ISSN 0915-6364

NATIONAL INSTITUTE FOR FUSION SCIENCE

Bibliography of Electron and Photon Cross Sections
with Atoms and Molecules
Published in the 20th Century
– Hydrogen molecules –

M. Hayashi

(Received - Jan. 29, 2004)

NIFS-DATA-82 Feb. 2004

TOKI, JAPAN

Bibliography of Electron and Photon Cross Sections with Atoms and Molecules Published in the 20th Century

—— Hydrogen molecules ——*

Makoto Hayashi

(Gaseous Electronics Institute)

Bibliographies of original and review reports of experiments or theories of electron and photon cross sections and also electron swarm data are presented for atomic or molecular species with specified targets. These works covered 17 atoms and 51 molecules. The present bibliography is only for hydrogen molecules (H_2, HD, HT, D_2, DT, T_2). About 2200 papers were compiled. A comprehensive author index is included. The bibliography covers the period 1901 through 2000 for H_2. Finally, author's comments for H_2 electron collision cross sections are given.

Keywords : H_2 molecules, collision cross sections, electron, elastic scattering, rotational, vibrational and electronic excitations, dissociation, ionization photon, photoabsorption, photodissociation, photoexcitation, photoionization, electron swarm, drift velocity, diffusion coefficient, ionization coefficient, excitation and ionization energies, transition probabilities, lifetimes of excited states

---

* This work was carried out under the collaboration research program at National Institute for Fusion Science.

Introduction

History

This bibliography is the result of a continuing literature survey which was begun around 1970 and originally encompassed only electron collision cross section and electron swarm data. The organization responsible for continuing this survey is Nagoya Institute of Technology, Nagoya. From 1994, the work continued to Gaseous Electronics Insititute, Nagoya. In 1997, the collection of photon cross section references was begun. The search for references in both cases was retrospective and included all papers reporting measurements, theoretical calculations or reviews and data compilations of such cross sections and electron swarm data.

Scope

This bibliography contains references to original research papers which report experiments or theoretical calculations of cross sections for electron and photon collisions with hydrogen molecules, H_2, HD, HT, D_2, DT, and T_2. The review papers on this subject are also included. Some hydrogen molecule cluster papers are included. Some conference reports, company or agency reports and PhD thesis are included. Hydrogen ion papers and positron collision papers are not included in principle.

Papers reporting the following data are included.

For electron collision cross section :

1) elastic scattering
2) rotational excitation
3) vibrational excitation
4) electronic excitation
5) dissociation
6) ionization
7) attachment
8) grand total scattering (sum of elastic and inelastic cross sections)
9) metastable hydrogen molecules
10) electron swarm parameters (drift velocity, diffusion coefficient)
11) excitation and ionization coefficients

For photon collision cross section :

1) photoabsorption
2) photoexcitation and fluorescence
3) photodissociation
4) photoionization

For some related data :

1) excitation and ionization energies
2) transition probabilities
3) lifetimes of excited states
4) others

The energy range for electron cross section data is usually 0 - 10 KeV, but some higher electron energy papers are included. The wavelength range for photon cross section data is from microwave to X-ray. Most papers are concerned with infrared, visible and ultraviolet ray region.

The bibliography includes the papers published in the 20th century, from 1901 to 2000. The oldest paper in this list is given by J. S. Townsend (1901). So for this hydrogen molecules bibliography, published papers from 1901 to 1999 are compiled in alphabetical order of the first author's surname of the paper. References published in 2000 and plus some old papers found very recently after compilation are added as "Addenda of References for Hydrogen Molecules". In total, about 2200 papers are compiled in the hydrogen molecules bibliography.

Organization

This report consists of four parts : introduction, the bibliography and its addenda, author index and some comments on electron collision cross sections.

Bibliography

In this section the complete citation for all references are given. At first following classifications are shown :

E : Elastic collision
R : Rotational excitation
V : Vibrational excitation
EX : electronic EXcitation
D : Dissociation
I : Ionization
A : Attachment
ME : MEtastable hydrogen
S : electron Swarm
O : Others (photon cross sections and the others)

All authors' initials and surname, journal name, volume, inclusive pages and year of publication are given as well as the title, and some additional information in the square bracket [ ]. E and T in the square bracket mean experiment and theory.

Bibliography for H_2, D_2 and so on are divided into four parts :

Author Index

In this section all authors are listed alphabetically by surname. After each author's name is a list of page numbers indicating which references he or she authored or coauthored. This author index are also divided into four parts :

Some Comments on Electron Collision Cross Sections for H_2

Acknowledgments

The author would like to say many thanks to :
Kazuo Takayanagi and Yukikazu Itikawa of ISAS, Tokyo and Sagamihara,
Hiroyuki Tawara of NIFS, Nagoya and Toki,
Yoshiharu Nakamura of Keio University, Kanagawa,
Yoshihiko Hatano of Tokyo Institute of Technology, Tokyo
for continuous support and encouragement.

The author also would like to say many thanks to the librarians of the following organizations :
Nagoya Institute of Technology, Nagoya
Nagoya University, Nagoya (five libraries)
Institute of Plasma Physics, Nagoya University
National Institute for Fusion Science, Toki
Institute for Molecular Science, Okazaki

Finally, the author would like to say many thanks to Kayo Hirono for longstanding support for the preparation of these bibliographies.

References for H_2, HD and D_2 (1990 - 1999)

(Hydrogen, Deuterium hydride, Deuterium)

E	: Elastic collision,	R	: Rotational excitation,
V	: Vibrational excitation,	EX	: Electronic excitation,
D	: Dissociation,	I	: Ionization,
A	: Attachment,	QT	: Grand total cross section,
S	: Swarm,	α	: Ionization coefficient,
O	: The others,	[ ]	: Additional informations, E : Exp., T : Theory.

E F. Abdolsalami and M. Absolosalami : Phys. Rev. A50, 360-363 (1994)
Study of electron-molecule collisions via the finite-element method and R-matrix propagation technique : Model exchange. [T, H_2; 0.047 - 7 eV]

O F. Abdolsalami, P. Abdolsalami, L. Perez, P. Gomez and M. Silva : J. Comput. Phys. 121, 314-323 (1995)
Study of electron-molecule collision via finite-element method and R-matrix propagation technique : Exact exchange. [T, H_2, N_2]

E M. Abdolsalami and F. Absolosalami : Phys. Rev. A50, 412-417 (1994)
R Implementation of nonseparable exact exchange effects in the first-order nongenerate adiabatic theory. [T, H_2; 0.047 - 5 eV]

O H. Abgrall, E. Roueff, X. Liu, D. E. Shemansky and G. K. James : J. Phys. B32, 3813-3838 (1999)
High-resolution far ultraviolet emission spectra of electron-excited molecular deuterium. [E, $h\nu$, D_2]

EX J. M. Ajello, D. E. Shemansky and G. K. James : Astrophys. J. 371, 422-431 (1991)·
Cross sections for production of H(2p, 2s, 1s) by electron collisional dissociation of H_2. [E, H_2; 10 - 700 eV]

EX J. M. Ajello and D. E. Shemansky : Astrophys. J. 407, 820-825 (1993) Z
Electron excitation of the H_2 ($a^3\Sigma_g^+ \rightarrow b^3\Sigma_u^+$) continuum in the vacuum ultraviolet. [E, H_2; 11.8 - 200 eV]

EX J. M. Ajello, S. M. Ahmed, I. Kanik and R. Multari : Phys. Rev. Lett. 75, 3261-3264 (1995)
Kinetic energy distribution of H(2p) atoms from dissociative excitation of H_2. [E, H_2; 20 - 100 eV]

EX J. M. Ajello, S. M. Ahmed and X. Liu : Phys. Rev. A53, 2303-2308 (1996)·
Line profile of H Lyman-β emission from dissociative excitation of H_2. [E, H_2; 1025.7 A, th. - 400 eV]

O S. W. Allendorf and A. Szoke : Phys. Rev. A44, 518-534 (1991)
High-intensity multiphoton ionization of H_2. [E, $h\nu$, H_2]

I A. H. Al-Nasir, M. A. Chaudhry, A. J. Duncan, R. Hippler and H. Kleinpoppen : Phys. Rev. A47, 2922-2926 (1993)
Doubly differential cross section for the ionization of the hydrogen molecule by the impact of 100-eV electrons. [E, H_2; 2/5/10 - 110/115°]

O J. Amorim, J. L. S. Lino, J. Loureiro, M. A. P. Lima and F. J. de Paixao : Chem. Phys. 246, 275-282 (1999)
Superelastic collisions of electrons with the $c^3\Pi_u$ metastable state in hydrogen DC positive column. [T, H_2]

I G. Arena, V. Berardi, N. Spinelli, R. Velotta and M. Armenante : Int. J. Mass Spectrom. Ion Phys. 127, 57-65 (1993)·
Electron impact ionisation of H_2 (D_2) molecules : kinetic energy distributions of H^+ (D^+).
[E, H_2, D_2; 40 and 100 eV, dissociative ionization]

O U. Asaf, K. Rupnik, G. Reisfeld and S. P. McGlynn : J. Chem. Phys. 99, 2560-2566 (1993)·
Pressure shifts and electron scattering lengths in atomic and molecular gases. [E and T, H_2, N_2, CH_4, C_2H_6, C_3H_8, CO_2, He - Xe]

O S. A. Astashkevich and B. P. Lavrov : Opt. Spectrosc. 85, 348-355 (1998a)·
Absolute values of rovibronic transition probabilities for the $I^1\Pi_g^- \rightarrow B^1\Sigma_u^+$ system of bands of the H_2 molecule.
[T, H_2; v' = 0-3, v" = 0-9]

A D. E. Atems and J. M. Wadehra : Phys. Rev. A42, 5201-5207 (1990a)
Nonlocal effects in dissociative electron attachment to H_2.
[T, H_2; 3 - 5.5 eV]

V D. E. Atems and J. M. Wadehra : AIP Conf. Proc. 210, Brookhaven 121-128 (1990b)
Isotope effect in vibrational excitation of H_2 by low energy electron impact. [T, H_2, D_2]

V D. E. Atems and J. M. Wadehra : Chem. Phys. Lett. 197, 525-529 (1992)·
Vibrational excitation of H_2 and HCl by low-energy electron impact. An isotope scaling law. [T, H_2, HCl]

D D. E. Atems and J. M. Wadehra : J. Phys. B26, L759-L765 (1993)·
Resonant contributions to dissociation of H_2 by low-energy electron impact. [T, H_2; th. - 18 eV]

A M. Bacal, F. G. Baksht and V. G. Ivanov : J. Phys. D32, 2886-2889 (1999)
The increase of the effective rate constant of the dissociative attachment of electrons to hydrogen molecules due to the H_2 vibrational excitation in a hydrogen stream flowing in the channel. [T, H_2]

O U. Bafile, L. Ulivi, M. Zoppi, F. Barocchi, M. Moraldi and A. Borysow : Phys. Rev. A42, 6916-6919 (1990)
Depolarized-light-scattering spectrum from gaseous hydrogen at 50 K : The density-squared component. [E, $h\nu$, H_2]

O U. Bafile, L. Ulivi, M. Zoppi, M. Moraldi and L. Frommhold : Phys. Rev. A44, 4450-4458 (1991)
Third virial coefficients of collision induced, depolarized light scattering of hydrogen. [E, H_2]

S A. Bagheri, K. L. Baluja and S. M. Datta : Z. Phys. D32, 211-217 (1994)
Density dependence of electron mobility in dense gases.
[T, H_2, N_2, O_2, CO_2, He - Xe]

A F. G. Baksht and V. G. Ivanov : Tech. Phys. Lett. 24, 977-979 (1998a)
Increasing in the rate constant for dissociative attachment of electrons to hydrogen molecules by vibrational pumping during flow in a channel.
[E, H_2]

O F. G. Baksht, V. G. Ivanov and M. Bacal : Plasma Sources Sci. Technol. 7, 431-439 (1998b)
Pumping of highly vibrationally excited molecules in a hydrogen flow through a cesium-hydrogen discharge. [E, H_2 + Cs]

O F. G. Baksht and V. G. Ivanov : Tech. Phys. 44, 621-627 (1999)
Characteristic features of the formation of the vibrational distribution function of H_2 molecules in a hydrogen stream. [T, H_2]

O A. Balakrishnan, V. Smith and B. P. Stoicheff : Phys. Rev. A49, 2460-2469 (1994)
Dissociation energies of the hydrogen and deutrium molecules.
[E, H_2 4.478111 eV, D_2 4.556255 eV]

O S. Banerjee, M. K. Chakrabarti, S. S. Bhattacharyya and S. Saha : J. Chem. Phys. 95, 1608-1618 (1991)
Resonance enhanced two-photon dissociation of H_2 by the X → (EF + GK + I) transition via intermediate B, C states. [T, $h\nu$, H_2]

O S. Banerjee, S. S. Bhattacharyya and S. Saha : Phys. Rev. A49, 1836-1846 (1994)
Nonadiabatic effects on resonance-enhanced two-photon dissociation of H_2.
[T, $h\nu$, H_2]

O C. W. Bauschlicher, Jr. and S. R. Langhoff : Theor. Chim. Acta 79, 93-103 (1991)
Computation of electronic transition moments : the length versus the velocity representation. [T, H_2, BH, C_2]

Z. N. Begun and Z. H. Khan : Bulg. J. Phys. 23, 27-36 (1996)
Some modifications in the Glauber theory for electron-atom and electron-molecule scattering. [T, H_2, He, Li]

EX V. A. Belyaev, M. M. Dubrovin, N. N. Semenov and A. N. Khlopkin : Plasma Phys. 20, 316-3 (1994)
Hydrogen molecular ions simultaneous dissociation in low energy self-collision. [E, H_2; 7.5 - 18 eV]

I V. Berardi, N. Spinelli, T. M. di Palma, R. Velotta, M. Armenante and F. Giammanco : An. Fis. (Spain) 90, 267-272 (1994)
Neutral long-lived collision complex production in e^- - impact ionisation of H_2 and D_2 molecules : influence of collective effects. [, H_2, D_2]

EX I. Borges, Jr., G. Jalbert and C. E. Bielschowsky : Phys. Rev. A57, 1025-1032 (1998)
Non-Franck-Condon electron-impact dissociative-excitation cross sections of molecular hydrogen producing H(1s) + H(2l) through $X^1\Sigma_g^+(v=0) \rightarrow \{B^1\Sigma_u^+, B'^1\Sigma_u^+, C^1\Pi_u\}$. [T, H_2; 100 - 1000 eV]

EX I. Borges, Jr. and C. E. Bielschowsky : Phys. Rev. A60, 1226-1234 (1999)
Photon and high-energy-electron-impact vibronic excitation of molecular hydrogen. [T, H_2]

E A. Bouferguene, I. Ema and C. A. Weatherford : Phys. Rev. A59, 2712-2718 (1999)·
Nonadiabatic polarization potentials in electron- and positron-molecule scattering : Application to e^- + H_2. [T, H_2; 0 - 10 eV]

S M. Braglia and M. Potremoli : Nuovo Cimento 14D, 867-869 (1992a)
Monte Carlo simulations of electron transport in real gases. Accuracy of diffusion and drift experiments in H_2 at 77 K. [T, H_2; 77 K]

S M. Braglia : Contrib. Plasma Phys. 32, 497-502 (1992b)
Monte Carlo calculations of electron transport coefficients in H_2. First simulations of the Townsend-Huxley experiment. [T, H_2]

EX S. E. Branchett and J. Tennyson : Phys. Rev. Lett. 64, 2889-2892 (1990a)·
Resonances in the electronic excitation of molecular hydrogen.
[T, H_2; 8 - 30 eV]

EX S. E. Branchett, J. Tennyson and L. A. Morgan : J. Phys. B23, 4625-4639 (1990b)
Electronic excitation of molecular hydrogen using the R-matrix method.
[T, H_2; th. - 25 eV, 6 ex. states]

E S. E. Branchett, J. Tennyson and L. A. Morgan : J. Phys. B24, 3479-3490 (1991)·
EX Differential cross sections for electronic excitation of molecular hydrogen using the R-matrix method. [T, H_2]

EX S. E. Branchett and J. Tennyson : J. Phys. B25, 2017-2026 (1992)
Transition moments for excitation to Rydberg states of molecules using the R-matrix method : H_2 with $n \leqq 5$. [T, H_2]

O I. K. Bronic, M. Kimura, M. Inokuti and M. A. Dillon : Nucl. Instrum. Meth. B71, 366-370 (1992)·
The Fano factor for electrons in gas mixtures.
[T, H_2 + Ar, CH_4 + Ar, He + Ar, etc.]

O D. Brown and J. C. Light : J. Chem. Phys. 101, 3723-3728 (1994)
Kohn variational principle for a general finite-range scattering functional. [general theory]

E M. J. Brunger, S. J. Buckman, D. S. Newman and D. T. Alle : Aust. J. Phys. 43, 665-682
V (1990)
Low energy electron scattering from H_2. [E, H_2; 1.5 eV]

E M. J. Brunger, S. J. Buckman, D. S. Newman and D. T. Alle : J. Phys. B24, 1435-1448
V (1991)○ Z
Elastic scattering and rovibrational excitation of H_2 by low-energy electrons. [E, H_2; 1 - 5 eV]

V S. J. Buckman, M. J. Brunger, D. S. Newman, G. Snitchler, S. Alston, D. W. Norcross, M. A. Morrison, B. C. Saha, G. Danby and W. K. Trail : Phys. Rev. Lett. 65, 3253-3256 (1990)○ Z
Near-threshold vibrational excitation of H_2 by electron impact : resolution of discrepancies between experiment and theory.
[E and T; H_2]

E S. J. Buckman and M. J. Brunger : Aust. J. Phys. 50, 483-509 (1997)・
R A critical comparison of electron scattering cross sections measured by
V single collision and swarm techniques.
[compilation, H_2, He - Xe, N_2, CO, O_2, NO, CO_2, CH_4]

E S. J. Buckman, D. T. Alle, M. J. Brennan, P. D. Burrow, J. C. Gibson, R. J. Gulley, M. Jacka,
V D. S. Newman, A. R. P. Rau, J. P. Sullivan and K. W. Trantham : Aust. J. Phys. 52, 473-491 (1999)
Role of negative ion resonances in electron scattering from atoms and molecules. [compilation, E and T, N_2, CO, O_2, NO, He, Mg, Cd]

V P. D. Burrow : AIP Conf. Proc. 360, 19th ICPEAC, Whistler 257-266 (1995)・
Electron scattering from vibrationally excited molecules.
[review, H_2, N_2, CO_2, SF_6, CH_3Cl]

O M. L. Burstein, B. P. Lavrov, A. S. Melnikov, V. P. Prosikhin, S. V. Yurgenson and V. N. Yakovlev : Opt. Spectrosc. 68, 166-168 (1990)
Measurement of the radiative lifetimes and collisional-quenching rate coefficients for the H_2-molecule $d^3\Pi_u^-$, v, N levels. [E, H_2]

O M. Cacciatore, M. Capitelli, R. Celiberto, P. Cives and C. Gorse : AIP Conf. Proc. 210, 74-87 (1990)
Coupled solution of Boltzmann equation and nonequilibrium vibrational kinetics in H_2 volume discharges : An analysis of the input data.
[T, H_2]

D M. A. Cacciatore, M. Capitelli and R. Celiberto : At. Plasma Mater. Interact. Data Fusion 2, 65-74 (1992)
Dissociative and energy transfer reactions involving vibrationally excited H_2/D_2 molecules. [T, H_2(v), D_2(v)]

O I. Cadez, C. Shermann, M. Landau, F. Pichou, D. Popovic and R. I. Hall : Z. Phys. D26, 328-330 (1993)・
Hydrogen recombination on metals : Vibrational excitation of desorbed molecules. [E, H_2 on metal surfaces]

O M. Capitelli, R. Celiberto and M. Cacciatore : in Advances in Atomic, Molecular and Optical Physics, Vol. 33, Academic 321-372 (1994)
Needs for cross sections in plasma chemistry.
[review, H_2, N_2, O_2, CO, HCl, Cl_2, F_2, HF, CO_2, etc.]

V M. Capitelli, M. Cacciatore, R. Celiberto, F. Esposito, C. Gorse and A. Laricchiuta :
A Plasma Phys. Rep. 25, 5-17 (1999)・
Some aspects of electron-molecule scattering, molecular dynamics, and vibrational kinetics in nonequilibrium H_2/D_2 plasmas. [T, H_2, D_2]

I R. Celiberto, M. Capitelli and M. Cacciatore : Chem. Phys. 140, 209-215 (1990a)
Electron impact direct dissociative ionization cross sections from vibrationally excited H_2 molecules and translational energy distribution. [T, $H_2(v)$; 15 - 100 eV]

EX R. Celiberto, P. Cives, M. Cacciatore, M. Capitelli and U. T. Lamanna : Chem. Phys. Lett. 169, 69-73 (1990b)
Direct electron-impact collision cross sections involving vibrationally excited $D_2(v)$ molecules relevant to D^- sources. [T, $D_2(v)$; 13 - 100 eV]

EX R. Celiberto and T. N. Rescigno : Phys. Rev. A47, 1939-1945 (1993)・
Dependence of electron-impact excitation and cross sections on the initial quantum number in H_2 and D_2 molecules : $X^1\Sigma_g^+ \rightarrow B^1\Sigma_u^+$ and $X^1\Sigma_g^+ \rightarrow C^1\Pi$ transition. [T, H_2, D_2; th. - 100 eV]

EX R. Celiberto, U. T. Lamanna and M. Capitelli : Phys. Rev. A50, 4778-4785 (1994a)・
Dependence of electron-impact excitation and cross sections on the initial vibrational quantum number in H_2 and D_2 molecules : $X^1\Sigma_g^+ \rightarrow B^1\Sigma^+$ and $X^1\Sigma_g^+ \rightarrow C^1\Pi_u$ transitions. [T, H_2, D_2; th. - 200 eV]

V R. Celiberto, M. Capitelli and U. T. Lamanna : Chem. Phys. 183, 101-106 (1994b)
Vibrational excitation of $H_2(X^1\Sigma_g^+, v)/D_2(X^1\Sigma_g^+, v)$ through excitation of electronically excited singlet states and radiative cascade. [T, H_2, D_2]

EX R. Celiberto, M. Capitelli, N. Durante and U. T. Lamanna : Phys. Rev. A54, 432-438 (1996a)
Electron-impact cross sections involving electronically excited states in H_2 molecules : $B^1\Sigma_u^+ \rightarrow 1^1\Pi_g$ transition. [T, H_2; th. - 200 eV]

EX R. Celiberto, M. Capitelli and R. K. Janev : Chem. Phys. Lett. 256, 575-580 (1996b)
Scaling of electron-impact electronic excitation cross sections of vibrationally excited diatomic molecules. [T, H_2, D_2]

I R. Celiberto, M. Capitelli and R. K. Janev : Chem. Phys. Lett. 278, 154-158 (1997)
Scaling of electron-impact dissociative ionization cross sections of vibrationally excited H_2 and D_2 molecules. [T, $H_2(v)$, $D_2(v)$]

E R. Celiberto, U. T. Lamanna and M. Capitelli : Phys. Rev. A58, 2106-2114 (1998)
Elastic, diffusion, and viscosity cross sections for collisions involving excited atomic hydrogen. [T, H; not H_2]

EX R. Celiberto, A. Laricchiuta, U. T. Lamanna, R. K. Janev and M. Capitelli : Phys. Rev. A60, 2091-2103 (1999)・
Electron-impact excitation cross sections for vibrationally excited $X^1\Sigma_g^+$ H_2 and D_2 molecules to Rydberg states. [T, $H_2(v)$, $D_2(v)$]

O W. F. Chan, G. Cooper and C. E. Brion : Chem. Phys. 168, 375-388 (1992)○ Z
Absolute optical oscillator strengths (11 - 20 eV) and transition moments for the photoabsorption of molecular hydrogen in the Lyman and Werner bands. [E, hν, H_2]

O D. Chen and G. A. Gallup : J. Chem. Phys. 93, 8893-8901 (1990)・
The relationship of the virtual orbitals of self-consistent-field theory to temporary negative ions in electron scattering from molecules.
[T, H_2, N_2, C_2H_4, C_3H_4, C_4H_6; using CI theory of Feshbach and Fano]

EX Z. Chen and A. Z. Msezane : Phys. Rev. A51, 3745-3750 (1995)・
Calculation of the excitation cross section for the $B^1\Sigma_u^+$ and $C^1\Pi_u^+$ states in e - H_2 scattering at 60 eV. [T, H_2]

S R. V. Chiflikyan : High Temp. 34, 1-6 (1996)・
Qualitative analysis of the relation between drift velocities of electrons in gas mixtures and pure gases formming these mixtures in gas-discharge plasma. [T, H_2, N_2, He, Ar, Kr, O_2, CO, CO_2, CF_4]

I H. Cho : Phys. Rev. A42, 6909-6911 (1990)
Coincident detection of D^+ and D(2S) from dissociative ionization of D_2 by electron impact. [E, D_2; 100 eV]

A L. G. Christophorou, L. A. Pinnaduwage and P. G. Datskos : in Linking the Gaseous and Condensed Phases of Matter, The Behavior of Slow Electrons, Plenum 415-442 (1994)
Electron impact to excited molecules. [review, H_2, O_2, SO_2, C_6F_6, etc.]

O Y. M. Chung, E. -M. Lee, T. Masuoka and J. A. R. Samson : J. Chem. Phys. 99, 885-889 (1993)○
Dissociative photoionization of H_2 from 18 - 124 eV. [E, hν, H_2]

S R. W. Crompton : in Nonequilibrium Effects in Ion and Electron Transport, Plenum Press 11-36 (1990)
Beam, swarm and theoretical studies of low-energy electron scattering : Some exemplers. [review, H_2, Ar, Kr, Ne, Hg, N_2]

S R. W. Crompton and M. A. Morrison : Aust. J. Phys. 46, 203-229 (1993)○ Z
V Analyses of recent experimental and theoretical determinations of e - H_2 vibrational excitation cross sections : Assessing a long-standing controversy. [T, H_2]

O S. M. Cybulski and D. M. Bidhop : Chem. Phys. Lett. 250, 471-465 (1996)
Electron-correlated calculations of the nuclear-shielding polarizability and magnetizability polarizability of H_2, N_2, HF and CO.
[T, H_2, N_2, HF, CO]

E G. Danby, B. K. Elza, M. A. Morrison and W. K. Trail : J. Phys. B29, 2265-2287 (1996)
R The separable representation of exchange in electron-molecule scattering : I. Elastic scattering and rotational excitation. [T, H_2; 0.05 - 10 eV]

E A. J. R. da Silva, M. A. P. Lima, L. B. Brescansin and V. McKoy : Phys. Rev. A41,
EX 2903-2905 (1990)・
Schwinger multichannl method : a study of a Feshbach resonance in e - H_2 collisions. [T, H_2; 12.2 - 12.5 eV]

A P. G. Datskos, L. A. Pinnaduwage and J. F. Kielkopf : Phys. Rev. A55, 4131-4142 (1997)
Photophysical and electron attachment properties of ArF-excimer-laser irradiated H_2. [E, H_2]

O A. Datta and S. S. Bhattacharyya : Phys. Rev. A59, 4502-4511 (1999a)
Laser-induced resonant structures in a close-coupling calculation of two-frequency multiphoton dissociation of HD^+. [T, HD]

O A. Datta, S. Saha and S. S. Bhattacharyya : Phys. Rev. A60, 1324-1335 (1999b)
Resonance-enhanced two-photon dissociation of H_2 through nonadiabatically coupled intermediate and final states. [T, $h\nu$, H_2]

O A. V. Dem'yanov, I. V. Kochetov, A. F. Pal' and A. V. Filippov : Sov. J. Plasma Phys. 18, 397-402 (1992)
Study of a beam-driven discharge in H_2 - N_2 mixtures at room and crygenic temperatures. [E, H_2 + N_2]

O P. Dietrich, M. Yu. Ivanov, F. A. Ilkov and P. B. Corkum : Phys. Rev. Lett. 77, 4150-4153 (1996)
Two-electron dissociative ionization of H_2 and D_2 in infrared laser fields. [T, H_2, D_2]

O S. N. Dixit : Phys. Rev. A42, 6932-6933 (1990)
Comment on laser-intensity effects on multiphoton ionization of H_2 via the E, $F^1\Sigma_g^+$ and the $B'^1\Sigma_u^+$ states. [T, $h\nu$, H_2]

V W. Domcke : Phys. Rep. 208, 97-188 (1991)・
A Theory of resonance and threshold effects in electron-molecule collisons : The projection-operator approach. [T, review, H_2, N_2, F_2, HCl, CO_2]

I I. J. Donnelly and E. K. Rose : Aust. J. Phys. 43, 45-64 (1990)
Ion densities in low temperature nitrogen plasmas.
[compilation, H_2, N_2; c. s. of disso. and ioniz.]

O I. Drira : J. Mol. Spectrosc. 198, 52-56 (1999)
Ab initio calculation of the electronic transition moments for excited states of the H_2 molecule. [T, H_2]

O K. F. Dunn, J. Geddes, F. P. O'Neill, N. Kouchi and C. J. Latimer : J. Elect. Spectrosc. Relat. Phenom. 79, 373-376 (1996)
The dissociative photoionization of hydrogen and deuterium via the lowest $^1\Sigma_u^+(Q_2)$ superexcited state. [E, $h\nu$, H_2, D_2; 37 eV]

EX A. K. Edwards, R. M. Wood, J. L. Davis and R. L. Ezell : Phys. Rev. A42, 1367-1375 (1990),
Errata A44, 797-798 (1991)
Collisional ionization and excitation of H_2 : Two-electron processes.
[E, H_2; 350 - 3500 keV]

EX A. K. Edwards, R. M. Wood, M. W. Dittmann, J. F. Browning, M. A. Mangan and R. L. Ezell :
I Nucl. Instrum. Methods B53, 472-476 (1991)
Two-electron processes in molecular collisions.
[E, H_2; 400 - 1100 eV]

EX A. K. Edwards, R. M. Wood, M. A. Mangan and R. L. Ezell : Phys. Rev. A46, 6970-6976 (1992)
Collisional ionization and excitation of H_2 : Dependence on the orientation of the internuclear axis. [E, H_2]

O A. K. Edwards, Q. Zheng, M. A. Mangan and R. M. Wood : J. Phys. B32, 3985-3992 (1999)
Excitation of the $2p\sigma_u$ state of H_2^+ as a function of energy loss.
[E and T, H_2^+; 400 eV]

R H. Ehrhardt : in Molecular Processes in Space, Plenum Press 41-64 (1990)・
V Experiments on low-energy electron-molecule collisions.
[review, H_2, N_2, CO, H_2O, HCl, CH_4, CO_2, HF]

E B. K. Elza and B. Ritchie : Phys. Rev. A48, 2940-2945 (1993)・
Use of time-dependent wave-packet theory in electron-molecule scattering.
[T, H_2; 13.6 eV, DCS]

O F. Esposito, G. Colonna, S. Longo and M. Capitelli : Plasma Chem. Plasma Process. 16, 1-16 (1996)
Monte Carlo global sensitivity analysis of Boltzmann equation for electron kinetics in H_2 discharges. [T, H_2]

O E. E. Eyler and N. Melikechi : Phys. Rev. A48, R18-R21 (1993)
Near-threshold continuum structure and the dissociation energies of H_2, HD, and D_2. [E, H_2, HD, D_2; laser double-resonance spectroscopy]

EX R. L. Ezell, A. K. Edwards, R. M. Wood, M. W. Dittmann, J. F. Browning and M. A. Mangan :
I Nucl. Instr. Meth. B56-57, 292-294 (1991)
Molecular orientation dependence for projectile-H_2 collisions.
[E, H_2]

O U. Fantz and B. Heger : Plasma Phys. Control. Fusion 40, 2023-2028 (1998)
Spectroscopic diagnostics of the vibrational population in the ground state of H_2 and D_2 molecules. [E, H_2, D_2]

O Fayyazuddin and M. Rafi : Phys. Lett. A205, 383-387 (1995)・
An empirical potential function of diatomic molecules.
[T, H_2, N_2, I_2, O_2, CO, NO, OH, HF]

O D. W. Ferguson, K. Narahari Rao, M. E. Mickelson an L. E. Larson : J. Mol. Spectrosc. 160, 315-325 (1993)
An experimental study of the 4-0 and 5-0 quadrupole vibration rotation bands of H_2 in the visible. [E, $h\nu$, H_2]

O H. H. Fielding and T. P. Softley : Phys. Rev. A49, 969-981 (1994)
Multichannel-quantum-defect-theory analysis of the Stark effects in autoionizing Rydberg states of H_2. [T, $h\nu$, H_2]

I N. P. Frandsen, F. M. Jacobsen, H. Kundsen and U. Mikkelsen : Mater. Sci. Forum 105-110, 539-544 (1992)
Preliminary results on impact ionization of molecular hydrogen by electrons and positrons. [E, H_2; th. - 3000 eV]

O L. J. Frasinski, M. Stankiewicz, P. A. Hatherly, G. M. Cross, K. Codling, A. J. Langley and W. Shaikh : Phys. Rev. A46, R6789-R6792 (1992)
Molecular H_2 in intense laser fields probed by electron-electron, electron-ion, and ion-ion covariance techniques. [E, $h\nu$, H_2]

E G. R. Freeman : J. Chem. Phys. 94, 3284-3284 (1991)・
Comment on : Electron scattering in dense atomic and molecular gases.
[comment, see K. Rupnik (1990)]

EX T. Fujimoto, K. Sawada and K. Takahata : Report, NIFS-DATA-4, National Inst. for Fusion Science, Nagoya 1-18 (1990)
Cross sections for production of excited hydrogen atoms following dissociative excitation of molecular hydrogen by electron impact.
[compilation, H_2]

EX J. M. Furlong and W. R. Newell : J. Phys. B28, 1851-1858 (1995)・Z
Resonant vibrational excitation of the $c^3\Pi_u$ state in HD and D_2 by electron impact. [E, HD, D_2; 11 - 13 eV]

A G. A. Gallup, Y. Xu and I. I. Fabrikant : Phys. Rev. A57, 2596-2607 (1998)・
Nonlocal theory of dissociative electron attachment to H_2 and HF molecules.
[T, H_2(g), H_2(v), HF]

O H. Gao and C. H. Greene : Phys. Rev. A42, 6946-6949 (1990)
Alternative vibrational frame transformation for electron-molecule scattering. [T, H_2; B"state, v = 0 - 7]

V H. Gao : Phys. Rev. A45, 6895-6898 (1992)
Vibrational excitation of H_2 by electron impact : An energy-dependent vibrational-frame-transformation approach. [T, H_2; 0 - 5 eV]

V J. P. Gauyacq : J. Chem. Phys. 93, 384-392 (1990)・
Time delay for resonant vibrational excitation in electron-molecule collisions. [T, model molecules]

O J. Geddes, K. F. Dunn, N. Kouchi, M. A. McDonald, V. Srigengan and C. J. Latimer : J. Phys. B27, 2961-2970 (1994)
Isotope effects in the autoionization of superexcited $^1\Sigma_u^+(Q_1)$ states in hydrogen. [E, $h\nu$, H_2, D_2; 27.5 - 32 eV]

V P. L. Gertitschke and W. Domcke : Phys. Rev. A47, 1031-1044 (1993a)
A Time-dependent wave-packet description of dissociative electron attachment. [T, H_2; 0 - 6 eV]

E P. L. Gertitschke and W. Domcke : J. Phys. B26, 2927-2942 (1993b) Z
V Systematically improved local complex potential approximation for the dynamics of electron-molecule collision complexes.
[T, H_2, N_2; shape resonance $^2\Sigma_u^+$ for H_2, 0 - 6 eV]

EX C. J. Gillan : 17th ICPEAC, Brisbane 263-272 (1992)
R-matrix calculations of electron scattering from neutral and ionized molecules. [T, ; elastic DCS at 15 eV]

O W. L. Glab and J. P. Hessler : Phys. Rev. A42, 5486-5499 (1990)
Ionization and dissociation of H_2 in a static electric field : Levels near the ionization threshold. [E, $h\nu$, H_2]

O T. Gorczyca and D. W. Norcross : Phys. Rev. A42, 5132-5138 (1990)
Close-coupling calculation for the $^2\Sigma_u^+$ state H_2^-. [T, H_2]

A C. Gorse, R. Celiberto, M. Cacciatore, A. Lagane and M. Capitelli : Chem. Phys. 161, 211-227 (1992a)
From dynamics to modeling of plasma complex systems : negative ion (H^-) sources. [T, H_2; $e + H_2(X^1\Sigma_g^+, v) \rightarrow H + H^-$]

A C. Gorse : Pure Appl. Chem. 64, 691-696 (1992b)
Progress in the modeling of H^- and D^- ion sources. [T, H_2, D_2]

O C. H. Greene and B. Yoo : J. Phys. Chem. 99, 1711-1718 (1995)
Doubly excited states in the spectrum of molecular hydrogen. [T, H_2]

EX X. Guo, D. J. Mathews, G. Mikaelian, M. A. Khakoo, I. Kanik and S. Trajmar : 21st ICPEAC, Sendai 305 (1999)○
The electron impact excitation of molecular hydrogen at 20 eV and 30 eV. [E, H_2; $c^3\Pi_u$ state]

O R. I. Hall, K. Ellis, G. Dawber, A. McConkey and G. C. King : 17th ICPEAC, Brisbane 44-44 (1991)
Near threshold photoionisation studies of vibrationally hot hydrogen. [E, $h\nu$, $H_2(v)$; 15 - 18 eV]

EX J. R. Harries, A. J. Murray and P. Hammond : 21st ICPEAC, Sendai 304 (1999)
Laser-probed ro-vibrationally-specific electron-impact excitation of H_2. [E, H_2; 11.5 - 14.5 eV]

O K. Hassouni, O. Leroy, S. Farhat and A. Gicquel : Plasma Chem. Plasma Process. 18, 325-362 (1998)
Modeling of H_2 and H_2/CH_4 moderate-pressure microwave plasma used for diamond deposition. [E, H_2, $H_2 + CH_4$]

A K. Hassouni, A. Gicquel and M. Capitelli : Chem. Phys. Lett. 290, 502-508 (1998b)
The role of dissociative attachment from Rydberg states in enhancing H^- concentration in moderate- and low-pressure H_2 plasma sources. [T, H_2]

D Y. Hatano : 50th GEC, Madison 1765-1765 (1997)
Dissociation of highly excited molecules. [review, E, H_2, N_2, O_2, CO, CO_2, N_2O, etc.]

O Y. Hatano : Phys. Rep. 313, 109-169 (1999)・
Interaction of vacuum ultraviolet photons with molecules. Formation and dissociation dynamics of molecular superexcited states.
[review, H_2, D_2, CH_4, C_2H_2, C_2H_4, C_2H_6, C_3H_8, H_2S, SiH_4, H_2O, D_2O, etc.]

O M. Hayashi and Y. Nakamura : EMS-99, A satellite of the 21th ICPEAC, Tokyo 175-176 (1999)・
May we measure the exact values of electron collision cross sections for molecules by beam and swarm experiments ?
[general comments, H_2 is the mixtures of H_2(g) and H_2(r) molecules]

O Z. X. He, J. N. Cutler, S. H. Southworth, L. R. Hughey and J. A. R. Samson : J. Chem. Phys. 103, 3912-3916 (1995)
Zero kinetic energy proton and deuteron production from photoionization of H_2 and D_2. [E, $h\nu$, H_2, D_2; 18 - 41 eV]

A A. P. Hickman : Phys. Rev. A43, 3495-3502 (1991)・
Dissociative attachment of electrons to vibrationally excited H_2.
[T, H_2; 0 - 6 eV]

O W. T. Hill III, B. P. Turner, S. Yang, J. Zhu and D. L. Hatten : Phys. Rev. A43, 3668-3674 (1991)
Competition between multiphoton fragmentation channels in H_2 and HD induced by intermediate states. [E, $h\nu$, H_2, HD]

V J. R. Hiskes : J. Appl. Phys. 70, 3409-3417 (1991)・
Cross sections for the vibrational excitation of the H_2 $X^1\Sigma_g^+$(v) levels generated by electron collisional excitation of the higher singlet states. [T, H_2]

O J. R. Hiskes : Appl. Phys. Lett. 69, 755-757 (1996)
Molecular Rydberg states in hydrogen negative ion discharges. [T, H_2]

EX W. M. Huo and D. Brown : Phys. Rev. A60, 295-305 (1999)
Finite-element Z-matrix method : Application to electron-molecule collisions. [T, H_2]

I W. Hwang, Y. -K. Kim and M. E. Rudd : J. Chem. Phys. 104, 2956-2966 (1996)○
New model for electron-impact ionization cross sections of molecules.
[T, H_2, N_2, O_2, CO, H_2O, C_2H_4, C_6H_6, SiF_3, and other molecules]

V M. Inokuti : in Molecular Processes in Space, Plenum Press 65-86 (1990)・
EX Subexcitation electrons in gases. [review, H_2, N_2, O_2, CO_2]

E W. A. Isaacs and M. A. Morrison : J. Phys. B25, 703-725 (1992)・
Modified effective range theory as an alternative to low-energy close-coupling calculations. [T, H_2, N_2; < 1 eV]

E W. A. Isaacs and M. A. Morrison : Phys. Rev. A53, 4215-4221 (1996)・
Analytic Born completion in the calculation of electron-molecule differential cross sections. [T, H_2, N_2; DCS, 1 and 10 eV for H_2]

O K. Ito, R. I. Hall and M. Ukai : J. Chem. Phys. 104, 8449-8457 (1996)
Dissociative photoionization of H_2 and D_2 in the energy region of 25 - 45 eV. [E, $h\nu$, H_2, D_2]

I F. M. Jacobsen, N. P. Frandsen, H. Knudsen and U. Mikkelsen : J. Phys. B28, 4675-4689 (1995) Z
Non-dissociative single ionization of molecular hydrogen by electron and positron impact. [E, H_2; 400 - 2000 eV]

QT A. Jain and K. L. Baluja : Phys. Rev. A45, 202-218 (1992) · Z
Total (elastic plus inelastic) cross sections for electron scattering from diatomic and polyatomic molecules at 10 - 5000 eV : H_2, Li_2, HF, CH_4, N_2, CO, C_2H_2, HCN, O_2, HCl, H_2S, PH_3, SiH_4, and CO_2.
[T, H_2, H_2S, PH_3, etc.; 20 - 5000 eV]

O B. M. Jelenkovic and A. V. Phelps : Phys. Rev. E53, 1852-1863 (1996) ·
Cathode-fall development in low-pressure, parallel-plane hydrogen discharges. [E, H_2]

EX G. K. James, J. M. Ajello and W. R. Pryor : J. Geophys. Res. 103, 20113-20123 (1998)
The middle ultraviolet-visible spectrum of H_2 excited by electron impact. [E, H_2; 175 - 530 nm]

EX G. K. James, J. M. Ajello and W. R. Pryor : 21st ICPEAC, Sendai 297 (1999)
The middle ultraviolet-visible spectrum of H_2 excited by electron impact. [E, H_2]

O K. Jimbo : J. Phys. Soc. Jpn. 65, 2455-2458 (1996)
An equilibrium in negative hydrogen ion production process related to the sheet plasma experiment. [E, H_2]

O Ch. Jungen, I. Dabrowski, G. Herzberg and M. Vervloet : J. Chem. Phys. 93, 2289-2298 (1990)
High orbital angular momentum states in H_2 and D_2. Ⅲ. Singlet-triplet splittings, energy levels, and ionization potentials.
[E, $h\nu$, H_2, D_2; $V_i(H_2)$ = 124417.501 cm^{-1}]

O Ch. Jungen, I. Dabrowski, G. Herzberg and M. Vervloet : J. Mol. Spectrosc. 153, 11-16 (1992)
The ionization potential of D_2. [E, $h\nu$, D_2; $V_i(D_2)$ = 124745.353 cm^{-1}]

E G. P. Karwasz, R. S. Brusa and A. Zecca : J. Phys. B28, L443-L448 (1995) Z
On possible absorption effects in electron scattering of electrons on molecules. [T, H_2; 2 - 200 eV]

QT W. E. Kauppila and T. S. Stein : in Advances in Atomic, Molecular, and Optical Physics, Vol. 26, Academic Press 1-50 (1990)
Comparisons of positron and electron scattering by gases.
[review]

V A. K. Kazanskii : Opt. Spectrosc. 80, 798-808 (1996)
Calculation of the vibrational excitation cross sections for H_2, HD, and D_2 molecules in collisions with slow electrons within the framework of nonstationary nonlocal theory. [T, H_2, HD, D_2; 0.5 - 7 eV]

EX M. A. Khakoo and J. Segura : J. Phys. B27, 2355-2368 (1994)○ Z
Differential cross sections for the electron impact excitation of the $b^3\Sigma^+$ continuum of molecular hydrogen.
[E, H_2; 9.2 - 20.2 eV at 6 energies, 20 - 120°]

O J. Khatum and K. R. Dastidar : Phys. Rev. A53, 4326-4330 (1996)
Theoretical study of the vibrational-branching ratio and photoelectron angular distribution in (1 + 1')-photon resonance-enhanced multiphoton ionization of HD and D_2 molecules. [T, $h\nu$, HD, D_2]

O S. V. Khristenko, A. I. Maslov and V. P. Shevelko : Molecules and Their Spectroscopic Properties, Springer (1998)

O S. H. Kim and E. Mazur : Phys. Rev. A52, 992-1004 (1995)・
Rydberg states of HD. [E, HD; n = 9 - 11]

E M. Kimura, I. Krajcar-Bronic and M. Inokuti : J. Chem. Phys. 94, 8244-8251 (1991)
R Electron degradation and yields of initial products. Ⅷ. Subexcitation
V electrons in H_2 and D_2 gases. [T, H_2, D_2]

E M. Kimura, I. Krajcar-Bronic, M. Dillon and M. Inokuti : Phys. Rev. A45,
V 7831-7837 (1992)
Electron degradation and yields of initial products : The Fano factor for mixtured of argon and molecular hydrogen. [T, H_2 + Ar]

E M. Kimura, M. Inokuti and M. A. Dillon : in Advances in Chemical Physics, Vol. 84,
V John Wiley & Sons 193-291 (1993)
Electron degradation in molecular substances. [review, H_2, etc.]

O T. Kiyoshima and H. Sato : Phys. Rev. A48, 4771-4774 (1993)・
Perturbation effects on lifetimes of $d^3\Pi_u$ states in H_2 and D_2.
[E, H_2, D_2]

O T. Kiyoshima, H. Sato, S. O. Adamson, E. A. Pazyuk and A. V. Stolyarov : Phys. Rev. A60, 4494-4503 (1999)・
Competition between predissociative and radiative decays in the $e^3\Sigma_u^+$ and $d^3\Pi_u^-$ states of H_2 and D_2. [E and T, H_2, D_2]

O W. Kolos and J. Rychlewski : J. Mol. Spectrosc. 143, 237-250 (1990b)
Adiabatic potential energy curves for the b and $e^3\Sigma_u^+$ states of the hydrogen molecule. [T, H_2, D_2]

O W. Kolos and J. Rychlewski : J. Mol. Spectrosc. 169, 341-351 (1995)
The $a^3\Sigma_g^+$ state of the hydrogen molecule. [T, H_2]

E J. Komasa and A. J. Thakkar : Phys. Rev. A49, 965-968 (1994)
Small-angle elastic scattering of high-energy electrons by H_2, HD and D_2.
[T, H_2, HD, D_2; first Born]

V V. P. Konovalov and E. E. Son : in Reviews of Plasma Chemistry, Vol. 1,
EX Consultants Bureau 219-257 (1991)
I Degradation spectra of electrons in gases. [T, H_2, N_2, O_2, He, Ar]

I H. Kossmann, O. Schwarzkopf and V. Schmidt : J. Phys. B23, 301-313 (1990) · Z
Absolute ionisation cross sections for electron impact on H_2.
[E, H_2; 100 - 3000 eV, H_2^+, H^+]

O N. Kouchi, M. Ukai and Y. Hatano : J. Phys. B30, 2319-2344 (1997)
Dissociation dynamics of superexcited molecular hydrogen.
[review, E, H_2, HD, D_2]

E K.-I. Kowari : Phys. Rev. A53, 853-866 (1996) ·
V Electron degradation and thermalization in H_2 gas. [T, H_2; 1 - 5 eV]

O P. S. Krstic and D. R. Schultz : Phys. Rev. A60, 2118-2130 (1999)
Consistent definitions for, and relationships among, cross sections for elastic scattering of hydrogen ions, atoms, and molecules.
[T, H_2, H; not e^-]

I E. Krishnakumar and S. K. Srivastava : J. Phys. B27, L251-L258 (1994) Z
Electron correlation effects in the dissociative ionization of H_2.
[E, H_2; th. - 1000 eV]

I M. Kurepa, S. Madzunkov and I. Cadez : Balk Phys. Lett. (Turkey) 6, 14-20 (1998)
Energy and angular distribution of positive ions from dissociative ionization processes. [E, H_2, H_2O, CH_4]

O C. J. Latimer, A. D. Irvine, M. A. McDonald and O. G. Savage : J. Phys. B25, L211-L214 (1992)
The dissociative photoionization of hydrogen via two-electron excitation at 27.5 eV and 30.5 eV. [E, $h\nu$, H_2]

O C. J. Latimer, K. F. Dunn, N. Kouchi, M. A. MacDonald, V. Srigengan and J. Geddes : J. Phys. B26, L595-L600 (1993) [McDonald → MacDonald]
A dissociative photoionization study of the autoionization lifetime of the lowest $^1\Sigma_u$ superexcited state in hydrogen and deuterium.
[E, $h\nu$, H_2, D_2; 30.5 eV]

O C. J. Latimer, K. F. Dunn, F. P. O'Neill, M. A. MacDonald and N. Kouchi : J. Chem. Phys. 102, 722-725 (1995)
Photoionization of hydrogen and deuterium. [E, $h\nu$, H_2, D_2; 25 - 40 eV]

O C. J. Latimer, J. Geddes, M. A. MacDonald, N. Kouchi and K. F. Dunn : J. Phys. B29, 6113-6121 (1996)
The photodissociative ionization of hydrogen and deuterium in the VUV via Π states. [E, $h\nu$, H_2, D_2; 29.5 - 60 eV]

O B. P. Lavrov and S. A. Astashkevich : Opt. Spectrosc. 86, 845-852 (1999)
Study of probabilities of the electronic-vibrational-rotational radiative transitions in hydrogen molecules. [review, H_2]

EX M.-T. Lee, L. E. Machado, E. P. Leal, L. M. Brescansin, M. A. P. Lima and F. B. C. Machado : J. Phys. B23, L233-L237 (1990a)・
Electronic correlation effects of the target in excitation cross sections by electron impact in H_2. [T, H_2; 3 ex. states, DSC, 20 eV]

EX M.-T. Lee, L. M. Brescansin and M. A. P. Lima : J. Phys. B23, 3859-3868 (1990b)
Varidity of the distorted-wave approximation (DWA) for inelastic e^- - H_2 scattering. [T, H_2; th.- 30 eV, 3 ex. states]

EX M.-T. Lee, L. E. Machado, L. M. Brescansin and G. D. Meneses : J. Phys. B24, 509-518 (1991)・
Studies of vibronic excitations of H_2 by electron impact.
[T, H_2; 15 - 40 eV]

EX M.-T. Lee, S. E. Michelin, L. M. Brescansin, G. D. Meneses and L. E. Machado : J. Phys. B26, L477-L481 (1993)
Rovibrationally resolved electronic excitation of H_2 by electron impact.
[T, H_2]

E M.-T. Lee, I. Iga, M. M. Fujimoto and O. Lara : J. Phys. B28, 3325-3334 (1995)
Application of the method of continued fractions for electron scattering by linear molecules. [T, H_2, H_2^+, LiH]

EX M.-T. Lee, S. E. Michelin, G. D. Meneses, L. M. Brescansin and L. E. Machado : J. Phys. B29, 2337-2346 (1996a)・
State-to-state cross sections and anisotropy parameters for the excitation of the $c^3\Sigma_u^-$ (v = 0, 1, 2, 3; N = 2) states of H_2 by electron impact. [T, H_2; 15 - 40 eV]

EX M.-T. Lee, M. M. Fujimoto, T. Kroin and I. Iga : J. Phys. B29, L425-L431 (1996b)
Electronic excitation of the $b^3\Sigma_u^+$ state of H_2 by electron impact using the method of continued fraction. [T, H_2; 10 - 40 eV]

E M.-T. Lee, T. Kroin, M. M. Fujimoto, I. Iga and S. E. Michelin : J. Phys. B30, L221-L229 (1997a)・
Second-order distorted-wave study for low- and intermediate-energy elastic electron scattering by the hydrogen molecule.
[T, H_2; 1 - 40 eV]

EX M.-T. Lee, M. M. Fujimoto and I. Iga : J. Mol. Struct. (Theochem) 394, 117-125 (1997b)
Application of the method of continued fractions to low-energy electron scattering by the hydrogen molecule. [T, H_2; 1.5 - 30 eV]

EX M.-T. Lee, A. M. A. Taveira, M. M. Fujimoto, L. E. Machado and L. M. Brescansin : J. Mol. Struct. (Theochem) 394, 127-133 (1997c)
Vibronic excitation cross-sections for the $X^1\Sigma_g^+$ (v = 0) → $C^1\Pi_u$ (v' = 0, 1, 2, 3) transitions in H_2 by electron impact. [T, H_2]

EX M.-T. Lee, M. M. Fujimoto and I. Iga : J. Mol. Struct., Theochem 432, 197-209 (1998)
Electronic excitation of the $a^3\Sigma_g^+$ and $c^3\Pi_u$ states of H_2 by electron-impact using the method of continued fractions. [T, H_2; th.- 30 eV]

I M.-T. Lee, A. L. Monzani, L. E. Machado and A. M. Machado : 21st ICPEAC, Sendai 301 (1999)
Electron-impact ionization of H_2. [T, H_2]

I N. Lermer, B. R. Todd, N. M. Cam, Y. Zheng, C. E. Brion, Z. Yang and E. R. Davidson : Phys. Rev. A56, 1393-1402 (1997)
Electron momentum spectroscopy of H_2 and D_2 : Ionization to ground and excited final states. [E, H_2, D_2]

EX M. A. P. Lima, L. M. Brescansin, A. J. R. da Silva, C. Winstead and V. McKoy : Phys. Rev. A41, 327-332 (1990)·
Applications of the Schwinger multichannel method to electron-molecule collisions. [T, H_2; exc. DCS 20 and 30 eV; CH_4, elastic DCS]

O M. D. Lindsay, A. W. Kam, J. R. Lawall, P. Zhao, F. M. Pipkin and E. E. Eyler : Phys. Rev. A41, 4974-4988 (1990)
Autoionization rates and energy levels of triplet nf, v = 1 Rydberg states of H_2. [E, H_2; n = 10 - 22]

O J. W. Liu : J. Phys. B23, L663-L667 (1990)
The exact Born-Oppenheimer oscillator strength distribution moments of $H_2^+(1s\sigma_g)$ for the excitation to all the continua. [T, H_2^+]

D J. W. Liu : Chin. J. Phys. 30, 653-663 (1992)
A critical study of the isotope effects in the electron impact dissociation for H_2^+ and D_2^+ and for their molecules H_2 and D_2. [T, H_2, D_2]

O J. W. Liu and S. Hagstrom : Phys. Rev. A48, 166-172 (1993)
Generalized oscillator-strength calculations for some low-lying excited of H_2 using a high accuracy configuration-interaction wave function. [T, H_2; $^{1,3}\Sigma_g$ and $^{1,3}\Sigma_u$ excited states]

D J. W. Liu and S. Hagstrom : Phys. Rev. A50, 3181-3185 (1994)·
Dissociative cross sections of H_2 by electron impact. [T, H_2]

EX X. Liu, S. M. Ahmed, R. A. Multari, G. K. James and J. M. Ajello : Astrophys. J. Suppl. 101, 375-399 (1995b)
High-resolution electron-impact study of the far-ultraviolet emission spectrum of molecular hydrogen. [E, H_2; 100 eV, 1140 - 1690 A]

EX X. Liu, D. E. Shemansky, S. M. Ahmed, G. K. James and J. M. Ajello : J. Geophys. Res. 103, 26739-26758 (1998)
Electron-impact excitation and emission cross sections of the H_2 Lyman and Werner systems. [E, H_2]

O D. L. Lynch and B. I. Schneider : Phys. Rev. A45, 4494-4498 (1992)
Molecular photoionization using the complex Kohn variational method. [T, $h\nu$, H_2, He, N_2]

E A. M. Machado and M.-T. Lee : J. Phys. B32, L81-L87 (1999a)·
Application of the method of continued fractions for the distorted-wave Green function in electron-molecule scattering. [T, H_2; 5 - 15 eV]

E A. M. Machado and M.-T. Lee : 21st ICPEAC, Sendai 284 (1999b)
Full second-order distoreted-wave study for elastic electron scattering by hydrogen molecule. [T, H_2]

EX M. A. Mangan, R. M. Wood, A. K. Edwards and Q. Zheng : Phys. Rev. A59, 358-362 (1999)
Excitation of the $2p\sigma_u$ state of H_2^+ as a function of the internuclear axis alignment. [E, H_2; 400 eV]

I D. Margreiter, J. Deutsch, M. Schmidt and T. D. Mark : Int. J. Mass Spectrom. Ion Phys. 100, 157-176 (1990)・
Electron impact ionization cross sections of molecules. Part II. Theoretical determination of total (counting) ionization cross sections of molecules : A new approach. [T, H_2, N_2, O_2, H_2O, CO_2; th.- 200 eV]

E T. D. Mark, Y. Hatano and F. Linder : Atomic and Molecular Data for Radiotherapy
V and Radiation Research, IAEA-TECDOC-799, 163-275 (1995)
EX Electron collision cross sections.
[review, H_2, He, Ar, N_2, O_2, H_2O, CO_2, CH_4, C_3H_8]

O F. Martin : J. Phys. B32, L181-L187 (1999a)
Non-autoionizing doubly excited states of H_2 : the Σ^- symmetry. [T, H_2]

O F. Martin : J. Phys. B32, R197-R231 (1999b)
Ionization and dissociation using B-splines : photoionization of the hydrogen molecules. [T, review, $h\nu$, H_2]

E N. J. Mason, W. H. Johnstone and P. Akther : in Electron Collision with Molecules,
Clusters, and Surfaces, Royal Holloway, Plenum Press 47-62 (1994)
Electron scattering by vibrationally excited molecules.
[review, H_2, CO_2, N_2O, OCS, etc.]

V S. Mazevet, M. A. Morrison and R. K. Nesbet : J. Phys. B31, 4437-4448 (1998)
Application of the non-adiabatic phase matrix method to vibrational excitation near a short-lived resonance : The case of e - H_2 scattering.
[T, H_2]

E S. Mazevet, M. A. Morrison, O. Boydstun and R. K. Nesbet : Phys. Rev. A59, 477-489
V (1999a)・
Inclusion of nonadiabatic effects in calculations on vibrational excitation of molecular hydrogen by low-energy electron impact.
[T, H_2; 0 - 10 eV]

V S. Mazevet, M. A. Morrison, O. Boydstun and R. K. Nesbet : J. Phys. B32, 1269-1294 (1999b)
Adiabatic treatments of vibrational dynamics in low-energy electron-molecule scattering. [T, H_2]

I I. E. McCarthy and E. Weigold : Rep. Prog. Phys. 54, 789-879 (1991)・
Electron momentum spectroscopy of atoms and molecules.
[review, H_2, N_2, H_2O, NH_3, NF_3, CCl_4, C_6H_6, C_2H_4, etc. and atoms]

EX G. D. Meneses, L. M. Brescansin, M. -T. Lee, S. E. Michelin, L. E. Machado and G. Csanak : Phys. Rev. Lett. 71, 1701-1704 (1993)
Stokes parameters and rovibrationally resolved cross sections for the $X^1\Sigma_g^+(v = 0, N = 1) \rightarrow d^3\Pi_u^-(v = 0, N = 1)$ excitation in H_2.
[T, H_2; 25 eV]

EX G. D. Meneses, L. M. Brescansin, M. -T. Lee, S. E. Michelin, L. E. Machado and G. Csanak : Z. Phys. D30, 173-175 (1994)
Coherence and correlation parameters for the $a^3\Pi^-(v = 0, 1, 2, 3; N = 1)$ states of H_2. [T, H_2; 15 - 40 eV]

EX G. D. Meneses, L. M. Brescansin, M. -T. Lee, S. E. Michelin, L. E. Machado and G. Csanak : Phys. Rev. A52, 404-412 (1995)
Electron-impact excitation of the $d^3\Pi_u^-(v = 0, 1, 2, 3; N = 1)$ states of H_2 : cross sections and anisotropy parameters. [T, H_2]

O F. Mertins, H. -D. Meyer and J. Schirmer : J. Phys. B30, 1691-1720 (1997)
Ground-state correlation effects in molecular photoionization at the extended frozen-core Hartree-Fock level. [T, $h\nu$, H_2, He, N_2, CO]

A H. H. Michels and J. M. Wadehra : AIP Conf. Proc. 210, Brookhaven 114-120 (1990)
Dissociative electron attachment to light molecules : A comparative study of H_2, LiH and Li_2. [T, H_2, LiH, Li_2]

I A. L. Monzani, L. E. Machado, M. -T. Lee and A. M. Machado : Phys. Rev. A60, R21-R24 (1999)
Intermediate-energy electron-impact ionization of molecules.
[T, H_2; doubly and triply - DCS, 100 and 250 eV]

V L. A. Morgan : AIP Conf. Proc. 205, 16th ICPEAC, New York 96-102 (1990)
R-matrix calculations of electron molecule scattering.
[review, T, H_2, N_2, HF, HCl]

S W. L. Morgan : J. Phys. D26, 209-214 (1993)
Test of a numerical optimization algorithm for obtaining cross sections for multiple collision processes from electron swarm data. [T, H_2]

R V M. A. Morrison, M. Abdolsalami and B. K. Elza : Phys. Rev. A43, 3440-3459 (1991)
Improved accuracy in adiabatic cross sections for low energy rotational and vibrational excitation of molecules by electron impact.
[T, H_2; 0.047 - 10 eV]

V M. A. Morrison and W. K. Trail : Phys. Rev. A48, 2874-2886 (1993)
Importance of bound-free correlation effects for vibrational excitation of molecules by electron impact : A sensitibity analysis. [T, H_2]

O R. E. Moss : J. Phys. B32, L89-L91 (1999)
Energies of low-lying vibration-rotation levels of H_2^+ and its isotopomers.
[T, H_2, D_2, HD]

I A. Motassium and B. Joulakian : Phys. Scr. 60, 142-147 (1999a)
Two centre Coulomb continua and the multiply differential cross section of the double ionisation of H_2 by electron impact. [T, H_2]

I A. Motassium and B. Joulakian : 21st ICPEAC, Sendai 289 (1999b)・
Angular distribution of the multiply differential cross section of the double ionization of H_2 by electron impact. [T, H_2]

I J. Moxom, G. Laricchia and M. Charlton : J. Phys. B28, 1331-1347 (1995)
Ionization of He, Ar and H_2 by positron impact at intermediate energies. [E, e^-, H_2, He, Ar; th.- 300 eV]

O A. J. Murray and P. Hammond : Rev. Sci. Instrum. 70, 1939-1950 (1999)
EX A novel spectrometer combining laser and electron excitation and deflection of atoms and molecules. [E, H_2, He as examples]

O R. Nagpal and A. Garscadden : Contrib. Plasma Phys. 35, 301-330 (1995)・
Electron and heavy particle energy redistributions in glow discharges in gas mixtures. [review, H_2 + N_2, N_2 + O_2, Ar + Cl_2]

EX K. Nakashima, M. Taniguchi and T. Ogawa : Chem. Phys. Lett. 197, 72-76 (1992)
Electron impact dissociation of hydrogen molecules. Time-resolved measurements of the Balmer line. [E, H_2]

V E. Narevicius and N. Moiseyev : Phys. Rev. Lett. 81, 2221-2224 (1998)
Fingerprints of broad overlapping resonances in the e + H_2 cross section. [T, H_2]

EX A. P. P. Natalense, C. S. Sartori, L. G. Ferreira and M. A. P. Lima : Phys. Rev. A54, 5435-5437 (1996)
Electronic excitation of H_2 by electron impact using soft norm-conserving pseudo potentials. [T, H_2]

V R. K. Nesbet : 17th ICPEAC, Brisbane 227 (1991)
Rovibrational excitation in electron scattering by H_2. [T, H_2]

V R. K. Nesbet : Phys. Rev. A54, 2899-2905 (1996)
A Nonadiabatic phase-matrix method for vibrational excitation and dissociative attachment in electron-molecule scattering. [general theory]

E R. K. Nesbet : Aust. J. Phys. 50, 473-482 (1997)
V Quantitative theory and accurate experiments : low-energy electron scattering by He and H_2 as case studies. [T, H_2, He]

QT J. C. Nickel, I. Kanik, S. Trajmar and K. Imre : J. Phys. B25, 2427-2431 (1992)○ Z
Total cross section measurements for electron scattering on H_2 and N_2 from 4 to 300 eV. [E, H_2, N_2; error 2.0 - 3.4 %]

EX T. Odagiri, N. Uemura, K. Koyama, M. Ukai, N. Kouchi and Y. Hatano : J. Phys. B28, L465-L470 (1995a)・
Electron energy-loss study of superexcited hydrogen molecules with the coincidence detection of the neutral dissociation. [E, H_2]

EX T. Odagiri, N. Uemura, K. Koyama, M. Ukai, N. Kouchi and Y. Hatano : Atomic Collision Res. in Jpn. 21, 12-13 (1995b)
Doubly excited states of H_2 as studied by coincident electron-energy-loss spectroscopy. [E, H_2]

EX T. Odagiri, N. Uemura, K. Koyama, M. Ukai, N. Kouchi and Y. Hatano : J. Phys. B29, 1829-1839 (1996)
Doubly excited states of molecular hydrogen as studied by coincident electron-energy-loss spectroscopy. [E, H_2; 80 eV]

EX T. Odagiri, K. Koyama, N. Uemura, N. Kouchi and Y. Hatano : J. Phys. B32, 1335-1344 (1999)・
Predissociation of optically forbidden states in electron-hydrogen collisions as studied by coincident electron energy-loss spectroscopy. [E, H_2; 30 and 150 eV]

EX T. Ogawa, S. Ihara and K. Nakashima : Chem. Phys. 161, 509-513 (1992)
Fano plots for the slow and fast groups of excited hydrogen atoms produced in e - H_2 collisions. [E, H_2; 30 - 2000 eV]

EX T. Ogawa : Bull. Chem. Soc. Jpn. 66, 3506-3507 (1993)
Excitation functions of the slow and fast groups of the excited hydrogen atom produced in e - H_2 collsions. [E, H_2]

I G. N. Ogurtsov : J. Phys. B31, 1805-1812 (1998)・
Differential cross sections for ionization of atmospheric gases by electron-impact. [E, H_2, N_2, CO, CO_2; 54.5° , 100 - 1000 eV]

EX S. Ohshima, T. Kondow, T. Fukuyama and K. Kuchitsu : Chem. Phys. Lett. 169, 331-336 (1990)
Measurements of differential cross sections for electron-impact excitation to long-lived excited states of He, Ar, H_2, and N_2 by a molecular-beam recoil method. [E, H_2, N_2, He, Ar]

A O. J. Orient and A. Chutjian : Phys. Rev. A59, 4374-4378 (1999)・
Experimental study of dissociative attachment in H_2 : Effects of vibrational excitation. [E, H_2; 3 - 16 eV]

V D. K. Otorbaev, M. J. de Graaf, M. C. M. van de Sanden and D. C. Schram : Contrib.
O Plasma Phys. 35, 195-202 (1995)
Vibrational population of hydrogen molecules excited by an RF discharge in an expanding thermal arc plasma as determined by emission spectroscopy. [E, H_2]

EX Ch. Ottinger and T. Rox : Phys. Lett. A161, 135-139 (1991)
Rovibrationally resolved relative cross sections for electron impact excitation of $H_2(c^3\Pi_u, v = 0, 1, 2, 3)$.
[E, H_2; relative, 12 - 22 eV]

S J. L. Pack, R. E. Voshall, A. V. Phelps and L. E. Kline : 42nd GEC, Palo Alto, E-14 (1989), Bull. Am. Phys. Soc. 35, 1809-1809 (1990)
Experimental and theoretical longitudinal electron diffusion coefficients in molecular gases. [E and T, H_2, N_2, D_2, CO, H_2O, CO_2, N_2O, NO_2, NH_3]

O S. Pal and S. C. Sabane : J. Chem. Phys. 104, 9779-9782 (1996)
Correlated static-exchange interaction for electron-molecule scattering : Case study for LiH and H_2. [T, H_2, LiH]

I S. Pal, S. Prakash and S. Kumar : Int. J. Mass Spectrom. Ion Process. 175, 247-252 (1998)
Partial doubley differential cross-sections for the ionization of H_2 by electron impact. [T, H_2; 100 - 1000 eV]

EX S. D. Parker, C. W. McCurdy, T. N. Rescigno and B. H. Lengsfield Ⅲ : Phys. Rev. A43, 3514-3521 (1991)
Electronic excitation of H_2 by electron impact : close-coupling calculations using the complex Kohn variational method.
[T, H_2; DCS, 3 ex. states, 15 - 40 eV]

A L. A. Pinnaduwage and L. G. Christophorou : Phys. Rev. Lett. 70, 754-757 (1993)・
H^- formation in laser-excited molecular hydrogen. [E, H_2]

A L. A. Pinnaduwage and L. G. Christophorou : J. Appl. Phys. 76, 46-54 (1994)・
Verification of H^- formation in ultraviolet-laser-irradiated hydrogen : Implications for negative ions and neutral beam technologies. [E, H_2]

A L. A. Pinnaduwage, W. X. Ding, D. L. McCorkle, S. H. Lin, A. M. Mebel and A. Garscadden : J. Appl. Phys. 85, 7064-7069 (1999)
Enhanced electron attachment to Rydberg states in molecular hydrogen volume discharges. [E, H_2, H_3]

O D. Popovic, I. Cadez, M. Landau, F. Pichou, C. Schermann and R. I. Hall : Meas. Sci.
V Tech. 1, 1041-1046 (1990)
Detection and measurement of ro-vibrational populations in molecular hydrogen. [E, H_2, HD, D_2]

O D. B. Popovic, R. I. Hall and I. Cadez : 15th SPIG, Dubrovnik 215-216 (1990)・
Time evolution of the hydrogen vibrational distribution under the low pressure conditions. [E, H_2]

A S. A. Pozdneev : Bull. Lebedev Phys. Inst. No. 5, 1-14 (1999)・
Dissociative electron attachment to excited diatomic molecules, basic approximations and methods of deriving analytical solutions.
[general theory]

O S. T. Pratt : Rep. Prog. Phys. 58, 821-883 (1995)
Excited-state molecular photoionization dynamics.
[review, H_2, N_2, NO, CO, HBr]

O K. Rai Dastidar and R. K. Das : J. Phys. B32, 3203-3213 (1999)
Dissociative autoionization in (1+2)-photon above-threshold excitation of H_2 molecules. [T, $h\nu$, H_2]

S G. Ramanan and G. R. Freeman : J. Chem. Phys. 95, 4195-4200 (1991) Z
E Electron mobilities in low density hydrogen and carbon monoxide gases : momentum transfer cross sections at very low energies.
[E, H_2, CO; 1 - 300 meV]

E J. Randell, S. L. Lunt, G. Mrotzek, J.-P. Ziesel and D. Field : J. Phys. B27, 2369-2382 (1994) · Z
Low energy electron scattering in H_2, N_2 and O_2.
[E, H_2, N_2, O_2; 0.01 - 0.175 eV]

O T. J. Reddish and J. M. Feagin : J. Phys. B32, 2473-2486 (1999)
Photo double ionization of molecular deuterium. [T and E, $h\nu$, H_2]

O E. Reinhold, W. Hogervorst, W. Ubachs and L. Wolniewicz : Phys. Rev. A60, 1258-1270 (1999)
Experimental and theoretical investigation of the HH $^1\Sigma_g^+$ state in H_2, D_2, and HD, and the $B''B^1\Sigma_u^+$ state in HD. [E and T, H_2]

V T. N. Rescigno, B. K. Elza and B. H. Lengsfield III : J. Phys. B26, L567-L573 (1993)
An ab initio treatment of near-threshold vibrational excitation of H_2 by electron impact : new parspectives on discrepancies between crossed-beam and swarm data. [T, H_2]

V T. N. Rescigno : in Electron Collisions with Molecules, Clusters, and Surfaces,
QT Royal Holloway, Plenum Press 1-13 (1994)
Non-adiabatic effects in low-energy electron-molecule scattering.
[T, ; 0.5 - 7 eV]

V F. Robicheaux : Phys. Rev. A43, 5946-5955 (1991) ·
A Driving nuclei with resonant electron : ab initio study of (e + H_2).
[T, H_2; th. - 5 eV]

E A. M. Rossi and I. E. McCarthy : J. Phys. B28, 3593-3602 (1995) ·
An ab initio, momentum-space optical potential for electron-molecule scattering. [T, H_2 only; DCS, 5 - 80 eV]

O H. Rottke, J. Ludwig and W. Sandner : Phys. Rev. A54, 2224-2237 (1996)
H_2 and D_2 in intense sub-picosecond laser pulses : Photoelectron spectroscopy at 1053 and 527 nm. [E, $h\nu$, H_2, D_2]

O H. Rottke, J. Ludwig and W. Sandner : J. Phys. B30, 2835-2844 (1997)
H_2 $B^1\Sigma_u^+$ photodissociation in an intense infrared light field.
[E, $h\nu$, H_2; 1064 nm]

O S. C. Roy : Phys. Rev. A43, 6393-6394 (1991)
Effect of electron correlation in photon-atom scattering.
[T, $h\nu$, H_2, He]

S W. Roznerski, J. Mechlinska-Drewko and K. Leja : J. Phys. D23, 1461-1463 (1990)
The characteristic energy and ratio of longitudinal diffusion coefficient to mobility for electrons in hydrogen and nitrogen.
[E, H_2, N_2; E/N = 70 - 1500 Td for H_2]

I M. E. Rudd : Phys. Rev. A44, 1644-1652 (1991) Z
Differential and total cross sections for ionization of helium and hydrogen by electrons. [T, H_2, He; DDCS, 100 eV]

I M. E. Rudd, K. W. Hollman, J. K. Lewis, D. L. Johnson, R. R. Porter and E. L. Fagerquist : Phys. Rev. A47, 1866-1873 (1993)
Doubly differential electron-production cross sections for 200 - 1500-eV e^- + H_2 collisions. [E, H_2]

E K. Rupnik, U. Asaf and S. P. McGlynn : J. Chem. Phys. 92, 2303-2304 (1990)・
Electron scattering in dense atomic and molecular gases : An empirical correlation of polarizability and electron scattering length.
[T, H_2, N_2, He - Xe, CH_4]

E K. Rupnik, U. Asaf and S. P. McGlynn : J. Chem. Phys. 94, 3285-3285 (1991)・
Reply to the comment on : Electron scattering in dense atomic and molecular gases. [see Freeman (1990)]

E K. Rupnik, U. Asaf and S. P. McGlynn : in Gaseous Dielectrics VII, Plenum Press 87-93 (1994)
Pressure shifts and electron scattering in atomic and molecular gases.
[T, H_2, N_2, CH_4, C_2H_6, C_3H_8, CH_3I]

O H. R. Sadeghpour and A. Dalgarno : Phys. Rev. A47, R2458-R2459 (1993)
Double photoionization of molecular hydrogen. [T, $h\nu$, H_2]

I Y. Sakai and M. K. Kawada : 21st ICPEAC, Sendai 336 (1999)・
Dissociative ionization of H_2 by electron impact.
[E, H_2; 30 - 100 eV]

I V. Saksena, M. S. Kushwara and S. P. Khare : Physica B233, 201-212 (1997)
Ionization cross-sections of molecules due to electron impact.
[T, H_2, N_2, O_2, CO_2, H_2O, NH_3]

O J. A. R. Samson and G. N. Haddad : J. Opt. Soc. Am. B11, 277-279 (1994)○
Total photoabsorption cross sections of H_2 from 18 to 113 eV.
[E, $h\nu$, H_2; review 18 - 300 eV]

O I. Sanchez and F. Martin : J. Phys. B30, 679-692 (1997)
Representation of the electronic continuum of H_2 with B-spline basis.
[T, $h\nu$, H_2]

O I. Sanchez and F. Martin : Phys. Rev. A60, 2200-2206 (1999a)
Dissociative photoionization of H_2 and D_2 by (30 - 37)-eV photons via $^1\Pi_u$ states. [T, $h\nu$, H_2, D_2]

O I. Sanchez and F. Martin : 21st ICPEAC, Sendai 293 (1999b)
Superexcited states of the hydrogen molecule : The Q_1 and Q_2 series.
[T, H_2]

I G. N. Sargsyan : J. Contemp. Phys. 34, 9-16 (1999)
Ionization of vibrationally-excited hydrogen molecules by low-energy electrons near the ionization threshold. [T, $H_2(v)$; v = 1 - 5]

E C. S. Sartori, F. J. da Paixao and M. A. P. Lima : Phys. Rev. A55, 3243-3246 (1997)
Superelastic cross sections in e^- - H_2 scattering. [T, H_2]

EX C. S. Sartori, F. J. da Paixao and M. A. P. Lima : Phys. Rev. A58, 2857-2863 (1998)
Transitions between excited electronic states of H_2 molecules by electron impact. [T, H_2; from $c^3\Pi_u$ and $a^3\Sigma_g^{(+)}$]

O K. Sawada, K. Eriguchi and T. Fujimoto : J. Appl. Phys. 73, 8122-8125 (1993)
Hydrogen-atom spectroscopy of the ionizing plasma containing molecular hydrogen : Line intensities and ionization rate. [T, H_2]

D K. Sawada and T. Fujimoto : J. Appl. Phys. 78, 2913-2924 (1995)・
I Effective ionization and dissociation rate coefficients of molecular hydrogen in plasma. [T, H_2]

O Y. Sawada, H. Tamaru, M. Kogoma, M. Kawase and K. Hashimoto : J. Phys. D29, 2539-2544 (1996)
The reduction of copper oxide thin films with hydrogen plasma generated by an atmospheric-pressure glow discharge. [E, H_2]

S B. Schmidt, K. Berkhan, B. Gotz and M. Muller : Phys. Scr. T53, 30-42 (1994)・Z
New experimental techniques in the study of electron swarms in gases and their impact on the determination of low energy electron scattering cross sections. [E, H_2, Ar - Xe]

I D. R. Schultz, L. Meng and R. E. Olson : J. Phys. B25, 4601-4618 (1992)・
Classical description and calculation of ionization in collisions of 100 eV electrons and positrons with He and H_2. [T, H_2, He]

O Y. L. Shao, D. J. Fraser, M. H. R. Hutchinson, J. Larsson, J. P. Marangos and J. W. G. Tisch : J. Phys. B29, 5421-5432 (1996)
Ionization and dissociation of H_2 with intense and ultra-short laser pulses at 780 nm and 390 nm. [E, $h\nu$, H_2]

O I. Shimamura, C. J. Noble and P. G. Burke : Phys. Rev. A41, 3545-3554 (1990)
Complex quantum defects of superexcited Rydberg states of H_2.
[T, H_2]

V I. Shimamura : Phys. Rev. A46, 1394-1399 (1992)
Scaling of the cross sections for vibrational transitions.
[T, general theory]

O L. D. A. Siebbeles, J. M. Schins, W. J. van der Zande, J. Los and M. Glass-Maujean : Phys. Rev. A44, 343-349 (1991a)
Differential cross section for photodissociation of H_2 by tunneling through the barreier of the $i^3\Pi_g$ state. [E, $h\nu$, H_2]

O L. D. A. Siebbeles, J. M. Schins, J. Los and M. Glass-Maujean : Phys. Rev. A44, 1584-1596 (1991b)
Resonances of the $j^3\Delta_g$ state in the differential photodissociation cross section of H_2. [E, $h\nu$, H_2]

O L. D. A. Siebbeles, J. M. Schins, W. J. van der Zande, J. A. Beswick and N. Halberstadt : Phys. Rev. A45, 4481-4489 (1992)
Consequences of electronic-state mixing on the dynamics of photodissociation of H_2 by barrier tunneling. [T, $h\nu$, H_2]

O L. D. A. Siebbeles, E. R. Wouters and W. J. van der Zande : Phys. Rev. A54, 531-543 (1996)
Branching and anisotropy of barrier tunneling and fluorescent decay in H_2. II. Theory. [T, $h\nu$, H_2; I. Exp. see E. R. Wouters (1996)]

E D. T. Stibbe and J. Tennyson : J. Phys. B29, 4267-4283 (1996)
Time-delay matrix analysis of resonances in electron scattering : e^- - H_2 and H_2^+. [T, H_2]

E D. T. Stibbe and J. Tennyson : J. Phys. B30, L301-L307 (1997a)
Parent state swapping of resonances in electron-hydrogen molecule scattering. [T, H_2; R-matrix]

V D. T. Stibbe and J. Tennyson : Phys. Rev. Lett. 79, 4116-4119 (1997b)
Ab initio calculations of vibrationally resolved resonances in electron collisions with H_2, HD, and D_2. [T, H_2, HD, D_2]

E D. T. Stibbe and J. Tennyson : J. Phys. B31, 815-844 (1998)
Electron-H_2 scattering resonances as a function of bond length.
[T, H_2]

D D. T. Stibbe and J. Tennyson : New J. Phys. 1, 2. 1 - 2. 9 (1998. 12. 17)・
Near-threshold electron impact dissociation of H_2 within the adiabatic nuclei approximation. [T, H_2]

D D. T. Stibbe and J. Tennyson : Astrophys. J. Lett. 513, L147-L150 (1999)
Rates for the electron impact dissociation of molecular hydrogen.
[T, H_2; through the excitation of $b^3\Sigma_u^+$ state]

I H. C. Straub, B. G. Lindsay, K. A. Smith and R. F. Stebbings : 19th ICPEAC, Whistler 38-38 (1995)
Absolute partial cross sections for electron impact ionization of molecules. [E, H_2,

I H. C. Straub, P. Renault, B. G. Lindsay, K. A. Smith and R. F. Stebbings : Phys. Rev. A54, 2146-2153 (1996)○
Absolute partial cross sections for electron-impact ionization of H_2, N_2, and O_2 from threshold to 1000 eV. [E, H_2, N_2, O_2; th. - 1000 eV]

O G. C. Stutzin, A. T. Young, H. F. Dobele, A. S. Schlachter, K. N. Leung and W. B. Kunkel : Rev. Sci. Instrum. 61, 619-6 (1990)
Density and temperature measurements of vibrationally excited hydrogen molecules in ion source plasmas. [E, $h\nu$, H_2]

QT Cz. Szmytkowski, K. Maciag and G. Karwasz : Phys. Scr. 54, 271-280 (1996)○ Z
Absolute electron-scattering total cross section measurements for noble gas atoms and diatomic molecules.
[E, H_2, He - Xe, N_2, CO, NO, O_2; 0.5 - 250 eV]

E H. Tawara, Y. Itikawa, H. Nishimura and M. Yoshino : J. Phys. Chem. Ref. Data 19,
V 617-636 (1990) Z
EX Cross-sections and related data for electron collisions with hydrogen
I molecules and molecular ions. [compilation, H_2, H_2^+]

H. Tawara : in Molecular Processes in Space, Plenum 233- (1990)
Atomic and molecular data needed in space, fusion and related researches.
[

A D. Teillet-Billy : J. Chim. Phys. Chim. Biol. 90, 1239-1265 (1993)
Attachment and electron bombardment.
[review, H_2, HCl, CO_2,

O J. Tennyson : Atomic Data Nucl. Data Tables 64, 253-277 (1996)
Resonance parameters and quantum defects for superexcited H_2.
[T, H_2; R-matrix cal.]

H. T. Thummel, T. Grimm-Bosbach, R. K. Nesbet and S. D. Peyerimhoff : in
Computational Methods for Electron-Molecule Collisions, Plenum 265-291
(1995)
Rovibrational excitation by electron impact. [review, N_2, HF]

E W. K. Trail, M. A. Morrison, W. A. Isaacs and B. C. Saha : Phys. Rev. A41, 4868-4878
EX (1990)
Simple procedure for including vibrational effects in the calculation
of electron-molecule cross sections. [T, H_2, N_2]

D N. Uemura, T. Odagiri, Y. Hirano, Y. Makino, N. Kouchi and Y. Hatano : J. Phys. B31,
5183-5196 (1998)
Isotope effects in the dynamics of doubly excited states of molecular
hydrogen and deuterium as studied by coincident electron-energy-loss
spectroscopy. [E, H_2, D_2; 2p H and D formation, 80 eV]

I C. Vallance, P. W. Harland and R. G. A. R. MacLagan : J. Phys. Chem. 100, 15021-15026
(1996)・
Quantum mechanical calculation of maximum electron impact single
ionization cross sections for the inert gases and small molecules.
[T, H_2, He - Xe, N_2, O_2, CO, NO, H_2O, CO_2, NH_3, CH_4, CH_3Cl]

I B. Van Zyl and T. M. Stephen : Phys. Rev. A50, 3164-3173 (1994)・Z
Dissociative ionization of H_2, N_2 and O_2 by electron impact.
[T, H_2, N_2, O_2; Rapp's data (1965a) have been reanalyzed, th.- 1000 eV]

O S. B. Vrhovac, S. B. Radovanov, S. A. Bzenie, Z. Lj. Petrovic and B. M. Jelenkovic :
EX Chem. Phys. 153, 233-245 (1991)
Dissociative excitation of hydrogen in RF and DC glow discharges
through H_2. [E, H_2]

O P. J. Walsh and J. H. Degnan : J. Appl. Phys. 70, 6718-6725 (1991)
Analysis of high-energy plasma formation in hydrogen. [E, H_2]

O T. D. G. Walsh, F. A. Ilkov and S. L. Chin : J. Phys. B30, 2167-2175 (1997)
The dynamical behaviour of H_2 and D_2 in a strong, femtosecond, titanium: sappire laser field. [E, $h\nu$, H_2, D_2]

O M. Walter and J. Briggs : J. Phys. B32, 2487-2501 (1999)
Photo-double ionization of molecular hydrogen. [T, $h\nu$, H_2]

E C. A. Weatherford, M. Dong and B. C. Saha : Int. J. Quant. Chem. 65, 591-600 (1997)
Low-energy electron scattering from a model H_2 potential using finite elements in two dimentions. [T, H_2; 1 - 300 eV]

I P. Weck, B. Joulakian and P. A. Hervieux : Phys. Rev. A60, 3013-3019 (1999a)·
Fivefold differential cross section of fast (e, 2e) ionization of H_2, D_2, and T_2 by a Franck-Condon approach. [T, H_2, D_2, T_2]

I P. Weck, B. Joulakian and P. A. Hervieux : 21st ICPEAC, Sendai 288 (1999b)
Theoretical five-fold differential cross section for the ionization of H_2 and D_2 by fast electron impact. [T, H_2, D_2; 4168 eV]

S R. Winkler, J. Wilhelm, M. Capitelli and C. Gorse : Plasma Chem. Plasma Process. 12, 71-87 (1992)·
Impact of electron-electron interaction on the electron energy distribution function in molecular plasma under rf field action. [T, H_2, CO]

V M. Winterstetter and W. Domcke : Phys. Rev. A47, 2838-2855 (1993)
Path-integral approach to resonant electron-molecule scattering. [T, H_2, N_2; th. - 7 eV]

O L. Wolniewicz and T. Orlikowski : Mol. Phys. 74, 103-111 (1991)
The $1s\sigma_g$ and $2p\sigma_u$ states of the H_2^+, D_2^+ and HD^+ ions. [T, H_2, etc.]

O L. Wolniewicz : J. Mol. Spectrosc. 169, 329-340 (1995a)
Adiabatic potentials of the lowest $^1\Pi_g$ and $^{1,3}\Delta_g$ states of the hydrogen molecule. [T, H_2]

O L. Wolniewicz : J. Mol. Spectrosc. 174, 132-136 (1995b)
Lowest $^{1,3}\Delta_g$ states of the hydrogen molecule. II. [T, H_2, D_2]

O L. Wolniewicz : Chem. Phys. Lett. 233, 644-646 (1995c)
The Werner band transition moments and the $C^1\Pi_u$ state of H_2. [T, H_2]

O L. Wolniewicz : Chem. Phys. Lett. 233, 647-650 (1995d)
Lowest order relativistic corrections to the energies of the $B^1\Sigma_u$ state of H_2. [T, H_2]

O E. R. Wouters, L. D. A. Siebbeles, P. C. Schuddeboom, B. R. Chalamala and W. J. van der Zande : Phys. Rev. A54, 522-530 (1996)
Branching and anisotropy of barrier tunneling and fluorescent decay in H_2. I. Experiment. [E, $h\nu$, H_2 ; II. Theory, see L. D. A. Siebbeles (1996)]

O B. Yang, M. Saeed, L. F. Dimauro, A. Zavriyev and P. H. Bucksbaum : Phys. Rev. A44, R1458-R1461 (1991)
High-resolution multiphoton ionization and dissociation of H_2 and D_2 molecules in intense laser fields. [E, $h\nu$, H_2, D_2]

EX N. Yonekura, K. Furuya, K. Nakashima and T. Ogawa : Chem. Phys. 199, 313-317 (1995)
Fano plot of the Paschen line of the excited hydrogen atom (n = 4) produced in e - H_2 collisions. [E, H_2]

EX N. Yonekura, K. Furuya, K. Nakashima and T. Ogawa : J. Chem. Phys. 107, 1147-1151 (1997)
Absolute emission cross sections of the Paschen-α line and production dynamics of the 4F state of the excited hydrogen atom in e - H_2 collisions. [E, H_2; 20 - 100 eV]

EX N. Yonekura, K. Furuya, K. Nakashima and T. Ogawa : 21st ICPEAC, Sendai 333 (1999)
Absolute emission cross sections of the Paschen-α line and production dynamics of the 4f state of the excited hydrogen atom in e - H_2 collisions. [E, H_2; 19 - 100 eV]

O A. Zavriyev, P. h. Bucksbaum, H. G. Muller and D. W. Schumacher : Phys. Rev. A42, 5500-5513 (1990)
Ionization and dissociation of H_2 in intense laser fields at 1.064μm, 532 nm, and 355 nm. [E, $h\nu$, H_2]

E A. Zecca, G. P. Karwasz and R. S. Brusa : Rivista Nuovo Cimento 19, No. 1, 1-146
V (1996)○
EX One century of experiments on electron-atom and molecule scattering :
I a critical review of integral cross-sections. I. — Atoms and
A diatomic molecules. [compilation, H_2, He - Xe, Li - Cs, etc.]

QT A. Zecca, R. Melissa, R. S. Brusa and G. P. Karwasz : Phys. Lett. A257, 75-82 (1999)
Additivity rule for electron-molecule cross section calculation : a geometrical approach. [T, H_2, N_2, O_2, CO, NO, CO_2, N_2O, NO_2, CH_4]

E Y. Zhang, A. W. Ross and M. Fink : Phys. Rev. A43, 3548-3552 (1991) Z
High-energy electron scattering study of molecular hydrogen.
[E, H_2; 30 keV]

O Z. P. Zhong, W. H. Zhang, K. Z. Xu, R. F. Feng and J. -M. Li : Phys. Rev. A60, 236-245 (1999)
Experimental and theoretical study of photoabsorption spectra of molecular hydrogen in the energy region 11 - 19 eV. [E and T, $h\nu$, H_2]

QT S. Zhou, H. Li, W. E. Kauppila, C. K. Kwan and T. S. Stein : Phys. Rev. A55, 361-368 (1997)○
Measurements of total and positronium formation cross sections for positrons and electrons scattered by hydrogen atoms and molecules.
[E, H_2, H; 1.7 - 300.7 eV for electrons]

References for H_2, HD and D_2 (1980 - 1989)

(Hydrogen, Deuterium hydride, Deuterium)

E : Elastic collision,
V : Vibrational excitation,
D : Dissociation,
A : Attachment,
S : Swarm,
O : The others,
R : Rotational excitation,
EX : Electronic excitation,
I : Ionization,
QT : Grand total cross section,
α : Ionization coefficient,
[ ]: Additional informations,
E : Exp., T : Theory.

V M. Abdolsalami and M. A. Morrison : Phys. Rev. A36, 5474-5477 (1987)
Calculating vibrational-excitation cross sections off the energy shell : a first-order adiabatic theory. [T, H_2; th. - 10 eV]

O H. Abgrall and E. Roueff : Astron. Astrophys. Suppl. Ser. 79, 313-328 (1989)
Wavelengths, oscillator strengths and transition probabilities of the H_2 molecule for Lyman and Werner systems. [T, $h\nu$, H_2]

EX J. M. Ajello, S. K. Srivastava and Y. L. Yung : Phys. Rev. A25, 2485-2498 (1982)
Laboratory studies of uv emissions of H_2 by electron impact. The Werner and Lyman-band system. [E, H_2]

EX J. M. Ajello, D. Shemansky, T. L. Kwok and Y. L. Yung : Phys. Rev. A29, 636-653 (1984)
Studies of extreme-ultraviolet emission from Rydberg series of H_2 by electron impact. [E, H_2]

J. M. Ajello, K. D. Pang, B. Franklin and F. Flam : EOS Trans. Am. Geophys. Union 66, 989- (1985) Z

EX J. M. Ajello, D. E. Shemansky and G. K. James : 15th ICPEAC, Brighton 305 (1987)
Threshold srudies of H_2 in the vacuum ultraviolet by electron impact.
[E, H_2]

EX J. M. Ajello, D. E. Shemansky, B. Franklin, J. Watkins, S. Srivastava, G. K. James, W. T. Simms, C. W. Hord, W. Pryor, W. McClintock, V. Argabright and D. Hall : Appl. Opt. 27, 890-914 (1988)
Simple ultraviolet calibration sources with reference spectra and its use with the Galileo orbiter ultraviolet spectrometer.
[E and T, H_2; 50 - 200 eV]

S S. A. J. Al-Amin, J. Lucas and H. N. Kucukarpaci : J. Phys. D18, 2007-2016 (1985)
The ratio of radial diffusion coefficient to mobiliry for electrons in hydrogen, nitrogen, and carbon monoxide at high E/N. [E, H_2, N_2, CO]

V M. Allan : J. Phys. B18, L451-L455 (1985) ○
Expermential observation of structures in the energy dependence of vibrational excitation in H_2 by electron impact in the $^2\Sigma_u^+$ resonance region. [E, H_2]

V M. Allan : in Electronic and Atomic Collisions, 15th ICPEAC, Brighton 93-104 (1988)
Resonant excitation of high vibrational levels by slow electron collisions. [review, H_2, N_2, CO, CO_2, etc.]

I H. Arai and H. Hotta : J. Chem. Phys. 75, 2723-2729 (1981)・
Ionization of gases by a pulsed electron beam as studied by self-focusing. II. Polyatomic gases. [E, H_2, CH_4, N_2, etc.]

O S. Arai, T. Yoshimi, M. Morita, K. Hironaka, T. Yoshida, H. Koizumi, K. Shinsaka, Y. Hatano, A. Yagishita and K. Ito : Z. Phys. D4, 65-71 (1986)
Lyman-α excitation spectra in the photodissociation of the doubly excited states of H_2. [E, $h\nu$, H_2]

EX G. P. Arrighini, F. Biondi and C. Giudotti : Mol. Phys. 41, 1501-1514 (1980)・
A study of the inelastic scattering of fast electrons from molecular hydrogen. [T, H_2]

O M. Aubert-Frecon and C. Le Sech : J. Mol. Spectrosc. 87, 56-74 (1981)
Prolate-spheroidal models for monoexcited states of diatomic molecules. Application to H_2. [T, H_2]

O U. Bafile, L. Ulivi, M. Zoppi and F. Barocchi : Phys. Rev. A37, 4133-4144 (1988)
Depolarized-light-scattering spectrum of normal gaseous hydrogen at low density and a temperature at 297 K. [E, $h\nu$, H_2]

O U. Bafile, M. Zoppi, F. Barocchi, M. S. Brown and L. Frommhold : Phys. Rev. A40, 1654-1656 (1989)
Depolarized light scattering of parahydrogen gas at low temperatures. [E, $h\nu$, H_2; 36 K]

O M. A. Baig and J. P. Connerade : J. Phys. B18, L809-L813 (1985)
New high-resolution photoabsorption study of the Lyman bands of H_2. [E, $h\nu$, H_2]

O F. G. Baksht : Sov. Phys. Tech. Phys. 27, 1-4 (1982)・
Dissociation rate of molecular hydrogen in highly ionized, low-temperature plasma. [T, H_2]

EX K. L. Baluja, C. J. Noble and J. Tennyson : J. Phys. B18, L851-L855 (1985)・
Electronic excitation of the $b^3\Sigma_u^+$ state of H_2 using the R-matrix method. [T, H_2]

D J. N. Bardsley : Comments At. Mol. Phys. 10, 191-197 (1981)・
Electron-impact dissociation of diatomic molecules. [comments]

EX K. Becker, H. W. Dessen and J. W. McConkey : J. Phys. B17, 2535-2548 (1984a)
Electron-polarised-photon coincidence study of the excitation of the $C^1\Pi_u^+$ state in hydrogen and deutrium. [E, H_2, D_2]

EX K. Becker, J. L. Forand, P. W. Zetner and J. W. McConkey : J. Phys. B17, L915-L919 (1984b)
Dipole and non-dipole excitation in collisions of low-energy electrons with diatomic molecules. [E, H_2, D_2, N_2, CO; 35 - 600 eV for N_2 and CO]

EX K. Becker and J. W. McConkey : Can. J. Phys. 62, 1-9 (1984c)·
Absolute cross sections for D_2 Lyman and Werner band excitation by controlled electron impact. [E, D_2; emission c.s., th. - 500 eV]

E K. L. Bell : J. Phys. B14, 2895-2900 (1981)
R Scattering of electrons with energies below 60 eV hydrogen molecules. [T, H_2]

R A. J. Berlinsky : Phys. Rev. B26, 443-444 (1982)
O Rotational excitation of physisorbed H_2 by low-energy electron scattering. [E, H_2 on the surface; 2 - 5 eV]

O M. Berman, C. Mundel and W. Domcke : Phys. Rev. A31, 641-651 (1985)
Projection-operator calculations for molecular shape resonances : the $^2\Sigma_u^+$ resonance in electron-hydrogen scattering. [T, H_2; 0.1 - 9 eV]

O S. P. Best, A. J. Bloodworth, R. J. H. Clark and H. J. Eggelte : J. Am. Chem. Soc. 107, 2626-2628 (1985)
Detection of H_2, HD, and D_2 by Raman spectroscopy. A powerful aid for the elucidation of reaction mechanisms. [E, H_2, HD, D_2]

O J. A. Beswick and M. Glass-Maujean : Phys. Rev. A35, 3339-3349 (1987), Erratum A36, 2486-2486 (1987)
Interference effects on the H(2p) to H(2s) branching ratio in the photodissociation of hydrogen and deuterium. [T, $h\nu$, H_2, D_2]

E P. K. Bhattacharyya and D. K. Syamal : Phys. Rev. A30, 126-131 (1984)
R Eikonal amplitude for electron-molecule collisions with effective
EX complex potential. [T, H_2; 40 - 100 eV]

E P. K. Bhattacharyya and D. K. Syamal : Phys. Rev. A32, 854-870 (1985)
Glauber-Eikonal study of electron molecule scattering at intermediate energies with the use of free-electron-gas model : H_2.
[T, H_2; 20 - 400 ev]

A S. Bhattacharyya, L. Chatterjee and T. Roy : Indian J. Phys. B57, 184-189 (1983a)·
Negative ion formation in collision of electron with H_2 and isotopes. [T, H_2, HD, D_2]

A S. Bhattacharyya and L. Chatterjee : 13th ICPEAC, Berlin 300-300 (1983b)·
Dissociative attachment of H_2 and its isotopes by low energy electron impact. [T, H_2, HD, D_2; 3.5 - 16 eV]

A S. Bhattacharyya, L. Chatterjee and K. Basuchoudhury : 14th ICPEAC, Palo Alto 280 (1985)
An ab-initio study of the dissociative attachment of H_2 of electrons at energies 6 eV to 12 eV. [T, H_2]

O G. Birnbaum, G. Bachet and L. Frommhold : Phys. Rev. A36, 3729-3735 (1987)
Experimental and theoretical investigation of the far-infrared spectrum of H_2 - He mixtures. [E, H_2 + He; 195 and 292.4 K]

O N. Bjerre, R. Kachru and H. Helm : Phys. Rev. A31, 1206-1208 (1985)
Three-photon double-resonance spectroscopy of autoionizing Rydberg states in H_2. [E, $h\nu$, H_2]

R. Blochberger, E. Rille and H. Winter : Acta Phys. Acad. Sci. Hung. 49, 315-3 (1980)
Polarization-free measurements of VUV-radiation from electron impact excited atomic particles. [E, H_2, rare gases; 40 - 130 nm]

I L. G. J. Boesten and H. G. M. Heideman : Physica 98C, 242-245 (1980)
Dissociative ionization of H_2 and D_2 by electron impact near threshold. [E, H_2, D_2; th. - 19 eV]

EX I. P. Bogdanova, G. V. Efremova, B. P. Lavrov, V. N. Ostrovskii, V. I. Ustimov and V. I. Yakovleva : Opt. Spectrosc. 50, 63-65 (1981)·
Measurements of cross section for electronic-rotational excitation of $d^3\Pi_u^-$, v states of orthohydrogen by electron impact. [E, H_2]

E R. A. Bonham and M. Fink : Phys. Rev. A33, 1569-1577 (1986) Z
Small-angle elastic electron scattering and moments of the molecular electronic charge density. [T, H_2, N_2, O_2; 25 keV for H_2]

O A. Borysow and M. Moraldi : Phys. Rev. A40, 1251-1261 (1989)
Rototranslational Raman scattering in hydrogen. [T, $h\nu$, H_2]

EX N. Bose and F. Linder : J. Phys. B14, 2499-2507 (1981)
Decay of electronically excited singlet states of molecular hydrogen investigated by electron-photon coincidences. [E, H_2, D_2; 12.2 - 16 eV]

O S. L. Braggs, J. W. Brault and W. H. Smith : Astrophys. J. 263, 999-1004 (1982)
Line positions and strengths in the H_2 quardrupole spectrum. [E, H_2; rot. constants B_0 = 59.33451, D_0 = 0.045651, H_0 = 4.56×10^{-7} cm^{-1}]

S G. L. Braglia and V. Dallacasa : in Electron and Ion Swarms, Pergamon Press 93-102 (1981)
Multiple scattering theory of electron mobility in dense gases. [T, H_2]

O J. Bretagne, G. Delouya, C. Gorse, M. Capitelli and M. Bacal : J. Phys. D18, 811-825 (1985)·
Electron energy distribution functions in electron-beam-sustained discharges application to magnetic multicusp hydrogen discharge. [T, H_2; B. Eq.]

EX J. Breton, P. M. Guyon and M. Glass-Maujean : Phys. Rev. A21, 1909-1913 (1980)·
Radiative emission from singlet superexcited levels of H_2. [, H_2]

O C. E. Brion and A. Hamnett : in Advances in Chemical Physics, Vol. 45, J. Wm. McGowan (Ed), 1-80 (1981)
Continuum optical oscillator-strength measurements by electron spectroscopy in the gas phase. [review, H_2, N_2, CO, Ne - Xe, CH_4, etc.]

O C. E. Brion and J. P. Thomson : J. Elect. Spectrosc. Relat. Phenom. 33, 301-331 (1984)・
Compilation of dipole oscillator strengths (cross sections) for the photoabsorption, photoionization and ionic fragmentation of molecules. [compilation, hν, H_2, CO, N_2, O_2, NO, HF, HCl, HBr, H_2O, NH_3, CH_4, N_2O, CO_2, COS, CS_2, SF_6]

O C. E. Brion : Int. J. Quant. Chem. 19, 1397-1428 (1986)
Looking at orbitals in the laboratory : The experimental investigation of molecular wavefunctions and binding energy by electron momentum spectroscopy. [review, H_2, H, He, Ne, Ar, NO, H_2O, CS_2, COS, CO_2, CF_4]

O M. S. Brown, S. -K. Wang and L. Frommhold : Phys. Rev. A40, 2276-2286 (1989)
Collision-induced light scattering of hydrogen gas at low density. [E and T, hν, H_2]

O A. P. Bryukhovetskii, E. N. Kotlikov, D. K. Otorbaev, V. M. Ochkin, P. L. Rubin, S. Y. Savinov and N. N. Sobolev : Sov. Phys. JETP 52, 852-860 (1980)・
Excitation of electron-vibrational rotational levels of hydrogen molecules by electron impact in a nonequilibrium gas-discharge plasma. [E, H_2]

B. D. Buckley, P. G. Burke and C. J. Noble : in Electron-Molecule Collisions, I. Shimamura and K. Takayanagi (Ed) Plenum 495-556 (1984)
Computational methods for low-energy electron-molecule collisions. [T, H_2,

V S. J. Buckman and A. V. Phelps : J. Chem. Phys. 82, 4999-5011 (1985a)○
Vibrational excitation of D_2 by low energy electrons. [E, D_2]

E S. J. Buckman and A. V. Phelps : JILA Data Center Report 27, 1-14 (1985b)○
V Tabulations of collision cross sections and calculated transport and
EX reaction coefficients for electrons in H_2 and D_2. [compilation, H_2, D_2]

P. G. Burke : in Quantum Dynamics of Molecules, R. G. Wolley (Ed), Plenum 483-547 (1980)
Theory of electron-molecule collisions. [review]

E P. G. Burke and C. J. Noble : Comments At. Mol. Phys. 12, 301-305 (1983)・Z
New directions in low energy electron molecule collision calculations. [comments, H_2, N_2]

E P. G. Burke and C. J. Noble : Comments At. Mol. Phys. 18, 181-207 (1986)・
V Theory of electron collisions with diatomic molecules.
EX [comments, H_2, N_2, O_2]

I M. D. Burrows, L. C. McIntyre, S. R. Ryan and W. E. Lamb, Jr. : Phys. Rev. A21, 1841-1847 (1980)・
Dissociative ionization of H_2, D_2, and HD using electron-impact excitation. [E, H_2, D_2, HD; 30 - 100 eV]

S V. L. Bychkov, A. V. Eletskii and B. M. Smirnov : High Temp. 18, 193-197 (1980)・
Longitudinal diffusion of electrons in atomic and molecular gases.
[T, H_2, He, Ne, N_2, CO, O_2, CO_2]

I M. Cacciatore, M. Capitelli and G. Gorse : J. Phys. D13, 575-582 (1980)
O Non-equilibrium ionization of molecular hydrogen in electrical discharges.
[T, H_2(v)]

EX M. Cacciatore and M. Capitelli : Chem. Phys. 55, 67-72 (1981)・Z
Cross sections and rate coefficients for electronic excitation of the triplet states of the hydrogen molecules in different vibrational levels.
[T, H_2]

V M. Cacciatore, M. Capitelli, S. Benedictis, M. Dilonardo and C. Gorse : in Non-
D equilibrium Vibrational Kinetics, M. Capitelli(Ed), Springer 5-46 (1986)
I Vibrational kinetics dissociation and ionization of diatomic molecules under non-equilibrium conditions. [T, H_2, N_2, CO, HCl]

A I. Cadez, R. I. Hall, M. Landau, F. Pichou and C. Schermann : 15th ICPEAC, Brighton 338 (1987)
Effect of vibrational and rotational excitation on the dissociative attachment process near 14 eV in H_2. [E, H_2]

A I. Cadez, R. I. Hall, M. Landau, F. Pichou and C. Schermann : J. Phys. B21, 3271-3284 (1988)・
Dissociative electron attachment to vibrationally excited H_2 and D_2 molecules : the 14 eV process. [E, H_2(v), D_2(v)]

D M. Capitelli and E. Molinari : Top. Current Chem. 90, 69-109 (1980a)・
O Kinetics of dissociation processes in plasmas in the low and intermediate pressure range.
[review, H_2; c. s. set for H_2 are shown in Fig. 8 of R. Winkler (1982). 0 - 20 eV]

D M. Capitelli and M. Molinari : in Fortschritte der Chemischen Forschung, Springer 59-109 (1980b)・
Kinetics of dissociation processes in plasmas in the low and intermediate pressure range.
[review, H_2, N_2, O_2, CO, HF, CO_2, CH_4, C_2H_4, C_2H_6, n-C_4H_{10}, NH_3]

D R. Celiberto, M. Cacciatore, M. Capitelli and C. Gorse : Chem. Phys. 133, 355-367 (1989a)
Electron impact direct dissociation processes of vibrationally excited H_2 molecules to excited atomic hydrogen H^* (n = 1-5). 1. Cross sections.
[T, H_2(v)]

D R. Celiberto, M. Cacciatore and M. Capitelli : Chem. Phys. 133, 369-375 (1989b)
Electron impact direct dissociation processes of vibrationally excited H_2 molecules to excited atomic hydrogen H^* (n = 1-5). 2. Translational energy distribution functions of dissociation products. [T, H_2]

O N. Chandra : J. Phys. B19, 1959-1988 (1986)
Ab initio multichannel photoionisation of H_2 : Photoelectron angular distribution for rotationally resolved states of H_2^+. [T, $h\nu$, H_2]

E E. S. Chang : J. Phys. B14, 893-901 (1981) Z
Modified effective-range theory for electron scattering from molecules. [T, H_2, N_2; 0.005 - 0.2 eV for H_2]

I M. Cherid, A. Lahmann-Bennani, A. Duguet, R. W. Zurales, R. R. Lucchese, M. C. Dal Capello and C. Dal Capello : J. Phys. B22, 3483-3499 (1989)
Triple differential cross sections for molecular hydrogen, both under Bethe ridge conditions and in the dipolar regime. Experiments and theory. [E and T, H_2; 4 keV]

I H. Cho, K. C. Hsieh, and L. C. McIntyre, Jr. : Phys. Rev. A33, 2290-2293 (1986)
Coincidence detection of H^+ and H(2s) from dissociative ionization of H_2 by electron impact. [E, H_2]

O L.-Y. Chow Chiu and S. R. Samanta : J. Quant. Spectrosc. Radiat. Transf. 25, 253-264 (1981)
Photoionization and photoelectron angular distribution for H_2. [T, $h\nu$, H_2]

S L. G. Christophorou, R. A. Mathis and D. R. James : J. Appl. Phys. 54, 3098-3100
O (1983)·
Isotope dependence of the breakdown strength of gases. [E, H_2, D_2, CH_4, CD_4]

O L. G. Christophorou (Ed) : Electron-Molecule Interactions and Their Applications. Vols. 1 and 2, Academic Press (1984)

A L. G. Christophorou, S. R. Hunter, J. G. Carter and S. M. Spyrou : Swarm Studies and Inelastic Electron-Molecule Collisions, Springer Verlag 303-328 (1986)
Effects of temperature on dissociative and nondissociative electron attachment. [review, H_2,

O W. A. Chupka : J. Chem. Phys. 87, 1488-1501 (1987)
Photoionization of molecular Rydberg states : H_2, $C^1\Pi_u$ and its doubly excited states. [T, $h\nu$, H_2]

O L. A. Collins and W. D. Robb : J. Phys. B13, 1637-1649 (1980a)
Multichannel variational calculations of low-energy electron-molecule collisions : Static exchange approximation. [T, H_2, N_2, LiH, CO]

O L. A. Collins, W. D. Robb and M. A. Morrison : Phys. Rev. A21, 488-495 (1980b)
Electron scattering by diatomic molecules : Iterative static-exchange techniques. [T, H_2, N_2, LiH, CO]

O L. A. Collins and B. I. Schneider : Phys. Rev. A24, 2387-2401 (1981)
Linear-algebraic approach to electron-molecule collisons : General formulation. [T, H_2, N_2, LiH, CO_2]

EX L. A. Collins and B. I. Schneider : Phys. Rev. A27, 101-111 (1983a)・
Linear algebraic approach to electronic excitation of atoms and molecules by electron impact. [T, Li, H_2^+; no H_2 example]

E L. A. Collins and B. I. Schneider : 13th ICPEAC, Berlin 217-217 (1983b)・
A linear algebrac approach to electron-molecule scattering. [T, H_2]

EX L. A. Collins and B. I. Schneider : J. Phys. B17, L235-L239 (1984a)
Electronic excitation of atoms and molecules by electron impact in a linear algebraic, separable potential approach.
[T, H; no H_2 example]

O L. A. Collins and B. I. Schneider : Phys. Rev. A29, 1695-1708 (1984b)・
Molecular photoionization in the linear algebraic approach : H_2, N_2, NO, and CO_2. [T, $h\nu$, H_2, N_2, NO, CO_2]

EX L. A. Collins and B. I. Schneider : in Electronic and Atomic Collisions, 15th ICPEAC, Brighton 57-72 (1988)
Recent advances in the theory of electron impact excitation of molecules.
[review, H_2, O_2, N_2]

O D. Combecher : Radiat. Res. 84, 189-218 (1980)
Measurement of W values of low-energy electrons in several gases.
[E, H_2, N_2, O_2, etc.; 15.7 - 500 eV for H_2]

D R. N. Compton and J. N. Bardsley : in Electron-Molecule Collisions, I. Shimamura and K. Takayanagi(Ed), Plenum 275-350 (1984)
Dissociation of molecules by slow electrons.
[review, H_2, D_2, CH_4, C_2H_6, C_3H_8, N_2, NO, O_2, F_2 - I_2, HCl, HBr, CO_2, H_2O, CF_4, CCl_2F_2, CCl_4]

I R. B. Cordaro, K. C. Hsieh, L. C. McIntyre, Jr. : J. Phys. B19, 1863-1872 (1986)・
Electron impact dissociative ionisation of hydrogen, water and hydrogen sulphide. [E, H_2, H_2O, H_2S; 20 - 45 eV]

O C. Cornaggia, J. Morellec and D. Normand : J. Phys. B18, L501-L506 (1985)
Resonant multiphoton ionisation-dissociation of H_2. [E, $h\nu$, H_2]

O C. Cornaggia, J. Normand, J. Morellec, G. Mainfray and C. Manus : Phys. Rev. A34, 207-215 (1986)
Resonant multiphoton ionization of H_2 via the E, F $^1\Sigma_g^+$ state : Absorption of photons in the ionization continuum. [E, $h\nu$, H_2]

O M. A. Crees : Comput. Phys. Commun. 19, 103-137 (1980)
ASYPCK, a program for calculating asymptotic solutions of the coupled equations of electron collision theory. [program]

E R. W. Crompton and M. A. Morrison : Phys. Rev. A26, 3695-3699 (1982)
Comment of the possibility of Ramsauer-Townsend minima in e - H_2 and e - N_2 scattering. [comment, H_2, N_2]

S R. W. Crompton and M. A. Morrison : in Swarm Studies and Inelastic Electron
E Molecule Collisions, Lake Tahoe, Springer 143-166 (1987)
R Experimental and theoretical investigation of near-threshold e - H_2
V collisions. [review, H_2]

E G. Csanak, D. C. Cartwright, S. K. Srivastava and S. Trajmar : in Electron-Molecule Interactions and Their Applications, Vol. 1, Academic Press 1-153 (1984)
Elastic scattering of electrons by molecules.
[review, H_2,

QT G. Dalba, P. Fornasini, I. Lazzizzera, G. Ranieri and A. Zecca : J. Phys. B13, 2839-2848 (1980)○ Z
Measurements of total absolute cross sections for 0.2 - 100 eV electrons on H_2. [E, H_2; error 1.7 - 5 %]

I M. C. Dal Cappello, C. Dal Cappello, C. Tavard, M. Cherid, A. Lahman-Bennani and A. Duguet : J. Physiq. 50, 207-217 (1989)
Description of (e, 2e) triply-differential cross sections : Situation of molecular targets. [T, H_2]

O A. Dalgarno : in Applied Atomic Collision Physics, Vol. 1, Academic Press, 427-467 (1982)
Molecules in interstellar space. [review, H_2, CO, H_2O, OCS, etc.]

EX H. W. Dassen and J. W. McConkey : J. Phys. B14, 3777-3788 (1981)・
Polarisation of molecular line radiation folliwing electron impact.
[E, H_2; Lyman and Werner systems of H_2, 20 - 200 eV]

O K. R. Dastidar, S. Ganguly and T. K. R. Dastidar : Phys. Rev. A33, 2106-2108 (1986)
Resonant two-photon autoionization of H_2. Ⅱ. Photoelectron angular distribution. [T, $h\nu$, H_2; I S. Ganguly (1986)]

O D. P. de Bruijn, J. Neuteboom and J. Los : Chem. Phys. 85, 233-251 (1984)
Predissociation of the $c^3\Pi_u$ state H_2, populated after charge exchange of H_2^+ with several targets at keV energies. [E, H_2]

O D. P. de Bruijn and H. Helm : Phys. Rev. A34, 3855-3864 (1986)
Dissociative decay of n=3 levels in H_2. Ⅱ. Excited by laser from the metastable $c^3\Pi_u^-$ state of H_2. [E, $h\nu$, H_2]

EX F. J. de Heer : Phys. Scr. 23, 170-178 (1981)・
I Electron excitation, dissociation and ionization of H_2, D_2, T_2, simple hydrocarbons and their ions. [E, H_2, D_2, T_2, CH_4, C_2H_2, C_2H_4, C_2H_6]

I F. J. de Heer and M. Inokuti : in Electron Impact Ionization, Springer 232-276 (1985)
Total ionization cross sections. [review]

O J. E. Demuth, D. Schmeisser and Ph. Avouris : Phys. Rev. Lett. 47, 1166-1169 (1981)
Resonance scattering of electrons from N_2, CO, O_2 and H_2 absorbed on a silver surface. [E, H_2 on Ag, etc.]

QT A. Deuring, K. Floeder, D. Fromme, W. Raith, A. Schwab, G. Sinapins, P. W. Zitzewitz and J. Krug : J. Phys. B16, 1633-1656 (1983)○ Z
Total cross section measurements for positron and electron scattering on molecular hydrogen between 8 and 400 eV. [E, H_2]

A W. Domcke, C. Mundel and L. S. Caderbaum : Comments At. Mol. Phys. 20, 293-315 (1987)・
Collision dynamics with nonlocal complex potentials.
[comments, H_2, HCl]

O D. A. Douthat : Astrophys. J. 314, 419-421 (1987)・
Initial vibrational and rotational yields from subexcitation electrons in molecular hydrogen. [T, H_2; 50 - 1500 K, 10 keV]

O K. Dressler and L. Wolniewicz : J. Mol. Spectrosc. 86, 534-543 (1981)
The $HH^1\Sigma_g^+$ state of hydrogen : Adiabatic calculation of vibronic states in H_2, HD, and D_2. [T, $h\nu$, H_2, HD, D_2]

O K. Dressler and L. Wolniewicz : J. Chem. Phys. 82, 4720-4721 (1985)
Electronic transition moments for the Lyman and Werner bands of the H_2 molecule. [T, H_2]

A G. Drukarev and S. Pozdneev : J. Phys. B13, 2611-2618 (1980)・
Dissociative attachment of an electron to hydrogen and halogen molecules.
[T, H_2, HD, D_2, F_2, Cl_2]

O G. Dujardin, M. J. Besnard, L. Hellner and Y. Malinovitch : Phys. Rev. A35, 5012-5019 (1987)
Double photoionization of H_2 : An experimental test of electronic-correlation models in molecules. [T, $h\nu$, H_2]

I A. K. Edwards, R. M. Wood, A. S. Beard and R. L. Ezell : Phys. Rev. A37, 3697-3701 (1988) Z
Single and double ionization of H_2 by electrons and protons.
[E, H_2; 408 - 1906 eV]

A I. S. Elets and A. K. Kazanskii : Sov. J. Chem. Phys. 2, 1439-1449 (1985)
Quasiclassical approximation in the theory of resonance dissociative attachment of an electron to a molecule. [T, H_2, D_2]

S M. T. Elford : in Electron and Ion Swarms, Pergamon, 2nd Int. Swarm Seminar, Oak Ridge 11-20 (1981)
Recent electron scattering cross sections derived from swarm transport coefficients. [review, H_2, N_2, CO_2, Hg, SF_6, Ne, O_2, CH_4, CO]

V J. P. England, M. T. Elford and R. W. Crompton : 15th ICPEAC, Brighton 306 (1987)
S A study of vibrational excitation of H_2 by measurements of the drift velocity of electron in H_2 - Ne mixtures. [E, H_2 + Ne]

S J. P. England, M. T. Elford and R. W. Crompton : Aust. J. Phys. 41, 573-586 (1988a) Z
V A study of vibrational excitation of H_2 by measurements of the drift velocity of electrons in H_2 - Ne mixtures. [E, H_2 + Ne]

S J. P. England and M. T. Elford : Aust. J. Phys. 41, 701-717 (1988b)
Momentum transfer cross section for electrons in krypton derived from measurements of the drift velocity in H_2 - Kr mixtures. [E, H_2 + Kr]

O D. A. Erwin and J. A. Kunc : IEEE Trans. Plasma Sci. PS-11, 266-273 (1983)・
Rate coefficients for some collisional processes in high-current hydrogen discharges. [, H_2]

O L. Estep and C. A. Quarles : Physica 145C, 369-376 (1987)
Atomic-field bremsstrahlung from hydrogen, helium, nitrogen, and neon from 5 to 15 keV. [E, H_2, He, N_2, Ne]

EX I. I. Fabrikant : J. Phys. B14, 335-347 (1981)・
Partial-wave analysis of low-energy electron scattering by quadrupole molecules. [T, H_2]

E I. I. Fabrikant : J. Phys. B17, 4223-4233 (1984)・
Effective-range analysis of low-energy electron scattering by non-polar molecules. [T, H_2, N_2, CO_2; 0.01 - 1 eV]

A. N. Feldt, T. L. Gibson and M. A. Morrison : 12th ICPEAC, Gatlinburg 324-324 (1981)
Theoretical investigations of low-energy e - H_2 scattering. [T, H_2]

R A. N. Feldt and M. A. Morrison : J. Phys. B15, 301-308 (1982)・
Breakdown of the adiabatic-nuclear-rotation approximation for near-threshold e - H_2 collisons. [T, H_2]

R A. N. Feldt and M. A. Morrison : Phys. Rev. A29, 401-404 (1984)・
Scaled adiabatic-nuclear-rotation theory for near-threshold rotational excitation in electron-molecule scattering. [T, H_2

A. N. Feldt, T. L. Gibson, M. A. Morrison and B. C. Saha : 14th ICPEAC, Palo Alto 219 (1985)
Theoretical cross sections for low-energy e - H_2 scattering. [T, H_2]

E A. N. Feldt : Phys. Rev. A37, 3573-3576 (1988)
R Accuracy of Hartree-Fock wave functions for electron - H_2 scatering
V calculations. [T, H_2; 0.1 - 6 eV]

QT J. Ferch, W. Raith and K. Schroder : J. Phys. B13, 1481-1490 (1980)○ Z
Total cross section measurements for electron scattering from molecular hydrogen at very low energies. [E, H_2; 0.02 - 2 eV, 2.5 %]

R E. Ficocelli Varracchio and U. T. Lamanna : Chem. Phys. Lett. 101, 38-43 (1983)・
Off-shell adiabatic nuclei theory of e^- - H_2 rotational excitation.
[T, H_2; 0.05 - 0.5 eV]

O E. Ficocelli Varracchio and U. T. Lamanna : J. Phys. B17, L611-L615 (1984a)・
New formulation of the random-phase approximation of atomic physics.
[T, N-electron atomic systems]

R E. Ficocelli Varracchio and U. T. Lamanna : J. Phys. B17, 4395-4409 (1984b)・
Threshold behaviour of rotational cross sections in e^- - H_2 scattering.
[T, H_2]

E E. Ficocelli Varracchio and U. T. Lamanna : J. Phys. B19, 3145-3160 (1986)・
Ab initio polarisation potential in the random-phase approximation : application to e^- - H_2 elastic scattering. [T, H_2]

E E. Ficocelli Varracchio, U. T. Lamanna and G. Petrella : J. Phys. B20, L765-L770 (1987)・
Random-phase approximation to dynamical polarisation effects in e^- - molecule scattering. [T, H_2; 0.1 - 8 eV]

EX A. W. Fliffet and V. McKoy : Phys. Rev. A21, 1863-1875 (1980) Z
Distorted-wave-approximation cross sections for excitation of $b^3\Sigma_u^+$ and $B^1\Sigma_u^+$ states of H_2 by low energy-electron impact. [T, H_2]

I S. N. Foner and R. L. Hudson : Chem. Phys. Lett. 100, 559-561 (1983)
Disparate effects of rotational energy excitation on the electron impact ionization of diatomic molecules : H_2 versus N_2.
[E, H_2, N_2 at threshold]

EX J. L. Forand, S. Wang, J. M. Woolsey and J. W. McConkey : 15th ICPEAC, Brighton 308 (1987)
Absolute electron-impact excitation cross-sections in the vaccum-ultraviolet. [E, H_2; 200 eV]

EX R. S. Freund, D. E. Donohue and G. J. Fisanick : J. Chem. Phys. 80, 1754-1759 (1984)
Polarization line shape of Balmer-β from electron impact dissociation of H_2. [E, H_2]

O T. Fujimoto, K. Sawada and K. Takahata : J. Appl. Phys. 66, 2315-2319 (1989)
Ratio of Balmer line intensities resulting from dissociative excitation of molecular hydrogen in an ionizing plasma. [T, H_2]

D O. Fukumasa, R. Itatani and S. Saeki : J. Phys. D18, 2433-2449 (1985)
I Numerical simulation of hydrogen ion species in the steady-state plasma of a low-pressure ion source. [E, H_2; 3 - 15 eV]

D O. Fukumasa : J. Phys. D22, 1668-1679 (1989)
Numerical studies on the optimisation of volume-produced H^- ions in the single-chamber system. [T, H_2]

E J. Furst, M. Mahgerefteh and D. E. Golden : Phys. Rev. A30, 2256-2260 (1984)○ Z
Absoluted total electrically elastic differential e^- - H_2 scattering cross section measurements from 1 to 19 eV. [E, H_2]

O J. W. Gallagher and E. C. Beaty : JILA Information Center Report No. 18, 1-142 (1980)
Bibliography of low energy electron and photon cross section data (1978).
[compilation, H_2, etc.]

O J. W. Gallagher and E. C. Beaty : JILA Information Center Report No. 21, 1-122 (1980)
Bibliography of low energy electron and photon cross section data (1979). [compilation, H_2, etc.]

O J. W. Gallagher, C. E. Brion, J. A. R. Samson and P. W. Langhoff : J. Phys. Chem. Ref. Data 17, 9-153 (1988)
Absolute cross sections for molecular photoabsorption, partial photoionization, and ionic photofragmentation processes.
[compilation, H_2, N_2, CO, O_2, NO, CO_2, N_2O, H_2O, SO_2, NH_3, CH_4, HF, HCl,

O S. Ganguly, K. R. Dastidar and T. K. R. Dastidar : Phys. Rev. A33, 337-341 (1986)
Resonant two-photon autoionization of H_2. I. Autoionization line shape and rate. [T, $h\nu$, H_2; II K. R. Dastidar (1986)]

A J. P. Gauyacq : J. Phys. B18, 1859-1872 (1985)・
Dissociative attachment in e^- - H_2 collisions. [T, H_2 and D_2]

A J. P. Gauyacq : J. Euro. Phys. Lett. 1, 287-294 (1986)
On the dynamical aspect of the dissociative attachment in electron-molecule collision. [T, H_2, HCl; 3.2 - 4.3 eV for H_2]

E F. A. Gianturco and U. T. Lamanna : Mol. Phys. 40, 793-804 (1980)
R The Glauber approximation in molecular scattering. III. Electron collisions with H_2 and N_2 at intermediate energies.
[T, H_2, N_2; 10 and 40 eV for H_2]

E T. L. Gibson and M. A. Morrison : J. Phys. B14, 727-739 (1981)
R Comparison of model exchange potentials for low-energy e - H_2 collisions with and without polarization effects. [T, H_2; 0.01 - 1 Ryd]

R T. L. Gibson and M. A. Morrison : J. Phys. B15, L221-L228 (1982)・
QT A parameter-free non-adiabatic polarisation potential for low energy e - H_2 collisions. [T, H_2]

E T. L. Gibson and M. A. Morrison : Phys. Rev. A29, 2497-2508 (1984a)
Ab initio nonadiabatic polarization potentials for electron-molecule scattering : The e - H_2 system. [T, H_2; 0.01 - 10 eV]

E T. L. Gibson, M. A. P. Lima, K. Takatsuka and V. McKoy : Phys. Rev. A30, 3005-3011 (1984b)・
Ab initio inclusion of polarization effects in the Schwinger multichannel formulation : Application to elastic e - H_2 scattering.
[T, H_2; DCS, 1 - 10 eV]

EX T. L. Gibson, M. A. P. Lima, V. McKoy and W. H. Huo : Phys. Rev. A35, 2473-2478 (1987)
Application of the Schwinger multichannel formulation to electron-impact excitation of the $B^1\Sigma_u^+$ state of H_2. [T, H_2]

O E. A. Gislason and N. H. Sabelli : 13th ICPEAC, Berlin 226-226 (1983)
Quantum chemical study of the $^2\Sigma_u^+$ resonance H_2^-. [T, H_2]

O A. Giusti-Suzor, C. E. Brion adn H. Lefebvre : Phys. Rev. A30, 3057-3065 (1984)
Theoretical study of complex resonances near ionization thresholds : Application to the N_2 photoionization spectrum. [T, $h\nu$, H_2, N_2, Ba]

O M. Glass-Maujean, J. Breton and P. M. Guyon : Chem. Phys. Lett. 112, 25-28 (1984b)
Photoabsorption probabilities for the D $3p\pi\ ^1\Pi_u$ vibrational bands of H_2. [E, $h\nu$, H_2]

V M. Glass-Maujean : Atomic Data Nucl. Data. Tables 30, 301-311 (1984d)
Transition probabilities for the D and B' vibrational levels to the X vibrational levels and continuum of H_2. [T, H_2]

O M. Glass-Maujean, J. Breton and P. M. Guyon : J. Chem. Phys. 83, 1468-1470 (1985)
Photoabsorption probabilities of H_2 levels lying near the H(1s) + H(n=2) dissociation limit. [E, $h\nu$, H_2]

O M. Glass-Maujean : Phys. Rev. A33, 342-345 (1986a)
Photodissociation of vibrationally excited H_2 by absorption into the continua of B, C, and B' systems. [T, $h\nu$, H_2]

O M. Glass-Maujean, P. M. Guyon and J. Breton : Phys. Rev. A33, 346-350 (1986b)
Photodissociation into H(1s) + H(n = 2) atoms : Total and partial dissociation cross sections and relative importance of dissociation and predissociation. [E, $h\nu$, H_2]

O M. Glass-Maujean : J. Chem. Phys. 85, 4830-4834 (1986c)
Photodissociation of doubly excited states of H_2, HD, and D_2. [E, $h\nu$, H_2, HD, D_2]

O M. Glass-Maujean, J. Breton and P. M. Guyon : Z. Phys. D5, 189-201 (1987)
High resolution study of photoabsorption photodissociation and fluorescence in H_2. [E, $h\nu$, H_2; 765 - 850 A]

O M. Glass-Maujean : J. Chem. Phys. 89, 2839-2843 (1988)
Photodissociation of doubly excited states of H_2 : Emission of Balmer lines. [E, $h\nu$, H_2]

A C. Gorse, M. Capitelli, M. Bacal and J. Bretagne : Chem. Phys. 102, 1-10 (1986)
Non-equilibrium dissociation of HCl and H_2 molecules under electrical discharges : The role of dissociative attachment from vibrationally excited molecules. [T, H_2(v), HCl(v)]

EX W. G. Graham : J. Phys. D17, 2225-2231 (1984)
Vacuum ultraviolet emission and H^- production in a low pressure hydrogen plasma. [E, H_2; 70 - 170 nm]

I B. Grosswendt : Nucl. Instrum. Meth. 198, 403-409 (1982)
Determination of statistical fluctuations in ionization yield of low energetic electrons in hydrogen. [E, H_2; 20 - 5000 eV]

R G. P. Gupta and K. C. Mathur : Pramana 17, 81-91 (1981)
Rotational excitation of H_2 and N_2 molecules by electron impact. [, H_2, N_2]

S G. N. Haddad and R. W. Crompton : Aust. J. Phys. 33, 975-983 (1980)・
Electron transport in argon-hydrogen mixtures. [E, H_2 + Ar]

EX R. I. Hall and L. Andric : J. Phys. B17, 3815-3825 (1984) Z
Electron impact excitation of H_2(D_2) resonance phenomena associated with the $X^2\Sigma_u^+$ and $B^2\Sigma_g^+$ states of H_2^- in the 10 eV region. [E, H_2, D_2]

V R. Hall : in Electron-Molecule Scattering and Photoionization, Daresbury, Prenum Press 75-97 (1988)
Recent experimental results related to shape resonances.
[review, H_2, O_2, NO, HCl, N_2, CO_2]

EX P. Hammond, F. H. Read and G. C. King : J. Phys. B17, 2925-2941 (1984)
Near-threshold electron impact excitation functions of high-n states of Ar, Kr, Xe, H_2, N_2 and CO. [E, H_2, Ar, Kr, Xe, N_2, CO]

O S. Hara and H. Sato : J. Phys. B17, 4301-4309 (1984)・
Theoretical study of autoionising states of molecules : H_2 and H_2^{2+}.
[T, H_2]

O S. Hara and S. Ogata : J. Phys. B18, L59-L63 (1985a)
Photoionisation of the H_2 molecule. [T, $h\nu$, H_2]

O S. Hara : J. Phys. B18, 3759-3768 (1985b)
Theoretical study of the photoionisation of H_2. [T, $h\nu$, H_2]

O S. Hara, H. Sato, S. Ogata and N. Tamba : J. Phys. B19, 1177-1186 (1986)
Vibrationally and rotationally resolved cross sections and angular distributions of photo-electrons from H_2. [T, $h\nu$, H_2]

D Y. Hatano : Comments At. Mol. Phys. 13, 259-273 (1983)・
Electron impact dissociation of simple molecules.
[comments, H_2, D_2, H_2O, HF, CH_4, NH_3]

E M. Hayashi : Nagoya University Report No. IPPJ-AM-19, 1-62 (1981)
QT Recommended value of transport cross section for elastic collision and total collision cross section for electrons in atomic and molecular gases.
[compilation, H_2, He - Xe, N_2, O_2, CO, CO_2; old tentative values]

EX A. U. Hazi : Phys. Rev. A23, 2232-2240 (1981)・
Impact-parameter method for electronic excitation of molecule by electron impact. [T, H_2, F_2, N_2]

O H. Helm : 14th ICPEAC, Palo Alto, invited paper 705-716 (1985)・
Photodissociation and photoionization in triplet molecular hydrogen.
[E, $h\nu$, H_2]

V A. Herzenberg : in Electron-Molecule Collisions, I. Shimamura and K. Takayanagi (Ed), Plenum 191-274 (1984)
Vibrational excitation of molecules by slow electrons.
[review, H_2, N_2, CO, HF, HCl, CO_2, etc.]

EX M. Higo and T. Ogawa : Chem. Phys. 56, 15-20 (1981)
Translational energy distribution of excited deuterium atoms produced by controlled electron impact on D_2. [E, D_2]

D M. Higo, S. Kamata and T. Ogawa : Chem. Phys. 66, 243-248 (1982)
Electron impact dissociation of molecular hydrogen and deuterium : Translational energy distribution of atomic hydrogen and deuterium (n = 3, 4, 5). [E, H_2, D_2; 30 - 100 eV]

O J. R. Hiskes, A. M. Karo and P. A. Willmann : J. Vac. Sci. Tech. A3, 1229-1233 (1985)
Hydrogen vibrational population distributions and negative ion generation in tandem high density discharges. [, H_2]

A J. R. Hiskes : Comments At. Mol. Phys. 19, 59-77 (1987a)・
Atomic processes in hydrogen negative ion discharges. [comments, H_2]

V J. R. Hiskes : AIP Conf. Proc. No. 158, 34-38 (1987b)
Electron excitation of $H_2(v'')$ levels to yield vibrationally excited H_2 molecules. [T, $H_2(v)$]

QT K. R. Hoffman, M. S. Dababneh, Y. -F. Hsieh, W. E. Kauppila, V. Pol, J. H. Smart and T. S. Stein : Phys. Rev. A25, 1393-1403 (1982)○ Z
Total-cross-section measurements for positrons and electrons colliding with H_2, N_2, and CO_2. [E, H_2, N_2, CO_2; 0.5 - 750 eV for e^- + H_2]

EX T. K. Holly, S. Chung, C. C. Lin and E. T. P. Lee : Phys. Rev. A26, 1852-1857 (1982)
Excitation cross sections of the H_2 ($X^1\Sigma_g^+ \rightarrow b^3\Sigma_u^+$) by the combined close-coupling R-matrix method. [T, H_2]

A A. Huetz and J. Mazeau : J. Phys. B14, L591-L595 (1981a)・
Observation of unstable H^- from the dissociation of H_2^-. [E, H_2]

EX A. Huetz : Thesis, Universite-Paris VI (1981b)
Excitation and resonant dissociation of diatomic molecules by electron impact. [E, H_2,

EX W. M. Huo, H. Pritchard, K. Watari, M. A. P. Lima and V. McKoy : 15th ICPEAC, Brighton 290-290 (1987)
Low-energy inelastic electron-molecule collisions. [T, H_2, N_2, CO, H_2O]

EX W. M. Huo : Phys. Rev. A38, 4527-4536 (1988)
Cross sections for excitation of the $b^3\Sigma_g^+$ and $b^3\Pi_u^+$ states of H_2 by low-energy electrons. [T, H_2]

EX I. Iga, M. -T. Lee, J. C. Nogueira and J. C. Pinheiro : 15th ICPEAC, Brighton 350 (1987)
Total inelastic differential cross section (TIDCS) derermination for electron-hydrogen molecule scattering in the intermediate energy range. [E, H_2; 400 - 2000 eV]

O Y. Itikawa, H. Takagi, H. Nakamura and H. Sato : Phys. Rev. A27, 1319-1327 (1983)
Theoretical studies of photoionization of hydrogen molecules. [T, $h\nu$, H_2]

O R.K.Janev, M.F.A.Harrison and H.W.Drawin : Nucl.Fusion 29, 109-127 (1989)・
Atomic and molecular database for fusion plasma edge studies.
[review, H_2, CH_4, CH_3, CH_2, etc.]

O D.E.Jennings and J.W.Brault : Astrophys.J. 256, L29-L31 (1982)
Laboratory measurements of the pure rotation S(2) and S(3) transitions in H_2. [E, $h\nu$, H_2; S(2) = 814.4250 cm^{-1}]

O D.E.Jennings and J.W.Brault : J.Mol.Spectrosc. 102, 265-272 (1983)
The ground state of molecular hydrogen.
[E, H_2; 587 - 1447 cm^{-1}, S(0) = 354.37350 cm^{-1}]

E B.L.Jhanwar, S.P.Khare and M.K.Sharma : Phys.Rev. A22, 2451-2459 (1980)・
Excharge effects in the independent-atom model for electron-hydrogen-molecule elastic scattering. [T, H_2]

E B.L.Jhanwar, S.P.Khare and M.K.Sharma : Pramana 14, 201-208 (1980)
Elastic scattering of electrons by hydrogen molecules.
[T, H_2; 100 - 2000 eV]

E B.L.Jhanwar, S.P.Khare and M.K.Sharma : Phys.Rev. A26, 1392-1400 (1982)
Elastic scattering of electrons by hydrogen molecules in the modified Glauber approximation. [T, H_2]

E B.L.Jhanwar, S.P.Khare and M.P.Singh : J.Phys. B15, 4239-4246 (1982)
e^- - H_2 elastic scattering over 100 - 1000 eV. [T, H_2]

I J.P.Johnson and J.L.Franklin : Int.J.Mass Spectrom.Ion Phys. 33, 393-407 (1980)
Kinetic energies and angular distributions of H^+ ions produced by electron impact on H_2. [E, H_2; 30 - 75 eV]

QT R.K.Jones : Phys.Rev. A31, 2898-2904 (1985)○ Z
Absolute total cross section for electron scattering from molecular hydrogen 1 to 50 eV. [E, H_2]

E K.N.Joshipura and H.S.Desai : Indian J.Phys. B57, 161-165 (1983)
Elastic scattering of electrons by hydrogen molecules. [T, H_2]

EX K.N.Joshipura and H.S.Desai : Indian J.Pure Appl.Phys. 22, 236-2 (1984)
Electronic excitation in inelastic e - H_2 scattering. [T, H_2]

EX J.Jovanovic-Kurepa, M.D.Tasic and Z.Lj.Petrovic : 13th SPIG, 27-30 (1986)・
Electron impact excitation cross section measurements in NH_3 and H_2 : Determination of correction factor F for the escape of high energy excited H fragments. [E, H_2, NH_3]

R K.Jung, K.-M.Scheuerlein, W.Sohn, K.-H.Kochem and H.Ehrhardt : J.Phys. B20, L327-L330 (1987)○ Z
Breakdown of the adiabatic-nuclei approximation in the rotational excitation of H_2 by very slow electrons. [E, H_2; DCS, 0.2 and 0.6 eV]

O S.Kanfer and M.Shapiro : J.Phys. B16, L655-L660 (1983)
Theory of the dissociative photoionisation of H_2. [T, $h\nu$, H_2]

O A.M.Karo, J.R.Hiskes and R.J.Hardy : J.Vac.Sci.Tech.Nol.A3, 1222-1228 (1985)
Vibrational relaxation in H_2 molecules by wall collisions : Applications to negative ion source processes. [T, H_2]

E A.K.Kazanskii and I.I.Fabrikant : Sov.Phys.Usp.27, 607-631 (1984a)・
R Scattering of slow electrons by molecules.
V [T, review, H_2, N_2, HCl, CO_2, CH_4, etc.]

V A.K.Kazanskii and I.S.Yelets : J.Phys.B17, 4767-4783 (1984b)
The semiclassical approximation in the local theory of resonace inelastic interaction of slow electrons with molecules.
[T, H_2, HD, D_2, N_2, CO; 1.5 - 4 eV]

E S.N.Ketkar and M.Fink : Phys.Rev.Lett.45, 1551-1553 (1980)
EX Effect of vibration in electron scattering by H_2 and D_2.
I [E, H_2, D_2; 40 keV, see Y.Zhang (1991)]

I M.A.Khakoo and S.K.Srivastava : 13th ICPEAC, Brighton 289-289 (1983)
The kinetic energy spectra of protons produced by the dissociative ionization of H_2 by electron impact. [E, H_2]

I M.A.Khakoo and S.K.Srivastava : J.Phys.B19, 2525-2540 (1985)・
The kinetic energy spectrum of protons produced by the dissociative ionization of H_2 by electron impact. [E, H_2]

E M.A.Khakoo and S.Trajmar : Phys.Rev.A34, 138-145 (1986a)○ Z
Elastic electron scattering cross sections for molecular hydrogen.
[E, H_2; 15 - 100 eV, 10/15/20 - 125°]

EX M.A.Khakoo and S.Trajmar : Phys.Rev.A34, 146-156 (1986b)○ Z
Electron-impact excitation of the $a^3\Sigma_g^+$, $B^1\Sigma_u^+$, $c^3\Pi_u^+$ and $C^1\Pi_u^+$ states of H_2. [E, H_2; 20 - 60 ev, 10/20 - 120°]

EX M.A.Khakoo and J.W.McConkey : J.Phys.B20, L175-L179 (1987a)・
Circular polarisation correlations for 50 eV electron impact excitation of the $C^1\Pi_u$ state of H_2. [E, H_2]

EX M.A.Khakoo, S.Trajmar, R.McAdams and T.W.Shyn : Phys.Rev.A35, 2832-2837 (1987b)○ Z
Electron-impact excitation cross sections for the $b^3\Sigma_u^+$ state of H_2.
[E, H_2; 20 - 100 eV, 15/20/25 - 120°]

E S.P.Khare and B.L.Jhanwar : 13th ICPEAC, Berlin 225-225 (1983)
Independent united atom model for electron-molecule scattering.
[T, H_2]

E S.P.Khare and K.Lata : J.Phys.B18, 2941-2954 (1985)・
Elastic scattering of electrons and positrons by the helium atom and the hydrogen molecule at intermediate energies.
[T, H_2, He; DCS, 100 - 1000 eV]

O D. A. L. Kilcoyne, C. M. McCarthy, S. Nordholm, N. S. Hush and P. R. Hilton : J. Elect. Spectrosc. Relat. Phenom. 36, 153-185 (1985)・
An atomic diffraction theory of molecular photoionization cross sections.
[T, $h\nu$, H_2, N_2, HF]

O K. Kirby, T. Uzer, A. C. Allison and A. Dalgarno : J. Chem. Phys. 75, 2820-2825 (1981)
Dissociative photoionization of H_2 at 26.9 eV and 30.5 eV.
[T, $h\nu$, H_2]

O T. V. Kirbyateva, B. P. Lavrov, V. N. Ostrovskii, M. V. Tyutchev and V. I. Ustimov : Opt. Spectrosc. 52, 21-26 (1982)
Probabilities of $d^3\Pi_u^- \rightarrow a^3\Sigma_g^+$ radiative transitions in the hydrogen molecule. [E, H_2]

O T. Kiyoshima : J. Phys. Soc. Jpn. 56, 1989-1995 (1987)
Lifetime measurement of $d^3\Pi_u$ state of hydrogen molecule.
[E, H_2; $d^3\Pi_u \rightarrow a^3\Sigma_g^+$, 40 ns]

O W. Kolos : J. Mol. Spectrosc. 86, 420-428 (1981a)
Adiabatic corrections for the $B''^1\Sigma_u^+$ state of the hydrogen molecule.
[T, H_2, HD, D_2]

O W. Kolos and J. Rychlewski : J. Mol. Spectrosc. 88, 1-13 (1981b)
Adiabatic corrections for the $B'^1\Sigma_u^+$ state of the hydrogen molecule.
[T, H_2, HD, D_2]

QT W. Kolos, H. J. Monkhorst and K. Szalewicz : J. Chem. Phys. 77, 1323-1334 (1982a)
Energy unresolved differential cross section for electron scattering by H_2. [T, H_2; 1st Born, high energy]

EX W. Kolos, H. J. Monkhorst and K. Szalewicz : J. Chem. Phys. 77, 1335-1344 (1982b)
Inelastic high-energy electron scattering from a hydrogen molecule. I. X - B and X - E transitions. [T, H_2; GOS, $B^1\Sigma_u^+$ and $E^1\Sigma_g^+$]

O W. Kolos and J. Rychlewski : J. Mol. Spectrosc. 91, 128-136 (1982c)
Ab initio potential energy curve for the $J^1\Delta_g$ state of the hydrogen molecule. [T, H_2, HD, D_2]

O W. Kolos and J. Rychlewski : J. Mol. Spectrosc. 125, 159-166 (1987)
Improved adiabatic corrections for the $a^3\Sigma_g^+$ state of the hydrogen molecule. [T, H_2, D_2]

O W. Koot, W. J. van der Zande and D. P. de Bruijn : Chem. Phys. 115, 297-305 (1987)
Rotational distribution of H_2^+ ions produced by 90 eV electron impact.
[E, H_2]

O W. Koot, W. J. van der Zande, J. Los, S. K. Keiding and N. Bjerre : Phys. Rev. A39, 590-604 (1989a)
Spectroscopy and dynamics of quasibound states in excited H_2.
[E, $h\nu$, H_2]

O E. L. Kosarev and E. R. Podolyak : Opt. Spectrosc. 56, 393-395 (1984)
X-ray photoabsorption in molecular hydrogen in the 17 - 400-eV photon energy range. [E and T, $h\nu$, H_2]

O H. Kossmann, O. Schwarzkopf, B. Kammerling, W. Braun and V. Schmidt : J. Phys. B22, L411-L414 (1989)
Photoionisation cross section of H_2. [E, $h\nu$, H_2]

EX N. Kouchi, N. Takahashi, S. Arai, M. Morita, N. Oda and Y. Hatano : 13th ICPEAC, Berlin 283-283 (1983)
Angular distribution of Balmer-α emission excited by electron impact on H_2. [E, H_2]

O K. Koura : J. Chem. Phys. 79, 3367-3372 (1983)
Nonequilibrium electron velocity distribution and temperature in thermalization of low-energy electrons in molecular hydrogen.
[T, H_2]

E K. Koura : J. Chem. Phys. 80, 5799-5805 (1984)
R Monte Carlo simulation of electron thermalization in gases. II.
V Subexcitation electrons in molecular hydrogen. [T, H_2]

QT V. Kumar and E. Krishnakumar : J. Elect. Spectrosc. Relat. Phenom. 24, 1-9 (1981)
Total electron-scattering cross-section for molecular hydrogen at low energies by photoelectron spectroscopy.
[E, H_2; relative, 0.02 - 1.14 eV]

R K. J. LaGattuta : Phys. Rev. A21, 547-555 (1980)
V Glauber approximation for $e^- + H_2(gs) \rightarrow e^- + H_2^*$ in a Gaussian basis.
[T, H_2]

E N. F. Lane : Rev. Mod. Phys. 52, 29-119 (1980)
The theory of electron-molecule collisions.
[review, H_2, N_2, O_2, CO_2, CO, N_2O, H_2O, NO, HF, HCl, HBr]

E N. F. Lane : 13th ICPEAC, Berlin, Invited paper 127-141 (1984)
V Fundamental advances in the theory of electron-molecule collisions.
[T, review, H_2, N_2, CO_2, HCl, HF]

EX M. Landau, R. I. Hall and F. Pichou : J. Phys. B14, 1509-1524 (1981)
Proton production from H_2 by electron impact excitation of autoionising states near threshold. [E, H_2]

I M. Landau, R. I. Hall, F. Pichou and C. Schermann : Phys. Lett. A89, 75-79 (1982)
O Deuteron production via autoionizing states of D_2 excited by electron impact. [E, D_2]

EX B. P. Lavrov, V. N. Ostrovsky and V. I. Ustimov : J. Phys. B14, 4701-4718 (1981)
Non-Franck-Condon transition in the electron impact excitation of molecules. II. Semi-empirical approach : Transitions in H_2.
[T, H_2; $d^3\Pi_u$, th. - 100 eV]

E M.-T. Lee and L. C. G. Freitas : J. Phys. B14, 1053-1064 (1981a)
Incoherent renormalised multicentre potential model for elastic scattering of electrons by linear molecules at intermediate and high energies. [T, H_2; DCS, 100 - 2000 eV]

O M.-T. Lee, K. Takatsuka and V. McKoy : J. Phys. B14, 4115-4123 (1981b)
Application of a new variational functional for electron-molecule collisions : an extension of the Schwinger variational principle.
[T, H_2, H_2^+, CO^+, LiH]

E M.-T. Lee and L. C. G. Freitas : J. Phys. B14, 4691-4700 (1981c)・
V Incoherent renormalised multicentre potential model for electron scattering linear molecule scattering : elastic and vibrational transition cross sections for e^- - H_2 collisions at 20 - 81.6 eV.
[T, H_2]

EX M.-T. Lee and V. McKoy : 17th ICPEAC, Gatlinburg 330-331 (1981c)
Distorted-wave-approximation cross sections for excitation of several electronic states of H_2 and N_2 by low energy-electron impact.
[T, H_2, N_2]

EX M.-T. Lee, R. R. Lucchese and V. McKoy : Phys. Rev. A26, 3240-3248 (1982) Z
Electron impact excitation and dissociation processes in H_2.
[T, H_2; th. - 100 eV]

E M.-T. Lee, L. F. C. Botelho and L. C. G. Freitas : J. Phys. B18, L633-L639 (1985)・
V Vibrationally elastic and inelastic (0→1) scattering of electrons by H_2. — A coherent renormalised multicentre potential model approach.
[T, H_2]

O L. J. Lembo, D. L. Huestis, S. R. Keiding, N. Bjerre and H. Helm : Phys. Rev. A38, 3447-3455 (1988)
Double-resonance study of predissociation of the $j^3\Delta_g$ state of H_2.
[E, $h\nu$, H_2]

O H. Le Rouzo : J. Phys. B19, L677-L682 (1986)
A theoretical study of the double photoionisation of molecular hydrogen.
[T, $h\nu$, H_2]

EX M. A. Lima, T. L. Gibson, K. Takatsuka and V. McKoy : Phys. Rev. A30, 1741-1746 (1984)・
Multichannel Schwinger variational cross section for electron-impact excitation of the $b^3\Sigma_u^+$ state in H_2. [T, H_2; DCS, 13 - 30 eV]

EX M. A. P. Lima, T. L. Gibson, W. M. Huo and V. McKoy : J. Phys. B18, L865-L870 (1985a)・
Cross section for electron impact excitation of the $b^3\Sigma_u^+$ state of H_2 : Application of the Schwinger multichannel variational method.
[T, H_2,

EX M. A. Lima, T. L. Gibson, W. M. Huo and V. McKoy : 14th ICPEAC, Palo Alto 235-235
E (1985b)
Multichannel Schwinger variational calculations of low-energy electron-molecule collisions. [T, H_2, CH_4]

E M. A. P. Lima, T. L. Gibson, L. M. Brescansin, V. McKoy and W. M. Huo : in Swarm
EX Studies and Inelastic Electron-Molecule Collisions, Springer, Lake Tahoe 239-264 (1987)
Studies of elastic and electronically inelastic electron-molecule collisions. [review, H_2, CH_4, H_2O]

EX M. A. P. Lima, T. L. Gibson, V. McKoy and W. M. Huo : Phys. Rev. A38, 4527-4536 (1988)
Cross section for excitation of the $b^3\Sigma_u^+$, $a^3\Sigma_g^+$ and $c^3\Pi_u^+$ state of H_2 by low-energy electrons. [T, H_2; DCS, 10.5 - 30 eV]

I J. W. Liu and V. H. Smith, Jr. : Phys. Rev. A31, 3003-3011 (1985a)
Effect of groud-state electron correlation on the (e, 2e) reaction spectroscopy of $H_2(^1\Sigma_g^+)$. [T, H_2]

E J. W. Liu : Phys. Rev. A32, 1384-1394 (1985b)
Elastic scattering of fast electrons by $H_2(^1\Sigma_g^+)$ and $N_2(X^1\Sigma_g^+)$. [T, H_2, N_2; 1 - 25 keV]

I J. W. Liu : Phys. Rev. A32, 3784-3786 (1985c)
Discrepancy between theory and experiment for noncoplanar symmetric (e, 2e) momentum profiles of $H_2[^2\Sigma_g^+]$. [T, H_2]

EX J. W. Liu : Phys. Rev. A35, 591-597 (1987)·
I Total cross sections for high-energy electron scattering by $H_2(^1\Sigma_g^+)$, $N_2(^1\Sigma_g^+)$ and $O_2(^3\Sigma_g^+)$. [T, H_2, N_2, O_2; 100 - 1300 eV]

O J. W. Liu : J. Phys. B22, 2605-2621 (1989)
The Bethe theory for dissociative excitations and ionisation of $H_2^+(1s\sigma_g)$ by electron impact. [T, H_2^+]

O R. B. Lockwood, R. E. Miers, L. W. Anderson, J. E. Lawler and C. C. Lin : Appl. Phys. Lett. 55, 1385-1387 (1989)
Effect of water vapor on a CH_4 - H_2 discharge plasma. [E, H_2 + CH_4 + H_2O]

E R. R. Lucchese, D. K. Watson and V. McKoy : Phys. Rev. A22, 421-426 (1980)
Iterative approach to the Schwinger variational principle for electron-molecule collisions. [T, H_2]

E R. R. Lucchese, T. Takatsuka and V. McKoy : Phys. Rep. 131, 147-221 (1986)·
EX Applications of the Schwinger variational principle to electron-molecule collisions and molecular photoionization.
[T, review, e + M, H_2, CO_2, LiH; PI]

A C. K. Lutrus and S. H. Suck Salk : Phys. Rev. A39, 391-394 (1989)
Argand-diagram representation of transition amplitudes for resonant reactive scattering : e + HCl and e + H_2. [T, H_2, HCl]

O C. H. Maier, L. S. Cederbaum and W. Domcke : J. Phys. B13, L119-L124 (1980)
A spherical-box approach to resonances. [T, general theory]

O L. Malegat, M. LeDourneuf and Vo Ky Lan : J. Phys. B20, 4143-4162 (1987)
Convergence of the separable exchange approximation in electron-molecule scattering using Slater-type basis sets. [T, H_2, N_2]

I T. D. Mark : in Electron-Molecule Interactions and Their Applications, Vol. 1, Academic Press 251-334 (1984)
Ionization of molecules by electron impact. [review]

I T. D. Mark : in Electron Impact Ionization, Springer 137-197 (1985)
Partial ionization cross sections. [review]

O G. Marowsky, A. Gierulski, B. Dick, U. Sowada and R. Vehrenkamp : Appl. Phys. (Germany) B39, 47- (1986)
Experimental study of vibrational and pure rotational coherent anti-Stokes Raman scattering (CARS) in molecular hydrogen. [E, H_2]

V T. Marx, A. Lebehot and R. Campargue : J. Physique 46, 1667-1670 (1985)・
EX Cross sections for vibrational excitation of H_2 [$X^1\Sigma_g^+$, v = 1] via electronically excited singlet states populated by low energy electron impact. [T, H_2; 15 - 180 eV]

EX N. J. Mason and W. R. Newell : J. Phys. B19, L203-L207 (1986a) Z
Electron resonance structure observed in the $c^3\Pi_u$ and $B^1\Sigma_g^+$ cross sections of H_2. [E, H_2]

EX N. J. Mason and W. R. Newell : J. Phys. B19, L587-L591 (1986b) ○ Z
The total excitation cross section of the $c^3\Pi_u$ state of H_2.
[E, H_2; th. - 60 eV]

O T. Masuoka : J. Chem. Phys. 81, 2652-2656 (1984)
Proton production probability in the dissociative photoionization of H_2.
[T, $h\nu$, H_2]

O T. Masuoka : Z. Phys. D4, 43-56 (1986)・
Analytical photoion spectroscopy applied to dissociative single and double photoionization of diatomic molecules (H_2, N_2, O_2, CO and NO).
[E, $h\nu$, H_2, N_2, O_2, CO, NO]

I D. Mathur : Int. J. Mass Spectrom. Ion Phys. 40, 235-239 (1981)・
Dissociative ionization of H_2 and D_2 by monoenergeric electron impact in the threshold region. [E, H_2, D_2; th. - 18.6 eV]

EX J. W. McConkey : 11th ICPEAC, Kyoto, Invited paper 225-236 (1980)・
Optical polarization studies in molecules following electron impact.
[E, ; th. - 300 eV]

EX J. W. McConkey : J. Chem. Phys. 74, 6224-6225 (1981)
Use of polarization measurements in evaluating cascade contributions to optical excitation functions. [E, H_2; th. - 250 eV]

EX J. W. McConkey, S. Trajmar, J. C. Nickel and R. McAdams : J. Phys. B18, L207-L212 (1985)・
Rotationally resolved electron-photon coincidence stydy of $H_2(d^3\Pi_u)$ excitation. [E, H_2]

EX J. W. McConkey, S. Trajmar, J. C. Nickel and G. Csanak : J. Phys. B19, 2377-2392 (1986)
A polarisation correlation study of the excitation of the H_2 $d^3\Pi_u$ (v_1 = 0, N_1 = 1) level by electron impact. [E, H_2]

V J. M. McConkey, S. Trajmar and G. C. M. King : Comments At. Mol. Phys. 22, 17-49 (1988)・
EX Electron-impact excitation of molecular hydrogen - what we do and do not know. [comments, H_2]

O E. McCormack, J. M. Gilligan, C. Cornaggia and E. E. Eyler : Phys. Rev. A39, 2260-2263 (1989)・
Measurement of high Rydberg states and the ionization potential of H_2.
[E, H_2; $V_i(H_2)$ = 124417.52 cm^{-1}]

O E. W. McDaniel, M. R. Flannery, E. W. Thomas and S. T. Manson : Atomic Data Nucl. Data Tables 33, 1-148 (1985)
Selected bibliography on atomic collisons : Data collections, bibliographies, review articles, books and papers of particular tutorial value. [compilation]

O W. Meier, H. Rottke, H. Zacharias and K. H. Welge : J. Chem. Phys. 83, 4360-4363 (1985)
Rotational state selective photoionization of the H_2 molecule from $B\ ^1\Sigma_u^+$ (v' = 0, 3) state. [E, $h\nu$, H_2]

E H.-D. Meyer : Phys. Rev. A34, 1797-1809 (1986)
Electron-molecule scattering treated with the use of separable approximations for the nonlocal part of the interaction : Static exchange calculations for e^- + H_2 and e^- + N_2. [T, H_2, N_2]

O W. Meyer, L. Frommhold and G. Birnbaum : Phys. Rev. A39, 2434-2448 (1989)
Rototranslational absorption spectra of H_2 - H_2 pairs in the far infrared. [T, $h\nu$, H_2]

I J. N. Migdall, M. A. Coplan, D. S. Hench, J. H. Moore, J. A. Tossell, V. H. Smith, Jr. and J. W. Liu : Chem. Phys. 57, 141-146 (1981)
The electron momentum distribution of molecular hydrogen. [E, H_2; 400 eV]

O M. Moraldi, J. Borysow and L. Frommhold : Phys. Rev. A36, 4700-4703 (1987)
Spectral moments for the collision-induced rotovibrational absorption bands of nonpolar gases and mixtures (H_2 - He). [T, $h\nu$, H_2 + He]

R M. A. Morrison, A. N. Feldt and D. Austin : Phys. Rev. A29, 2518-2540 (1984a)・
Adiabatic approximations for the nuclear excitation of molecules by low-energy electron impact : Rotational excitation of H_2.
[T, H_2; 0.047 - 6 eV]

V M. A. Morrison, A. N. Feldt and B. C. Saha : Phys. Rev. A30, 2811-2813 (1984b)
Validity of the adiabatic nuclei theory for vibrational excitation of molecules by electron impact : The e - H_2 system. [T, H_2]

R M. A. Morrison : J. Phys. B19, L707-L715 (1986a)
A first-order non-degenerate adiabatic theory for calculating near-threshold cross sections for rovibrational excitation of molecules by electron impact. [T, H_2; th. - 6 eV]

E M. A. Morrison and B. C. Saha : Phys. Rev. A34, 2786-2797 (1986b)·
R Investigation of parameter-free model polatization potentials for
V electron-molecule scattering calculations including the nuclear motion. [T, H_2]

R M. A. Morrison, R. W. Crompton, B. C. Saha and Z. L. Petrovic : Aust. J. Phys. 40,
V 239-281 (1987) Z
Near-threshold rotational and vibrational excitation of H_2 by electron impact : Theory and experiment. [T and E, H_2]

E M. A. Morrison : in Advances in Atomic and Molecular Physics, Vol. 24, Academic
V Press 51-156 (1988)
Near-threshold electron-molecule scattering.
[review, H_2, N_2, F_2, CO, Li_2, HCl, HBr, CO_2, CH_4]

E A. Mozumder : J. Chem. Phys. 76, 3277-3284 (1982)
R Electron thermalization in gases. VI. Relaxation time in molecular
V hydrogen. [T, H_2]

V C. Mundel, M. Berman and W. Domcke : Phys. Rev. A32, 181-193 (1985) Z
A Nuclear dynamics in resonant electron-molecule scattering beyond the local approximation : vibrational excitation and dissociative attachment in H_2 and D_2. [T, H_2, D_2; 1 - 6 eV]

D K. Nakashima, H. Kawazumi and T. Ogawa : J. Phys. Soc. Jpn. 58, 3857-3858 (1989)
Dissociation of HD : Dependence of isotope effects on the principal quantum number. [E, HD; 20 - 100 eV]

E V. L. Narasimham, A. S. Ramachandran and C. S. Warke : Phys. Rev. A23, 641-646 (1981)·,
Erratum 26, 2270-2270 (1982)
Exchange correction to electron-hydrogen-molecule scattering cross section in the Glauber approximation. [T, H_2; DCS, 30 - 200 eV]

E V. K. Narasimham and A. S. Ramachandran : Phys. Rev. A25, 2834-2837 (1982)
Erratum : Exchange correction to electron-hydrogen-molecule scattering cross section in the Glauber approximation (Phy. Rev. A23, 641 (1981)).

E R. K. Nesbet, C. J. Noble, L. A. Morgan and C. A. Weatherford : J. Phys. B17, L891-L895 (1984)
Variational R-matrix calculations of e^- + H_2 scattering using numerical asymptotic basis functions. [T, H_2]

E R. K. Nesbet, C. J. Noble and L. A. Morgan : Phys. Rev. A34, 2798-2808 (1986)
Calculations of elastic electron scattering by H_2 for fixed nuclei.
[T, H_2; 0 - 12 eV]

E H. Nishimura, A. Danjo and H. Sugahara : J. Phys. Soc. Jpn. 54, 1757-1768 (1985) ○ Z
V Differential cross sections of electron scattering from molecular hydrogen. I. Elastic scattering and vibrational excitation ($X^1\Sigma_g^+$, v = 0 → 1). [E, H_2; 2.5 - 200 eV]

EX H. Nishimura and A. Danjo : J. Phys. Soc. Jpn. 55, 3031-3036 (1986) ○ Z
Differential cross section of electron scattering from molecular hydrogen. II. $b^3\Sigma_u^+$ excitation. [E, H_2; 12 - 60 eV]

EX C. J. Noble, P. G. Burke and S. Salvini : J. Phys. B15, 3779-3786 (1982) ·
Low-energy scattering of electrons by diatomic molecules.
[T, H_2 and N_2; R-matrix, 0.01 - 1 Ryd]

V C. J. Noble, R. K. Nesbet and L. A. Morgan : 13th ICPEAC, Berlin 218-218 (1983)
Variational R-matrix calculations of electron-molecule scattering.
[T, H_2, N_2]

EX C. J. Noble, T. T. Scholz, C. J. Gillan and P. G. Burke : 16th ICPEAC, New York 306 (1989)
Electronic excitation of H_2, N_2, O_2 by low energy electrons.
[T, H_2, N_2, O_2]

O D. Normand, C. Cornaggia and J. Morellec : J. Phys. B19, 2881-2889 (1986)
Six-photon ionisation of H_2 via the E, F $^1\Sigma_g^+$ v_E = 0 level. Absorption of photons in the ionisation continuum. [E, $h\nu$, H_2]

O D. Normand and J. Morellec : J. Phys. B21, L625-L630 (1988)
Competition between photoionisation and predisociation of excited states of H_2 : laser intensity effects. [E, $h\nu$, H_2]

EX T. Ogawa and J. Kurawaki : 13th ICPEAC, Berlin 284-284 (1983)
Translational energy and angular distributions of H^* and D^* produced in e - H_2, D_2 collisions. [E, H_2, D_2]

EX T. Ogawa, M. Taniguchi and K. Nakashima : 15th ICPEAC, Brighton 339 (1987)
Time resolved analysis of the Balmer lines produced in e - H_2 collsions : Dissociation dynamics of hydrogen. [E, H_2]

EX T. Ogawa, M. Taniguchi, K. Nakashima and H. Kawazumi : Chem. Phys. 137, 323-330 (1989)
Distributions over the 4s, 4p and 4d sublevels and hydrogen atom emission cross sections following e - H_2 collisions.
[E, H_2; 19 - 100 eV]

S T. F. O'Malley : J. Phys. B13, 1491-1504 (1980)
Multiple scattering effect on electron mobilities in dense gases.
[T, H_2, Ar, He, CO_2]

O M. Ortiz and J. Campos : J. Chem. Phys. 72, 5635-5638 (1980)
Emission of the Hα and Hβ lines excited by electron impact on H_2.
[E, H_2; 15 - 100 eV]

E N. T. Padial and D. W. Norcross : Phys. Rev. A29, 1742-1748 (1984)
Parameter-free model of the correlation-polarization potential for electron-molecule collisions.
[T, H_2, N_2, CO_2, HF, HCl, CO; 0.1 - 10 eV]

O A. C. Parr, J. E. Hardis, S. H. Southworth, C. S. Feigerle, T. A. Ferrett, D. M. P. Holland, F. M. Quinn, B. R. Dobson, J. B. West, G. V. Marr and J. L. Dehmer : Phys. Rev. A37, 437-443 (1988)
Vibrationally resolved photoelectron angular distributions for H_2 in the range 17 eV $\leqq h\nu \leqq$ 39 eV. [E, $h\nu$, H_2]

EX D. Pasquerault, A. Defrance and M. Hagene : J. Phys. B18, L871-L873 (1985)・
Differential (0, 180°) excitation function of the $C^3\Pi_u$ state of H_2 by electron impact. [E, H_2]

S Z. Lj. Petrovic and R. W. Crompton : Aust. J. Phys. 40, 347-353 (1987)
V A swarm experiment in He - H_2 mixtures to examine vibrational excitation of H_2 by electron impact. [E, H_2 + He]

S Z. Lj. Petrovic and R. W. Crompton : Aust. J. Phys. 42, 609-625 (1989)・
Electron transport coefficients in carbon monoxide and deuterium.
[E, D_2, CO]

S A. V. Phelps : in Swarm studies and Inelastic Electron-Molecule Collisions, Lake Tahoe, Springer 127-141 (1987a)
Relations between electron-molecule scattering and swarm experiments and analysis. [review]

α A. V. Phelps, B. M. Jelenkovic and L. C. Pitchford : 5th Int. Swarm Seminar, Birmingham 41-44 (1987b)
Simple models of spatially dependent electron motion at extremly high E/n.
[E and T, H^2, N^2]

D F. Pichou, R. I. Hall, M. Landau and C. Schermann : J. Phys. B16, 2445-2456 (1983)
I Observation of autoionising states in H_2 and D_2 above 30 eV by electron impact. [E, H_2, D_2; proton production]

E R. T. Poe, T. F. Jiang and Y. Shan : J. Phys. B19, 3559-3564 (1986)・
V Electron - H_2 scattering at intermediate and high energies.
[T, H_2; two-potential approach, 50 - 700 eV]

E S. Pozdneev and V. Shcheglov : Chem. Phys. 123, 27-41 (1988)・
D Application of the quantum theory of scattering to the calculation of the
A simplest chemical reactions. [T, H_2, HD, D_2, N_2, Cl_2 - I_2, HCl, HBr]

O S. T. Pratt, P. M. Dehmer and J. L. Dehmer : J. Chem. Phys. 85, 3379-3385 (1986)
Photoionization dynamics of excited molecular states. Photoelectron angular distributions and rotational and vibrational branching ratio for H_2 $C^1\Pi_u$, v = 0 - 4. [E, $h\nu$, H_2]

O P. Quadrelli and K. Dressler : J. Mol. Spectrosc. 86, 316-326 (1981)
Molecular constants for the $1^1\Pi_g$ and $J^1\Delta_g$ states of the 3d complex in H_2, HD, and D_2. [T, H_2, HD, D_2]

E N.B.Rao and H.S.Desai : 14th ICPEAC, Palo Alto 220-220 (1985)
Scattering of electrons by hydrogen molecule in independent united atom model. [T, H_2; 100 - 800 eV]

N.S.Rao : Indian J.Phys. 60B, 232-234 (1986)・
Inelastic scattering of electrons by hydrogen molecule in independent united atom model. [T, H_2]

E N.S.Rao and H.S.Desai : Indian J.Pure Appl.Phys. 25, 255-257 (1987)
An analytical study of higher-order exchange amplitude for e - H_2 elastic scattering. [T, H_2]

O M.Raoult and Ch.Jungen : J.Chem.Phys. 74, 3388-3399 (1981)
Calculation of vibrational preionization in H_2 by multichannel quantum defect theory : Total and partial cross sections and photo-electron angular distributions. [T, $h\nu$, H^2]

O G.Raseev : Comput.Phys.Commun. 20, 267-274 (1980)
Third version of a program for calculating the static interaction potential between an electron and a diatomic molecules. [program]

O G.Raseev and H.Le Rouzo : Phys.Rev. A27, 268-284 (1983)
Electronic ab initio quantum-defect theory. Low-resolution H_2 photoionization spectrum. [T, $h\nu$, H_2]

EX M.J.Redmon, B.C.Garrett, L.T.Radmon and C.W.McCurdy : Phys.Rev. A32, 3354-3365 (1985)・
Improved impact-parameter method for electronic excitation and dissociation of diatomic molecules by electron impact.
[T, H_2; $X^1\Sigma_g^+$, $B^1\Sigma_u^+$, $B'^1\Sigma_u^+$ states, rot.-temp. dependence]

E T.N.Rescigno and A.E.Orel : Phys.Rev. A24, 1267-1271 (1981)・
Separable approximation for exchange interactions in electron-molecule scattering. [T, H_2, LiH; 0.01 - 1 Ryd]

EX T.N.Rescigno and B.I.Schneider : J.Phys. B21, L691-L695 (1988)・
Electron-impact excitation of $b^3\Sigma_u^+$ state of H_2 using the complex Kohn method : R dependence of the cross section. [T, H_2; 12 - 30 eV]

O J.A.Richards and F.P.Larkins : J.Phys. B17, 1015-1026 (1984)
Molecular photoionisation calculations with numerical continuum wavefunctions : Application to the hydrogen molecule. [T, $h\nu$, H_2]

O J.A.Richards and F.P.Larkins : J.Phys. B19, 1945-1957 (1986)
Photoionisation cross section calculations of H_2 and H_2^+ using numerical continuum wavefunctions. [T, $h\nu$, H_2]

O B.Ritchie : Phys.Rev. A35, 5108-5113 (1987)
Theory of transient stimulated Raman scattering in H_2. [T, $h\nu$, H_2]

E F.Rossi and J.Pascale : Phys.Rev. A32, 2657-2669 (1985)
Pseudopotential molecular-structure calculations for alkali-metal-atom - H_2 systems. [T, e + H_2; 1 - 10 eV]

S W. Roznerski and K. Leja : J. Phys. D13, L181-L184 (1980)
The ratio of lateral diffusion coefficient to mobility for electrons in hydrogen and nitrogen at moderate E/N. [E, H_2, N_2]

S W. Roznerski and K. Leja : J. Phys. D17, 279-285 (1984)
Electron drift velocity in hydrogen, nitrogen, oxygen, carbon monoxide, carbon dioxide and air at moderate E/N.
[E, H_2, N_2, O_2, CO, CO_2, N_2 + O_2]

S W. Roznerski, K. Leja and Z. Lj. Petrovic : 5th Int. Swarm Seminar, Birmingham 45-48 (1987)
Transport coefficients for electrons in deuterium. [E, D_2]

S W. Roznerski, J. Mechlinska-Drewko, K. Leja and Z. Petrovic : 6th Int. Swarm Seminar, New York 25- (1989)
The characteristic energy of electrons in hydrogen. [E, H_2]

O H. Rudolph, D. L. Lynch, S. N. Dixit and V. McKoy : J. Chem. Phys. 84, 6657-6661 (1986)
Photoionization cross sections of rovibrational levels of the B $^1\Sigma_u^+$ state of H_2. [T, $h\nu$, H_2]

O V. D. Rusanov, A. A. Fridman and G. V. Sholin : Sov. Phys. Usp. 24, 447-474 (1981)・
V The physics of a chemically active plasma with nonequilibrium vibrational
A excitation of molecules. [review, H_2, CH_4, O_2, NO, N_2, CO, CO_2, I_2, etc.]

E B. C. Saha : Indian J. Phys. B63, 130-148 (1989)・
R A vibrational averaging technique for calculating e^- - molecule cross sections. [T, H_2, N_2]

O K. Sakimoto : J. Phys. B22, 2727-2739 (1989)
Influence of electric fields on highly excited states of H_2 : quantum-defect-theory approach. [T, $h\nu$, H_2]

QT S. Salvini, C. J. Noble and P. G. Burke : 13th ICPEAC, Berlin 234-234 (1983)
Electron scattering by diatomic molecules. [T, H_2, N_2]

O J. A. R. Samson and L. Yin : J. Opt. Soc. Am. B6, 2326-2333 (1989)
Precision measurements of photoabsorption cross sections of Ar, Kr, Xe, and selected molecules at 58.4, 73.6, and 74.4 nm.
[E, $h\nu$, H_2, N_2, O_2, CO, N_2O, CO_2, CH_4, Ar - Xe]

O J. A. Sanchez and J. Campos : J. Physique 49, 445-449 (1988)・
Radiative lifetime measurements for H_2 molecule.
[E, H_2; many levels, lifetimes range 34 - 110 ns]

O H. Sato and S. Hara : J. Phys. B19, 2611-2615 (1986)・
Theoretical study of autoionising states of molecules : II. The $^1\Sigma_u^+$ and $^1\Pi_g$ states of H_2. [T, H_2]

EX K.-H. Schartner, B. Kraus, W. Poffel and K. Reymann : Nucl. Instrum. Meth. B27, 519-526 (1987)
Electron impact excitation and radiometric applications.
[compilation, E, H_2, N_2, He - Xe]

E B. I. Schneider and L. A. Collins : Phys. Rev. A24, 1264-1266 (1981)
Linear-algebraic approach to electron-molecule collisions : Separable exchange approximations. [T, H_2, LiH; 0.04 Ry]

E B. I. Schneider and L. A. Collins : J. Phys. B15, L335-L340 (1982)
Application of ab-initio optical potentials to low-energy electron - H_2 scattering. [T, H_2; 0.13 - 10 eV]

E B. I. Schneider and L. A. Collins : Phys. Rev. A27, 2847-2857 (1983a)・
Ab initio optical potentials applied to low-energy e - H_2 and e - N_2 collisions in the linear-algebraic approach. [T, H_2, N_2]

O B. I. Schneider and L. A. Collins : Phys. Rev. A28, 166-168 (1983b)・
Examination of the $^1\Sigma_g$ resonances in low-energy e - H_2^+ collisions.
[T, H_2^+ only]

EX B. I. Schneider and L. A. Collins : J. Phys. B18, L857-L863 (1985)・
Electronic excitation of the $b^3\Sigma_u^+$ state of H_2 by electron impact in the linear algebrac approach. [T, H_2]

O B. I. Schneider and L. A. Collins : Phys. Rev. A33, 2970-2981 (1986a)
Direct interaction-variation method for scattering problems.
[T, H_2, LiH, N_2; 0 - 1.36 eV]

EX B. I. Schneider and L. A. Collins : Phys. Rev. A33, 2982-2988 (1986b)
Electronic excitation of atoms and molecules using the linear-algebrac method. [T, H_2, H, He, H_2^+; $b^3\Sigma_u$, th. - 30 eV for H_2]

E B. I. Schneider and T. N. Rescigno : Phys. Rev. A37, 3749-3754 (1988)
Complex Kohn variational method : Application to low-energy electron-molecule collisions. [T, H_2]

O N. Sen, K. Rai Dastidar and T. K. Rai Dastidar : Phys. Rev. A38, 841-848 (1988)
Effect of laser intensity on (2 + 1)-photon ionization of the hydrogen molecule via the E, $F^1\Sigma_g$ state. [T, $h\nu$, H_2]

O N. Sen, K. Rai Dastidar and T. K. Rai Dastidar : Phys. Rev. A40, 735-741 (1989)
Effect of laser intensity on (3 + 1)-photon resonant enhanced multiphoton ionization of a H_2 molecule via the $B'^1\Sigma_u$ state. [T, $h\nu$, H_2]

O B. S. Sharma and A. J. Thakkar : Phys. Rev. A36, 5151-5158 (1987)
Moments of the Bethe surface and total inelastic X-ray scattering cross sections for H_2. [T, $h\nu$, H_2]

EX D. F. Shemansky, J. M. Ajello and D. T. Hall : Astrophys. J. 296, 765-773 (1985) Z・
Electron impact excitation of H_2 : Rydberg band systems and the benchmark dissociative cross section for H Lyman-alpha. [E, H_2]

R I. Shimamura : Chem. Phys. Lett. 73, 328-333 (1980)
State-to-state rotational transition cross sections from unresolved energy -loss spectra. [general theory]

R I. Shimamura : Phys. Rev. A23, 3350-3353 (1981)
Energy loss by slow electrons and by slow atoms in a molecular gas. [general theory]

R I. Shimamura : J. Phys. B15, 93-100 (1982a)
Sum rules for the rotational structure in the molecular transition spectrum. [general theory]

R I. Shimamura : Z. Phys. A309, 107-117 (1982b)
Moments of the spectra for rotational transitions induced by collisions or by external perturbations. [general theory]

R I. Shimamura : Phys. Rev. A28, 1357-1362 (1983)
Partial-sum rules for and asymmetry between rotational transitions J ± ΔJ ← J. [general theory]

O I. Shimamura and K. Takayanagi (Ed) : Electron-Molecule Collisions. Plenum (1984)

E I. Shimamura : Sci. Papers of Inst. Phys. Chem. Res. 82, 1-51 (1989) Z
Cross sections for collisions of electrons with atoms and molecules. [compilation, H_2, He - Xe, etc.]

I T. W. Shyn, W. E. Sharp and Y. -K. Kim : Phys. Rev. A24, 79-88 (1981a)
Doubly differential cross sections ejected from gases by electron impact 25 - 250 eV on H_2. [E, H_2]

E T. W. Shyn and W. E. Sharp : Phys. Rev. A24, 1734-1740 (1981b) ○ Z
Augular distribution of electrons elastically scatterd from H_2. [E, H_2]

EX J. J. Spezeski, O. F. Kalman and L. C. McIntyre, Jr. : Phys. Rev. A22, 1906-1915 (1980)
Time-of-flight study of H(2S) and D(2S) produced by electron impact on H_2 and D_2 : Fast peaks. [E, H_2, D_2; 29 - 100 eV]

E G. Staszewska, D. W. Schwenke and D. G. Truhlar : J. Chem. Phys. 81, 335-343 (1984)
R Complex optical potential method for electron-molecule scattering, elastic scattering, and rotational excitation of H_2 at 10 - 100 eV. [T, H_2]

O J. A. Stephens and F. Robicheaux : Radiat. Res. 110, 19-34 (1987)
Resonance effect on the moderation of slow electrons in diatomic gases. [, H_2, N_2,

O G. C. Stutzin, A. T. Young, A. S. Schlachter, K. N. Leung and W. B. Kunkel : Chem. Phys. Lett. 155, 475-480 (1989)
In situ measurement of rovibrational populations of H_2 ground state in a plasma by VUV laser absorption. [E, $h\nu$, H_2]

QT K. P. Subramanian and V. Kumar : J. Phys. B22, 2387-2392 (1989) ○ Z
Total electron scattering cross sections for molecular hydrogen at low electron energies. [E, H_2; 0.21 - 9.14 eV, error 2.7 %]

A S. H. Suck Salk and C. K. Lutrus : Phys. Rev. A38, 3388-3394 (1988)
T-matrix study of resonant reactive scattering and comparison between direct and indirect scattering contributions to the dissociative attachment process of e + AB → A + B-. [T, H_2, HCl]

S. Sur and A. S. Ghosh : Indian J. Phys. B57, 67-70 (1983a)・
Local model exchange potentials. [T, H_2

E S. Sur and A. S. Ghosh : 13th ICPEAC, Berlin 221-221 (1983b)
R Electron hydrogen molecule scattering at low energies. [T, H_2]

R S. Sur and A. S. Ghosh : Phys. Rev. A29, 2236-2238 (1984)
Rotational excitation of hydrogen molecules by electron and positron impact. [T, H_2]

E S. Sur and A. S. Ghosh : J. Phys. B18, 539-546 (1985)
R Model exchange potential and e^- - H_2 scattering. [T, H_2; 0 - 20 eV]

QT K. Szalewicz, W. Kolos, H. J. Monkhorst and C. Jackson : J. Chem. Phys. 80, 1435-1439 (1984)
Effect of vibrations on the energy unresolved electron scattering by H_2 and D_2. [T, H_2, D_2; high energy]

QT C. Szmytkowski : Z. Phys. D13, 69-73 (1989)
On trends in total cross sections for electron (positron) scattering on atoms and molecules at intermediate energies.
[T, H_2, etc.; 100 - 500 eV, polarizability]

O H. Takagi and H. Nakamura : J. Phys. B13, 2619-2632 (1980)
Elastic scattering of electrons from H_2^+ : phaseshifts, quantum defects and two-electron excited states. [T, H_2^+; not H_2]

O H. Takagi and H. Nakamura : J. Chem. Phys. 74, 5808-5813 (1981)
Autoionization of highly excited Rydberg states of diatomic molecules.
[T, H_2; see P. M. Dehmer : J. Chem. Phys. 65, 2243 (1976)]

O H. Takagi and H. Nakamura : Phys. Rev. A27, 691-708 (1983)
Two-electron excited states and adiabatic quantum defects of H_2 : Analysis of elastic scattering of electrons from H_2^+. [T, H_2^+]

O K. Takatsuka and V. McKoy : Phys. Rev. Lett. 45, 1396-1399 (1980)
Schwinger variational principle for multichannel scattering.
[T, general theory]

O K. Takatsuka and V. McKoy : Phys. Rev. A23, 2352-2358 (1981a)
Variational scattering theory using a functional of fractional form. I. General theory. [general theory]

O K. Takatsuka and V. McKoy : Phys. Rev. A23, 2359-2364 (1981b)
Variational scattering theory using a functional of fractional form. II. An L^2 approach. [T, general theory]

O K. Takatsuka, R. R. Lucchese and V. McKoy : Phys. Rev. A24, 1812-1816 (1981c)
Relationship between the Schwinger and Kohn-type variational principles in scattering theory. [T,

O K. Takatsuka and V. McKoy : Phys. Rev. A24, 2473-2480 (1981d) ○
Extension of the Schwinger variational principle beyond the static-exchange approximation. [T, general theory]

O K. Takatsuka, M.-T. Lee and V. McKoy : 12th ICPEAC, Gatlinburg 303-304 (1981e)
The application of a fractional C-functional for electron-molecule scattering. [T,

O K. Takatsuka and V. McKoy : Phys. Rev. A30, 1734-1740 (1984) ○
Theory of electronically inelastic scattering of electron by molecules. [T, general theory]

EX S. M. Tarr, J. A. Schiavone and R. S. Freund : Phys. Rev. Lett. 44, 1660-1663 (1980)
Obervation of direct excitation of high-orbital-angular-momentum high-Rydberg states by threshold-energy electron collisions. [E, H_2, N_2]

EX S. M. Tarr, J. A. Schiavone and R. S. Freund : J. Chem. Phys. 74, 2869-2878 (1981)
Long-lived high-Rydberg molecules formed by electron impact : H_2, D_2, N_2 and CO. [E, H_2, D_2, N_2, CO; th. - 80 eV]

EX M. D. Tasic, Z. Lj. Petrovic and J. M. Kurepa : Chem. Phys. 134, 163-172 (1989)
The influence of fast excited H fragments on Balmer line emission cross section measurements for H_2 and NH_3 molecules. [E, H_2, NH_3]

I H. Tawara, T. Kato and M. Ohnishi : Nagoya Univ. Rep., IPPJ-AM-37, 1-321 (1985)
Ionization cross sections of atoms and ions by electron impact. [compilation; H_2, p. 13 - 15]

E H. Tawara, Y. Itikawa, Y. Itoh, T. Kato, H. Nishimura, S. Ohtani, H. Takagi, K. Takayanagi
V and M. Yoshino : IPPJ-AM-46, Inst. Plasma Phys., Nagoya University 1-43 (1986)
EX Atomic data involving hydrogens relevant to edge plasma.
I [compilation, H_2]

E H. Tawara, Y. Itikawa, H. Nishimura and M. Yoshino : IPPJ-AM-55, Inst. Plasma Phys.,
V Nagoya University 1-32 (1987a)
EX Atomic data for hydrogen in collisions with electrons. - Addenda to IPPJ-
I AM-46. [compilation, H_2]

I H. Tawara and T. Kato : Atomic Data Nucl. Data Tables 36, 167-353 (1987b)
Total and partial ionization cross sections of atoms and ions by electron impact. [compilation, H_2, D_2, H - U]

O H. Tawara and R. A. Phaneuf : Comments At. Mol. Phys. 21, 177-193 (1988)・
Atomic and molecular data requirements for fusion plasma edge studies.
[comments, H_2, CH_4, C_2H_2, C_2H_4, H_2O, CO, CO_2, O_2]

V B. L. Tembe and A. Mozumder : J. Chem. Phys. 78, 2030-2038 (1983)
EX Electron thermalization in gases. V. Diatomic molecules H_2, N_2 and CO.
[T, H_2, N_2, CO]

EX A. Temkin : in Electronic and Atomic Collisions, North-Holland Pub. Co., 11th ICPEAC, Kyoto 95-107 (1980)
Theory and calculation of electron-molecule scattering.
[T, H_2, N_2, CH_4, SF_6]

O J. Tennyson : J. Phys. B20, L375-L378 (1987)
Fully vibrationally resolved photoionisation of H_2 and D_2.
[E, $h\nu$, H_2, D_2; 584 A]

E A. J. Thakkar, A. N. Tripathi and V. H. Smith, Jr. : Phys. Rev. A29, 1108-1113 (1984)
Molecular X-ray and electron-scattering intensities. [T, H_2, N_2]

V D. G. Thompson : in Advances in Atomic and Molecular Physics, Vol. 19, Academic 309-343 (1983)・
The vibrational excitation of molecules by electron impact.
[review, H_2, N_2, CO, CO_2, HCl, etc.]

V S. Trajmar : Acc. Chem. Res. 13, 14-20 (1980)・
Electron impact spectroscopy. [review, H_2, N_2, O_2, He, Ba, UF_6]

EX S. Trajmar, D. F. Register and A. Chutjian : Phys. Rep. 97, 219-356 (1983) Z
Electron scattering by molecules. II. Experimental methods and data.
[review, H_2, p. 235-260]

EX S. Trajmar and D. C. Cartwright : Electron-Molecule Interactions and Their Applications, Vol. 1, Academic Press 155-249 (1984)
Excitation of molecules by electron impact. [review]

O I. I. Tugov : Bull. Acad. Sci. USSR Phys. 50, No. 6, 100-106 (1986)・
Nonlinear photoprocesses in diatomic molecules. Experiment and theory.
[E and T, $h\nu$, H_2, N_2, I_2, Cs_2, NO]

O L. Ulivi, Z. Lu and G. C. Tabisz : Phys. Rev. A40, 642-651 (1989)
Temperature dependend of the collisional interference in the pure rotational far-infrared spectrum of HD. [E, $h\nu$, HD; 77 and 195 K]

EX P. J. M. van der Burgt, W. B. Westerveld and J. S. Risley : J. Phys. Chem. Ref. Data 18, 1757-1805 (1989)
Photoemission cross sections for atomic transitions in the extreme ultraviolet due to electron collisions with atoms and molecules.
[review, H_2, N_2, O_2, CO, NO, He - Xe, CO_2, H_2O, NH_3, CH_4, etc.]

QT B. van Wingerden, R. W. Wagenaar and F. J. de Heer : J. Phys. B13, 3481-3491 (1980a)○ Z
Total cross sections for electron scattering by molecular hydrogen.
[E, H_2; 25 - 750 eV, 4 %]

QT B. van Wingerden : PhD Thesis, Amsterdam 1-132 (1980b)・
E Electron scattering on molecular hydrogen.
I [E, H_2; Q_T 25 - 750 eV, elastic DCS 100 - 2000 eV, 5 - 50°]

I B. van Wingerden, J. T. N. Kimman, N. van Tilburg and F. J. de Heer : J. Phys. B14, 2475-2498 (1981)
Triple and double differential cross sections for electron impact ionisation of helium and molecular hydrogen. [E, H_2, He; 200 - 2800 eV]

R E. F. Varracchio and U. T. Lamanna : J. Phys. B17, 4395-4409 (1984)
Threshold behaviour of rotational cross sections in e^- - H_2 scattering.
[T, H_2]

E E. F. Varracchio and U. T. Lamanna : J. Phys. B19, 3145-3160 (1986)
Ab initio polarisation potential in the randam-phase approximation : Application to e^- - H_2 elastic scattering. [T, H_2]

E E. F. Varracchio, U. T. Lamanna and G. Petrella : J. Phys. B20, L765-L770 (1987)・
Random-phase approximation to dynamical polarisation effects in e^- - molecule scattering. [T, H_2 only; 0.1 - 8 eV]

O J. W. J. Verschuur, L. D. Noordam and H. B. van Linden van den Heuvell : Phys. Rev. A40, 4383-4391 (1989)
Anomalies in above-threshold ionization observed in H_2 and its excited fragments. [E, $h\nu$, H_2]

A J. M. Wadehra : Phys. Rev. A29, 106-110 (1984)・
Dissociative attachment to rovibrationally excited H_2. [T, H_2]

J. M. Wadehra : in Nonequilibrium Vibrational Kinetics, Springer (1986)

E D. K. Watson, R. R. Lucchese, V. McKoy and T. N. Rescigno : Phys. Rev. A21, 738-744 (1980)・
Schwinger variational principle for electron-molecule scattering : Application to electron-hydrogen scattering. [T, H_2]

EX C. A. Weatherford : Phys. Rev. A22, 2519-2528 (1980)
Excitation of the $b^2\Sigma_u^+$ states of H_2 by electron impact : Semiclassical excharge potentials at intermediate energies. [T, H_2]

O R. B. Winkler, J. Wilhelm and R. Winkler : Ann. Phys. 39, 10-22 (1982)
The influence of admixtures of molecular gases on the efficiency of radiation production by Ar - Hg mixture plasmas used in fluorescent lamps.
[T, H_2 + Ar + Hg; cross section set for H_2, 0 - 20 eV]

O R. Winkler and J. Wilhelm : Ann. Phys. 39, 216-232 (1982a)
Impact of the vibrationally excited states on the macroscopic bahaviour of the band-like electron beam discharge plasma in H/H_2 - mixture.
[T, H_2 + H]

O R. Winkler and J. Wilhelm : Ann. Phys. 39, 241-312 (1982b)
The impact of direct ionization by beam electrons on the electron kinetics of the beam discharge plasma in molecular hydrogen. [T, H_2]

O L. Wolniewicz and K. Dressler : J. Mol. Spectrosc. 96, 195-199 (1982)
Electronic transition moments between excited singlet states of the H_2 molecule. [T, H_2]

O L. Wolniewicz and K. Dressler : J. Chem. Phys. 82, 3292-3299 (1985)
The EF, GK, and HH $^1\Sigma_g^+$ states of hydrogen. Improved ab initio calculation of vibrational states in the adiabatic approximation. [T, H_2]

O L. Wolniewicz and K. Dressler : J. Chem. Phys. 88, 3861-3870 (1988)
The $B^1\Sigma_u^+$, $B'^1\Sigma_u^+$, $C^1\Pi_u$, and $D^1\Pi_u$ states of the H_2 molecules. Matrix elements of angular and radial nonadiabatic coupling and improved ab initio potential energy curves. [T, H_2]

EX J. M. Woolsey, J. L. Forand and J. W. McConkey : J. Phys. B19, L493-L497 (1986) Z
Lyman-alpha revisited. [E, H_2; 100 eV]

O E. Xu, A. P. Hickman, R. Kachru, T. Tsuboi and H. Helm : Phys. Rev. A40, 7031-7038 (1989)
Photoelectron spectroscopy of vibrationally excited H_2 (E, F $^1\Sigma_g^+$).
[E, $h\nu$, H_2]

A I. S. Yelets and A. K. Kazansky : 13th ICPEAC, Brighton 287-287 (1983)
Semiclassical calculations of dissociative attachment in collisions of electrons with H_2, HD, D_2. [T, H_2, HD, D_2]

EX A. N. Zavilopulo, A. V. Snegurskii and O. B. Shpenik : JETP Lett. 31, 11-15 (1980)
Resonaces during electronic excitations of molecular metastable levels.
[E, H_2, N_2, O_2; 8 - 18 eV for three molecules]

EX P. W. Zetner and S. Trajmar : 15th ICPEAC, Brighton 307-307 (1987)
Electron impact excitation cross sections for molecular electronic states at low energies.
[E, H_2, N_2, CO, CO_2; 10 - 15 eV, 7 - 127°, example is N_2 at 13 eV]

O C. W. Zucker and E. E. Eyler : J. Chem. Phys. 85, 7180-7183 (1986)
Photodissociation cross sections from the E, F state of H_2. [T, $h\nu$, H_2]

I R. W. Zurales and R. R. Lucchese : Phys. Rev. A37, 1176-1184 (1988)
Differential cross sections for the electron impact ionization of molecular hydrogen in the distorted-wave Born approximation. [T, H_2]

References for H_2, HD, D_2 and T_2 (1900 - 1979)

(Hydrogen, Deuterium hydride, Deuterium, Tritium)

E	: Elastic collision,	R	: Rotational excitation,
V	: Vibrational excitation,	EX	: Electronic excitation,
D	: Dissociation,	I	: Ionization,
A	: Attachment,	QT	: Grand total cross section,
S	: Swarm,	α	: Ionization coefficient,
O	: The others,	[ ]	: Additional informations, E : Exp., T : Theory.

The oldest paper in this list is given by J.S.Townsend (1901).

α R.E.Aamodt : Phys.Fluids 6, 446-449 (1963)
Model of an electrical discharge in a neutral gas. [T, H_2]

R R.A.Abram and A.Herzenberg : Chem.Phys.Lett. 3, 187-190 (1969)
Rotational excitation of H_2 by slow electrons. [T, H_2]

I B.Adamczyk, A.J.H.Boerboom, B.L.Schram and J.Kistemaker : J.Chem.Phys. 44, 4640-4642 (1966)・Z
Partial ionization cross sections of He, Ne, H_2 and CH_4 for electrons from 20 to 500 eV. [E, H_2, He, Ne, CH_4]

O M.N.Adamov and V.D.Ob'yedkov : Opt.Spectrosc. 21, 58-58 (1966)
Quadrupole and polarization potentials of the hydrogen molecule.
[T, H_2]

O P.Agostini, M.Lu Van and G.Mainfray : Phys.Lett. 36A, 21-22 (1971)
Multiphoton ionization and dissociation of the hydrogen molecule at 1.06 μ. [E, hν, H_2]

O J.D.Alemar-Rivera and A.L.Ford : J.Mol.Spectrosc. 67, 336-359 (1977)
Nonadiabatic effects in the B, C and E, F states of HD. [T, H_2, HD]

I N.I.Alinovskii, Yu.E.Nesterikhin and B.K.Pakhtusov : Sov.Phys.Tech.Phys. 14, 96-98 (1969)・
Mean for ionization cross sections of neutral beams by electrons with a Maxwellian velocity distribution. [T, H_2, D_2, N_2, O_2, H, Ne - Kr]

A M.Allan and S.F.Wong : Phys.Rev.Lett. 41, 1791-1794 (1978)・
Effect of vibrational and rotational excitation on dissociative attachment in hydrogen. [E, H_2]

O H.S.Allen : Proc.Roy.Soc.London A106, 69-82 (1924)
The band spectrum of hydrogen. [E, hν, H_2]

O W.P.Allis and S.C.Brown : Phys.Rev. 87, 419-424 (1952)
High frequency electrical breakdown of gases. [T, H_2]

O A. C. Allison : Chem. Phys. Lett. 3, 371-373 (1969a)
Quasi-bound states in H_2. [T, H_2]

O A. C. Allison and A. Dalgarno : Atomic Data 1, 91-102 (1969b)
Photodissociation of vibrationally excited H_2, HD, and D_2 by absorption into the continua of the Lyman and Werner systems. [T, $h\nu$, H_2, HD, D_2]

O A. C. Allison and A. Dalgarno : Atomic Data 1, 289-304 (1970a)
Band oscillator strengths and transition probabilities for the Lyman and Werner systems of H_2, HD, and D_2. [compilation, H_2, HD, D_2]

O A. C. Allison and A. Dalgarno : Mol. Phys. 19, 567-572 (1970b)
Isotope effects in the Lyman and Werner system of molecular hydrogen.
[T, H_2, HD, D_2; see J. Geiger (1969)]

O A. C. Allison and A. Dalgarno : J. Chem. Phys. 55, 4342-4344 (1971)
Continuity at the dissociation threshold in molecular absorption.
[T, H_2, O_2]

EX R. J. Anderson, J. Watson, Jr. and F. A. Sharpton : J. Opt. Soc. Am. 67, 1641-1643 (1977)
Electron impact excitation of the $G^1\Sigma_g^+$ state of H_2. [E, H_2]

EX H. Anton : Ann. Phys. 16, 17-29 (1965)
Zur Lumineszenz einiger Molekulgase bei Anregung durch schnelle Elektronen.
[E, H_2, D_2, N_2, CO; 50 keV]

O S. Arai : Sci. Rep. Tohoku Univ. 18, 6-12 (1959)
Energy losses of electrons passing through gases hydrogen, oxygen, air, carbon dioxide, methane and acetylene.
[E, H_2, O_2, $N_2 + O_2$, CO_2, CH_4, C_2H_2; 20 keV]

R R. W. B. Ardill and W. D. Davison : Proc. Roy. Soc. London A304, 465-477 (1968)
Exchange effects in the rotational excitation of molecular hydrogen by slow electrons. [T, H_2; exchange interaction]

E F. L. Arnot : Proc. Roy. Soc. London A133, 615-636 (1931)
The diffraction of electrons in gases.
[E, H_2, N_2, CO, CH_4, Ne - Xe; DCS, 30 - 800 eV]

E A. M. Arthurs and A. Dalgarno : Proc. Roy. Soc. London A256, 540-551 (1960)
The theory of scattering by rigid rotator. [T, general theory]

O L. Asbrink : Chem. Phys. Lett. 7, 549-552 (1970)
Photoelectron spectrum of H_2. [E, $h\nu$, H_2; 15.5 - 18.3 eV]

O. Ashihara : ISAS Report No. 530, Tokyo 1-18 (1975)
The electron energy loss rates by polar molecules. [T, H_2, CO,

S V. M. Atrazhev and I. T. Yakubov : J. Phys. D10, 2155-2163 (1977)
The electron drift velocity in dense gases. [T, H_2, He, Ar, N_2, CH_4]

α T. L. R. Ayres : Phil. Mag. 45, 353-368 (1923)
The ionization by collision of hydrogen, nitrogen, and argon.
[E, H_2, N_2, Ar]

O M. Bacal and G. W. Hamilton : Phys. Rev. Lett. 42, 1538-1540 (1979)
H^- and D^- production in plasmas. [E, H_2, D_2]

EX C. Backx : PhD Thesis, Amsterdam 1-106 (1975b)
Dipole excitation and fragmentation of H_2, HD, D_2, and CH_4.
[E, H_2, HD, D_2, CH_4]

EX C. Backx, G. R. Wight and M. J. van der Wiel : J. Phys. B9, 315-331 (1976)
I Oscillator strength (10 - 70 eV) for absorption, ionization, and dissociation in H_2, HD and D_2, obtained by an electron-ion coincidence method. [E, H_2, HD, D_2]

O H. Baerwald : Ann. Phys. 76, 829-848 (1925)
Elektronenreflexion in Gasen. (Untersuchung von Wasserstoff). [E, H_2]

S V. A. Bailey : Phil. Mag. 9, 560-567 (1930a)
The behaviour of electrons in magnetic fields. [T and E, H_2]

S V. A. Bailey : Phil. Mag. 9, 625-629 (1930b)
The behaviour of electrons in magnetic fields. [T and E, H_2]

P. Baille and J. W. Darewych : 10th ICPEAC, Paris I, 502-503 (1977a)·
Electron-molecule scattering at middle energies using different local exchange potentials. [T, H_2]

E P. Baille and J. W. Darewych : J. Phys. B10, L615-L621 (1977b)·
R Comparison of local exchange potentials for electron scattering by hydrogen molecules. [T, H_2; 0.136 - 19.6 eV, DCS at 10 eV]

EX P. Baltayan and O. Nedelec : J. Physique 36, 125-133 (1975)·
Relative intensities and polarizations in H_2 rotational lines excited by electron impact. [E, H_2]

EX P. Baltayan and O. Nedelec : J. Quant. Spectrosc. Radia. Transf. 16, 207-211 (1976)
Excitation of the 3p $^3\Pi_u$ level of H_2 by electron impact : Pressure effects. [E, H_2; th. - 100 eV, emission c. s.]

O G. A. Baraff and S. J. Buchsbaum : Phys. Rev. 130, 1007-1019 (1963)
Anisotropic electron distribution and the dc and microwave avalanche breakdown in hydrogen. [T, H_2]

O J. Baran and W. Kolos : J. Mol. Spectrosc. 8, 121-125 (1962)
Vibrational constants for the ground state of the hydrogen molecule.
[T, H_2; PA 65-12314]

E M. Barat, J. Baudon et S. Bliman : J. Physique 28, 363-376 (1967)・
Les resonances dans les collisions atomiques. I. Resonances elastiques electrons-atomes, electrons-molecules.
(Resonances in atomic collisions. I. Elastic electron-atom, electron-molecule resonances.) [review]

V J. N. Bardsley, A. Herzenberg and F. Mandl : Proc. Phys. Soc. London 89, 305-319 (1966a)
Electron resonances of the H_2^- ion. [T, H_2]

V J. N. Bardsley, A. Herzenberg and F. Mandl : Proc. Phys. Soc. London 89, 321-340
A (1966b)
Vibrational excitation and dissociative attachment in the scattering of electron by hydrogen molecules. [T, H_2]

V J. N. Bardsley and F. H. Reid : Chem. Phys. Lett. 2, 333-336 (1968a)
Predicted angular distribution for resonant scattering of electrons by molecules. [T, H_2, N_2, CO, NO, O_2, CO_2, C_2H_2, C_6H_6]

V J. N. Bardsley and F. Mandl : Rep. Prog. Phys. 31, 471-531 (1968b)
Resonant scattering of electrons by molecules.
[review, H_2, HD, D_2, N_2, CO, C_6H_6, NO, O_2, H_2O]

A J. N. Bardsley and J. S. Cohen : J. Phys. B11, 3645-3654 (1978)
Variational calculation of resonant states of H_2^-. [T, H_2]

A J. N. Bardsley and J. M. Wadehra : Phys. Rev. A20, 1398-1405 (1979a) Z
V Dissociative attachment and vibrational excitation in low-energy collisions of electrons with H_2 and D_2. [T, H_2, D_2]

V J. N. Bardsley : in Electron-Molecule and Photon-Molecule Collisions, Plenum
A 267-280 (1979b)
Molecular resonance phenomena.
[review, H_2, N_2, O_2, NO, HCl, F_2, Cl_2, I_2]

A. D. Barlas, W. Rueckner and H. F. Wellenstein : Phil. Mag. 36, 201-207 (1977)・
High energy electron impact spectroscopy measurement on the Compton defect. [T, H_2, D_2, He]

α S. F. Barna, D. Edelson and K. B. McAfee : J. Appl. Phys. 35, 2781-2782 (1964)
First Townsend ionization coefficients in hydrogen and deuterium.
[E, H_2, D_2]

O R. G. Barnes, P. J. Bray and N. F. Ramsey : Phys. Rev. 94, 893-902 (1954)
Variations of hydrogen rotational magnetic moments with rotational quantum number and with isotopic mass. [E, $h\nu$, H_2, D_2]

S A. Bartels : Phys. Rev. Lett. 28, 213-215 (1972)
Pressure dependence of electron drift velocity in hydrogen at 77.8°K.
[E, H_2]

S A. Bartels : Appl. Phys. 8, 59-64 (1975)
Density dependence of electron drift velocities in helium and hydrogen at 77.6 K. [E, H_2, He]

I K. Batabyal, A. K. Barua and B. N. Srivastava : Indian J. Phys. 39, 219-226 (1965)
Ionization cross-section of atoms and molecules by electron impact.
[T, H_2, N_2, O_2, He - Xe, CO, CH_4, etc.]

EX D. R. Bates, A. Fundaminsky, H. S. W. Massey and J. W. Leech : Phil. Trans. Roy. Soc.
I London 243A, 93-143 (1950)
Excitation and ionization of atoms by electron impact. The Born and Oppenheimer approximations. Part I and Part II.
[T, H, He, Ne, Na, Hg, no H_2] ?

I E. Bauer and C. D. Bartky : J. Chem. Phys. 43, 2466-2476 (1965a)
Calculation of inelastic electron-molecule collision cross sections by classical methods. [T, H_2, He, N_2, NO, O_2, CO, C_2H_2]

I E. Bauer and C. D. Bartky : Philco Report No. U-2943, California 1-116 (1965b)
Calculation of inelastic electron-atom and electron-molecule collision cross sections by classical methods. [T, H_2, N_2, CO, etc.]

I N. Bauer and J. Y. Beach : J. Chem. Phys. 15, 150-151 (1947)
Differences in mass spectra of H_2 and D_2. [E, H_2, D_2; 30 - 100 eV]

S E. C. Beaty, J. Dutton and L. C. Pitchford : JILA Information Center Report No. 20, 1-240 (1979)
A bibliography of electron swarm data. [compilation]

O K. H. Becker and E. H. Fink : Z. Naturforsch. 26a, 319-320 (1971)
Relative line intensities in the Lyman bands of HD and H_2.
[E, $h\nu$, H_2, HD]

E B. Bederson and L. J. Kieffer : Rev. Mod. Phys. 43, 601-640 (1971)·
QT Total electron-atom collision cross sections at low energies —
A critical review.
[review, H_2, N_2, O_2, H, He - Xe, Li - Cs, Cd, Hg, N, O, etc.]

Z. N. Begun and Z. H. Khan : Bulg. J. Phys. 23, 27-36 (1965)
Some modifications in the Glauber theory for electron-atom and electron-molecule scattering. [T, H_2, He, Li]

S G. Bekefi and S. C. Brown : Phys. Rev. 112, 159-164 (1958)
Collision cross section and energy loss of slow electrons in hydrogen.
[E, H_2; momentum transfer c. s.]

D A. T. Bell : Indust. Eng. Chem. Fundam. 11, 209-215 (1972)·
O A model for the dissociation of hydrogen in an electric discharge.
[, H_2]

O K. L. Bell, A. E. Kingston and W. A. McIlveen : J. Phys. B8, 659-664 (1975)
The free-free absorption coefficient of the negative ion of molecular hydrogen. [T, H_2; 0.1 - 10 eV]

S M. J. Bell and M. D. Kostin : Phys. Rev. 169, 150-155 (1968)
Transport coefficients and energy distributions of electrons in gases. [T, H_2, N_2, He]

O S. W. Bennett, J. B. Tellinghuisen and L. F. Phillips : J. Phys. Chem. 75, 719-721 (1971)
Absorption coefficients and ionization yields of some small molecules at 58.4 nm. [E, H_2, He, Ar, N_2, O_2, CO, NO, N_2O, H_2O, CO_2, NH_3, CH_4, C_2H_6, CH_3OH, C_2H_5OH, etc.]

S W. H. Bennett and L. H. Thomas : Phys. Rev. 62, 41-47 (1942a)
Mobilities in some free electron gases. [E and T, H_2, D_2, N_2, H_2 + N_2, H_2 + Ne]

S W. H. Bennett : Phys. Rev. 62, 369-371 (1942b)
Mobilities in nitrogen at high current densities. [E, H_2 + N_2, N_2]

E R. O. Berger, T. F. O'Malley and L. Spruch : Phys. Rev. 137, A1068-A1075 (1965)
Extrapolation of cross-section data to zero energy for long-range effective potentials. [T, general theory]

I J. Bergeron and S. Collin-Souffrin : Astron. Astrophys. 25, 1-8 (1973)
Secondary electrons and energy per ion-pair in a thermal gas for electron, proton and X-ray ionization. [T, H_2]

O J. Berkowitz, H. Ehrhardt and T. Tekaat : Z. Phys. 200, 69-83 (1967a)
Spektren und Winkelverteilungen der Photoelektronen von Atomen und Molekulen. [E, $h\nu$, H_2, N_2, Kr, O_2, CO, NO, CH_4, C_2H_6, C_3H_8, n-C_4H_{10}]

O J. Berkowitz and W. A. Chupka : 5th ICPEAC, Leningrad 608- (1967b)
High-resolution photoionization and mass analysis of small molecules. [E, $h\nu$, H_2,]

O J. Berkowitz and W. A. Chupka : J. Chem. Phys. 51, 2341-2354 (1969)
Photoelectron spectroscopy of autoionization peaks. [E, $h\nu$, H_2, N_2]

O J. Berkowitz and R. Spohr : J. Elect. Spectrosc. Relat. Phenom. 2, 143-152 (1973)
Comparison of photoelectron intensities and Franck-Condon factors in the photoionization of H_2, HD and D_2. [E, $h\nu$, H_2, HD, D_2]

S M. J. Bernstein : Phys. Rev. 127, 335-341 (1962a)
Electron drift and diffusion measurements in H_2 and D_2 with crossed electric and strong magnetic fields. [E, H_2, D_2]

α M. J. Bernstein : Phys. Rev. 127, 342-345 (1962b)
Townsend ionization coefficient for hydrogen in a transverse strong magnetic field. [E, H_2]

O H. Beutler und H.-O. Junger : Z. Phys. 101, 285-303 (1936)
Pradissoziation und Autoionisierung in den Termfolgen des Wasserstoff-(H_2-) Spektrums. [E, $h\nu$, H_2]

O K. O. Beyer und K. H. Welge : Z. Naturforsch. 19a, 19-28 (1964)
Photodissoziationen von H_2, N_2, O_2, NO, CO, H_2O, CO_2, und NH_3 im extremen Vakuum-UV. [E, $h\nu$, H_2, N_2, O_2, NO, CO, H_2O, CO_2, NH_3]

O K. O. Beyer und K. H. Welge : Z. Naturforsch. 22a, 1161-1170 (1967)
Photodissoziation zu elektronisch angeregten Bruchstucken von H_2, H_2O, und NH_3 im extremen Vakuum-UV. II. [E, $h\nu$, H_2, H_2O, NH_3; 645 - 1500 A]

O J. D. Beynon : Nature 207, 405-405 (1965)
An experimental determination of the photo-ionization cross-section of atomic hydrogen. [E, $h\nu$, H_2, H; 850.6 A]

O J. D. Beynon : Proc. Phys. Soc. London 89, 59-61 (1966)
Further measurements of the photoabsorption cross section of atomic hydrogen. [E, $h\nu$, H_2, H; at 840 and 826 A]

E P. K. Bhattachayya and A. S. Ghosh : Phys. Rev. A12, 480-485 (1975)
Elastic scattering of electrons by hydrogen molecules using the eikonal approximation. [T, H_2; DCS, 9.4 - 100 eV]

R P. K. Bhattachayya and A. S. Ghosh : Phys. Rev. A14, 1587-1590 (1976)
Application of the eikonal amplitude to rotational excitations of diatomic molecules by electron impact. [T, H_2; J = 1→3, 40 eV]

O D. K. Bhattacharyya and L.-Y. C. Chiu : J. Chem. Phys. 67, 5727-5734 (1977)
Theoretical radiative lifetime of the metastable $c^3\Pi_u$ state of H_2.
[T, H_2]

E P. K. Bhattachayya, K. K. Goswami and A. S. Ghosh : Phys. Rev. A18, 1865-1877 (1978)
R Elastic and pure rotational excitation of the hydrogen molecule by intermediate-energy electrons. [T, H_2]

M. A. Biondi : in Advances in Electronics and Electron Physics, Vol. 18, Academic Press 67-165 (1963)·
Atomic collisions involving low energy electron and ions.
[review, H_2, H, O, He, Ar - Xe, N_2, O_2, H_2O, CO_2, N_2O, NH_3, SF_6; ref. 253]

O G. Birnbaum : J. Quant. Spectrosc. Radiat. Transf. 19, 51-62 (1978)
Far-infrared absorption in H_2, and H_2 - He mixtures.
[E, $h\nu$, H_2, H_2 + He; 20 - 900 cm^{-1}, 77.4 - 292 K]

O D. M. Bishop and S.-K. Shih : J. Chem. Phys. 64, 162-169 (1976)
An effective Schrodinger equation for the rovibronic energies of H_2 and D_2. [T, H_2, D_2]

?

I E. S. Bishop : Phys. Rev. 33, 325-353 (1911)
An absolute determination of the minimum ionizing energy of an electron, and the application of the theory of ionization by collision to mixtures of gases. [, H_2

O J. H. Black and A. Dalgarno : Astrophys. J. 203, 132-142 (1976)
Interstellar H_2 : The population of excited rotational states and the infrared response to ultraviolet radiation.
[T, H_2; lifetimes τ (v, J), v = 0 - 14, J = 0 - 10]

EX P. M. S. Blackett und J. Franck : Z. Phys. 34, 389-401 (1925)
Anregung von Spektren des Wasserstoffs durch Elektronenstoss.
[, H_2]

α H. A. M. Blasberg and F. J. de Hoog : Physica 54, 468-472 (1971)
Measurements of the primary ionization coefficient in H_2. [E, H_2]

I W. Bleakney : Phys. Rev. 35, 1180-1186 (1930)
The ionization of hydrogen by single electron impact. [E, H_2]

O W. Bleakney : Phys. Rev. 40, 496-501 (1932)
The ionization potential of molecular hydrogen. [E, H_2; 15.37 $\pm$ 0.03 eV]

α H. A. Blevin, S. C. Haydon and J. M. Somerville : Nature 179, 38-39 (1957a)
Effect of gaseous impurities on the first Townsend coefficient in hydrogen. [E, H_2]

α H. A. Blevin and S. C. Haydon : Aust. J. Phys. 10, 590-594 (1957b)
The theoretical evaluation of the Townsend coefficient α/p for hydrogen.
[T, H_2]

α H. A. Blevin and S. C. Haydon : Aust. J. Phys. 11, 18-34 (1958)
The Townsend ionization coefficients in crossed electric and magnetic fields. [T, H_2; H. A. Blevin : M. Sc. Thesis, U. New England (1956)]

O H. A. Blevin and S. C. Haydon : Proc. Phys. Soc. London 81, 490-492 (1963)
The interpretation of breakdown characteristics of electrodeless discharges in transverse magnetic fields. [T, H_2, Ar, $N_2 + O_2$]

S H. A. Blevin and M. Z. Hasan : Aust. J. Phys. 20, 735-739 (1967)
The measurement of electron drift velocities. [E, H_2; E/N = 36 - 150 Td]

S H. A. Blevin and H. M. P. Stock : J. Phys. D6, 1467-1476 (1973)
Prebreakdown current growth in crossed electric and magnetic fields at low gas pressures : II. Spatial growth of current. [E, H_2 only]

S H. A. Blevin, J. Fletcher, S. R. Hunter and L. M. Marzec : J. Phys. D9, 471-479 (1976a)
An experimental study of photons from a Townsend discharge in hydrogen.
[E, H_2]

S H. A. Blevin, J. Fletcher and S. R. Hunter : J. Phys. D9, 1671-1679 (1976b)
The electron drift velocity and longitudinal diffusion coefficient of an electron swarm in hydrogen at elevated swarm energies. [E, H_2]

S H. A. Blevin, J. Fletcher and S. R. Hunter : Aust. J. Phys. 31, 299-312 (1978a)
A Monte-Carlo simulation of the behaviour of electron swarms in hydrogen using an anisotropic scattering model. [T, H_2]

S H. A. Blevin, J. Fletcher and S. R. Hunter : J. Phys. D11, 1653-1665 (1978b)
The effect of non-uniformities on the measured transport parameters of electron swarms in hydrogen. [E, H_2]

S H. A. Blevin, J. Fletcher and S. R. Hunter : J. Phys. D11, 2295-2303 (1978c)
α Measurement of the transverse diffusion and Townsend's first ionisation coefficients from the observation of the photon flux produced in a Townsend discharge in molecular hydrogen. [E, H_2]

S H. A. Blevin, J. Fletcher and S. R. Hunter : 5th ICGD, Liverpool 256-258 (1978d)
The study of photons from an electron drift tube. [E, H_2,

R H. Boersch, J. Geiger and M. Topschowsky : Phys. Lett. 17, 266-267 (1965)・
Rotational structure in the energy loss spectrum of H_2.
[E and T, H_2; 30 keV]

I L. G. J. Boesten, H. G. M. Heideman, F. D. Schowengerdt, D. E. Golden and S. Ormonde : Phys. Lett. 50A, 144-146 (1974)・
H_2^- formation in electron impact ionization of H_2 near threshold.
[E, H_2]

D I. P. Bogdanova, G. V. Efremova and V. I. Yakovleva : Opt. Spectrosc. 47, 17-18 (1979)・
Mechanism of the dissociation of the hydrogen molecule by electron collision. [E, H_2; 16 - 90 eV]

D R. F. Bojkova : Vestn. Leningr. Univ. Ser. Fiz. Khim. 2, 31-35 (1977)
Dissociation of vibrationally excited two-atomic molecules by electron impact. [, H_2,

A. Boksenberg : Thesis, University of London 1-127 (1962)
Electron collision processes in dissociated molecular gases. [, H_2,

E R. A. Bonham and T. Iijima : J. Phys. Chem. 67, 2266-2272 (1963)
QT The theory of electron scattering from molecules. II. Molecular hydrogen.
[T, H_2; DCS]

O P. Borrell, P. M. Guyon and M. Glass-Maujean : J. Chem. Phys. 66, 818-827 (1977)
H_2 and D_2 photon impact predissociation. [E, $h\nu$, H_2, D_2]

EX N. Bose : J. Phys. B11, L83-L85 (1978a)
Excitation function of $a^3\Sigma_g^+ \rightarrow b^3\Sigma_u^+$ light emission in H_2 measured by monoenergetic electrons. [E, H_2; th. - 16 eV]

EX N. Bose : J. Phys. B11, L309-L312 (1978b)
Direct coincidence detection of two D(2p) dissociation products from a doubly excited state of D_2. [E, D_2]

EX N. Bose and F. Linder : J. Phys. B12, 3805-3817 (1979a)・
Threshold excitation in H_2 and D_2 by electron impact and predissociation of triplet states measured by electron-photon coincidences. [E, H_2, D_2]

EX N. Bose and F. Linder : Sympo. on Electron-Molecule Collisions, Tokyo 179-186 (1979b)
Threshold excitation in H_2 and D_2 by electron impact and pre-dissociation of triplet states measured by electron-photon coincidences. [E, H_2, D_2]

I C. Bottcher and K. Docken : J. Phys. B7, L5-L8 (1974a)
Autoionizing states of the hydrogen molecules. [T, H_2; e and hν]

I C. Bottcher : J. Phys. B7, L352-L357 (1974b)
Dissociative ionization of the hydrogen molecule. [T, H_2; e and hν]

O C. Bottcher : Proc. Roy. Soc. London A340, 301-322 (1974c)
Theory of dissociative recombination and related processes. [T, H_2]

A C. Bottcher and B. D. Buckley : J. Phys. B12, L497-L500 (1979)·
Dissociative electron attachment to the metastable $c^3\Pi_u$ state of molecular hydrogen. [T, H_2; see B. D. Buckley (1977)]

I F. Bottiglioni, J. Coutant and M. Fois : Phys. Rev. A6, 1830-1843 (1972)·
Ionization cross sections for H_2, N_2 and CO_2 clusters by electron impact. [E, clusters of H_2, N_2, CO_2; number of molecules per cluster is 10^2 - 10^5]

I R. L. F. Boyd and G. W. Green : Proc. Phys. Soc. London 71, 351-356 (1958)
Electron ionization cross sections using chopped beams.
[E, H_2, He; th. - 256 eV]

O N. E. Bradbury : Phys. Rev. 40, 980-987 (1932)·
Photoelectric currents in gases between parallel plates as a function of the potential difference. [E, H_2, N_2]

S N. E. Bradbury and R. A. Nielsen : Phys. Rev. 49, 388-393 (1936)
Absolute values of the electron mobility in hydrogen. [E, H_2]

O D. Bradley and S. M. A. Ibrahim : Combust. Flame 27, 353-362 (1976)
Electron-gas energy exchanges in a. c. fields and their relevance in lasers.
[, H_2

S G. L. Braglia and V. Dallacasa : Phys. Rev. A18, 711-717 (1978)
Theory of the density dependence of electron drift velocity in gases.
[T, H_2, N_2, He, Ar]

O P. J. Brannon, C. H. Church and C. W. Peters : J. Mol. Spectrosc. 27, 44-54 (1968)
Electric field induced spectra of molecular hydrogen, deuterium and deuterium hydride. [E, hν, H_2, D_2, HD]

EX C. J. Brasefield : Phys. Rev. 34, 431-437 (1929)
The densities of hydrogen spectral lines as a function of the electronic velocity of excitation. [E, H_2; 19 - 220 eV]

S J. M. Breare and A. von Engel : 6th ICIPG, Paris 1, 317-319 (1963)
A new method of measuring electron drift velocities. [E, H_2]

S J. M. Breare and A. von Engel : Proc. Roy. Soc. London A282, 390-402 (1964)
Locating electron swarms in hydrogen by far ultra-violet signals.
[E, H_2]

O H. Bredohl and G. Herzberg : Can. J. Phys. 51, 867-887 (1973)
The Lyman and Werner bands of deuterium. [E, $h\nu$, D_2]

O B. Brehm und R. Frey : Z. Naturforsch. 26a, 523-526 (1971)
Rotationsstruktur im 21. 22 eV Photoelektronenspektrum von H_2.
[E, $h\nu$, H_2]

I B. Brehm and G. De Frenes : Int. J. Mass Spectrom. Ion Phys. 26, 251-266 (1978)
Investigation of ion pairs from fast decay processes of doubly-charged molecular ions. [E, H_2, N_2, O_2, CO, NO; th. - 10^3 eV]

V E. L. Breig and C. C. Lin : J. Chem. Phys. 43, 3839-3845 (1965)
Vibrational excitation of diatomic molecules by electron impact.
[T, H_2, N_2, CO; 1.5 - 10 eV for H_2]

V E. L. Breig : Thesis, University of Oklahoma, Norman 1-209 (1966)
A study of vibrational excitation of molecules and transitions between the spin-multiplets of atomic oxygen induced by electron collision.
[, H_2, N_2, CO,

I C. Breton : Compt. Rend. Acad. Sci. 258, 3648-3651 (1964)
Role de la dissociation dans les phenomenes d'ionisation de l'hydrogene dans une decharge pulsee.
(Role of dissociation in hydrogen ionization phenomena in a pulsed discharge.) [, H_2]

O N. J. Bridge and A. D. Buckingham : Proc. Roy. Soc. London A295, 334-349 (1966)
The polarization of laser light scattered by gases.
[E, $h\nu$, H_2, D_2, N_2, O_2, CO, NO, HCl, Cl_2, CO_2, N_2O, SO_2, NH_3, C_2H_6, C_2H_4, C_2H_2, c-C_3H_6, C_6H_6, CH_3OH, CH_2F_2, etc.]

I D. D. Briglia and D. Rapp : Phys. Rev. Lett. 14, 245-247 (1965a)
Ionization of the hydrogen molecule by electron impact near threshold.
[E, H_2]

I D. D. Briglia and D. Rapp : J. Chem. Phys. 42, 3201-3213 (1965b)
Ionization of H_2 by electron impact near threshold. [E, H_2]

I D. D. Briglia, P. Englander-Golden and D. Rapp : J. Chem. Phys. 42, 4081-4085 (1965c)
Cross sections for dissociative ionization of molecules by electron impact. [E, H_2, D_2, N_2, CO, NO, O_2, CO_2, N_2O, CH_4; th. - 1000 eV]

I D. D. Briglia and D. Rapp : Rev. Sci. Instrum. 36, 1259-1260 (1965d)
Electron collision cross section plotter. [E, HD; th. - 160 eV]

QT R. B. Brode : Phys. Rev. 25, 636-644 (1925)
The absorption coefficient for slow electrons in gases.
[E, H_2, N_2, He, Ar, CO, CH_4; 2 - 360 eV]

QT R. B. Brode : Rev. Mod. Phys. 5, 257-279 (1933)・
The quantitative study of the collisions of electrons with atoms.
[review, H_2, He - Xe, Na - Cs, Zn, N_2, CO, O_2, CO_2, N_2O]

O J. E. Brolley, L. E. Porter, R. H. Sherman, J. K. Theobald and J. C. Fong : J. Geophys. Res. 78, 1627-1632 (1973)
Photoabsorption cross sections of H_2, D_2, N_2, O_2, Ar, Kr, and Xe at the 584-A line of neutral helium. [E, $h\nu$, H_2, D_2, N_2, O_2, Ar - Xe]

O P. R. Brooks, W. Lichten and R. Reno : Phys. Rev. A4, 2217-2223 (1971)
Metastable hydrogen molecules. Ⅲ. Hyperfine structure of orthohydrogen.
[E, H_2; see W. Lichten (1960), (1962)]

S H. L. Brose and F. H. Saayman : Ann. Phys. 5, 797-852 (1930)・
Uber Querschnittsmessungen an Nichtedelgasmoleculen durch langsame Elektronen. [E, H_2, N_2, O_2, CO, CO_2, C_5H_{12}, C_2H_4, N_2O]

O J. C. Browne : J. Chem. Phys. 40, 43-46 (1964)
Some excited states of the hydrogen molecule. I. $^1\Pi_u(1s2p\Pi)$ and $^3\Pi_u(1s2p\Pi)$. [T, H_2]

O J. C. Browne : Phys. Rev. 138, A9-A11 (1965)
Quantum mechanical potential energy curves for the $^1\Pi_u$ and $^3\Pi_u$ states of He_2 and the $^1\Pi_g$ and $^3\Pi_g$ states of H_2. [T, H_2, He_2]

O J. C. Browne : Astrophys. J. 156, 397-398 (1969)・
Electronic transition moments for the Lyman band of H_2. [T, H_2]

O R. Browning and J. Fryar : J. Phys. B6, 364-371 (1973)
Dissociative photoionization of H_2 and D_2 through the $1s\sigma_g$ ionic state.
[T, $h\nu$, H_2, D_2]

QT E. Bruche : Ann. Phys. 81, 537-571 (1926)
Uber den Querschnitt von Wasserstoff- und Stickstoffmolekulen gegenuber langsamen Elektronen. [E, H_2, N_2, Ne; 1 - 36 eV]

QT E. Bruche : Ann. Phys. 82, 912-946 (1927)
Uber den Querschnitt von Wasserstoff- und Stickstoffmolekulen gegenuber langsamen Elektronen. [E, H_2, N_2; 1 - 49 eV]

S H. Brunet and P. Vincent : J. Appl. Phys. 50, 4700-4707 (1979)・
Predicted electron-transport coefficients at high E/N values. I. Hydrogen.
[T, H_2; cross section set for H_2]

O A. D. Buckingham, R. L. Disch and D. A. Dunmur : J. Am. Chem. Soc. 90, 3104-3107 (1968)
The quadrupole moments of some simple molecules.
[E, H_2, N_2, O_2, C_2H_6, C_2H_4, CS_2, CO_2, N_2O, CO]

E B. D. Buckley and P. G. Burke : J. Phys. B10, 725-739 (1977a)
R The scattering of low-energy electrons by diatomic molecules.
[T, N_2; no data for H_2]

V B. D. Buckley and C. Bottcher : J. Phys. B10, L635-L640 (1977b)
O Feshbach projection-operator calculation of the resonant states of H_2^-.
[T, H_2]

B. D. Buckley, P. G. Burke and L. Vo Ky : Comput. Phys. Comm. 17, 175-179 (1979)
R-matrix calculations for electron-molecule scattering. [

O H. L. Buijs and H. P. Gush : Can. J. Phys. 49, 2366-2375 (1971)
Static field induced spectrum of hydrogen. [E, $h\nu$, H_2]

O J. F. Bukta and W. J. Meath : Mol. Phys. 25, 1203-1215 (1973)
Long range interaction energies between ground and first excited hydrogen atoms using a one centre method.
[T, H(1s) - H(2p) interaction]

E E. C. Bullard and H. S. W. Massey : Proc. Roy. Soc. London A133, 637-651 (1931)
The elastic scattering of slow electrons in gases. II.
[E, H_2, N_2, He - Ar, Hg, CH_4; DCS, 4 - 40 eV for H_2]

O S. M. Bunch, G. R. Cook, M. Ogawa and A. W. Ehler : J. Chem. Phys. 28, 740-741 (1958)
Absorption coefficients of C_6H_6 and H_2 in the vacuum ultraviolet.
[E, $h\nu$, H_2, C_6H_6]

O P. R. Bunker : J. Mol. Spectrosc. 35, 306-313 (1970), Erratum 37, 197-197 (1971)
The effect of the breakdown of the Born-Oppenheimer approximation on the determination of B_e and ω_e for a diatomic molecule. [T, H_2, CO]

O P. R. Bunker : J. Mol. Spectrosc. 42, 478-494 (1972)
On the breakdown of the Born-Oppenheimer approximation for a diatomic molecule. [T, H_2, D_2, CO, HCl - HI]

O P. R. Bunker, C. J. McLarnon and R. E. Moss : Mol. Phys. 33, 425-429 (1977)
Application of the effective vibration-rotation hamiltonian to H_2 and D_2.
[T, H_2, D_2]

E P. G. Burke and A. L. Sinfailam : J. Phys. B3, 641-659 (1970)
Electron molecule interactions. II. Scattering by closed-shell diatomic molecules. [T, N_2; exchange interaction for many-electron linear target]

R P. G. Burke, I. MacKey and I. Shimamura : J. Phys. B10, 2497-2512 (1977a)·
V R-matrix theory of electron-molecule scattering. [T, general theory]

E P. G. Burke and J. F. Williams : Phys. Rep. 34, 325-369 (1977b)·
R Electron scattering by atoms and molecules.
V [review, T, H_2, H, Na, K, O, He, N_2, F_2, CH_4, KI]

E P. G. Burke : in Advances in Atomic and Molecular Physics, Vol. 15, Academic
R Press 471-506 (1979)
V Theory of low energy electron-molecules collisions. [T, H_2, N_2]

V P. D. Burrow and G. J. Schulz : Phys. Rev. 187, 97-105 (1969) ○
Vibrational excitation by electron impact near threshold in H_2, D_2, N_2 and CO. [E, H_2, D_2, N_2, CO]

EX K. Burrows and G. H. Dunn : Bull. Am. Phys. Soc. 13, 215-215 (1968)
Isotope effect in the dissociative excitation of $H_2(D_2)$.
[E, H_2, D_2]

EX M. Cacciatore, M. Capitelli and M. Dilonardo : Chem. Phys. 34, 193-204 (1978)
O A joint vibro-electronic mechanism in the dissociation of molecular hydrogen in non-equilibrium plasmas.
[T, H_2; $H_2(v) + e \rightarrow 2H + e$, th. - 28 eV]

EX P. Cahill, R. Schwartz and A. N. Jette : Phys. Rev. Lett. 19, 283-284 (1967)・
Polarization of light emitted from the excitation of H_2 by electron impact.
[E, H_2; 10 - 80 eV]

O P. Cahill : J. Opt. Soc. Am. 59, 875-876 (1969)
Determination of the lifetime of the $d^3\Pi_u$ state of H_2. [E, H_2]

O M. Capitelli, M. Dilonardo and E. Molinari : Chem. Phys. 20, 417-429 (1977)
A theoretical calculation of dissociation rates of molecular hydrogen in electrical discharges. [T, H_2]

EX M. Capitelli and M. Dilonardo : Z. Naturforsch. A34, 585-593 (1979)
O Electron energy distribution functions of hydrogen : The effect of superelastic vibrational collisions and of the dissociation process.
[T, H_2 + H; B. Eq., $H_2(v=1, 3) + e \rightarrow H_2(v=0) + e$, $H_2(v) + e \rightarrow 2H + e$]

O J. D. Carette et L. Kerwin : Can. J. Phys. 42, 2022-2026 (1964)
Etude experimentale du deuterium au moyen d'un selecteur d'electrons. (Experimental study of deuterium by means of an electron selector.)
[E, D_2]

O R. W. Carlson and W. R. Fenner : Astrophys. J. 178, 551-556 (1972)
Absolute Raman scattering cross-section of molecular hydrogen.
[E, $h\nu$, H_2; 4800 and 5145 A]

O T. A. Carlson and A. E. Jonas : J. Chem. Phys. 55, 4913-4924 (1971)
Angular distribution of the photoelectron spectra for Ar, Kr, Xe, H_2, N_2, and CO. [E, $h\nu$, H_2, N_2, CO, Ar - Xe]

EX B. L. Carnahan and E. C. Zipf : Phys. Rev. A16, 991-1002 (1977)・
Dissociative excitation of H_2, HD, and D_2 by electron impact.
[E, H_2, HD, D_2]

EX J. D. Carriere and F. J. de Heer : J. Chem. Phys. 56, 2993-2996 (1972)
Transmission properties of a LiF-O_2 filter for radiation resulting from electron impact on H_2 : Cross sections for Lyman-α radiation. [E, H_2]

R T. R. Carson : Proc. Phys. Soc. London A67, 909-916 (1954)
V The vibrational and rotational excitaion of molecular hydrogen by electron impact. [T, H_2; Born]

E C. Carter, N. H. March and D. Vincent : Proc. Phys. Soc. London 71, 2-16 (1958)
O X-ray and electron scattering by molecular hydrogen. [T, H_2]

EX D. C. Cartwright and K. Kuppermann : Phys. Rev. 163, 86-102 (1967)・
D Electron-impact excitation cross section for the two lowest triplet states of molecular hydrogen. [T, H_2; Ochkur-Rudge approxi.]

EX D. C. Cartwright : Thesis, California Inst. Tech., Pasadena 1-305 (1968)
The exchange excitation of helium and the hydrogen molecule by low energy electrons. [, H_2, He]

EX D. C. Cartwright, S. Trajmar, W. Williams and D. L. Huestis : Phys. Rev. Lett. 27, 704-707 (1971)○, Errata 27, 1485-1485 (1971)・
Selection rule for $\Sigma^+ \leftrightarrow \Sigma^-$ transitions in electron-molecule collisions. [T, general theory]

O J. K. Cashion : J. Chem. Phys. 45, 1663-1666 (1966)
Calculated ion-to-molecule-ion ratios for electron-bombardment studies of molecular hydrogen and its isotopes. [T, H_2, D_2, T_2, HD, HT, DT]

O V. Cermak : J. Chem. Phys. 44, 1318-1323 (1966)
Detection of long-lived excited states of molecules by Penning ionization. [E, H_2, CO, N_2, O_2, He - Ar]

O C. Chackerian, Jr. and L. P. Giver : Appl. Opt. 14, 1993-1996 (1975)
Measurement of weak ir absorption with a tunable laser : the hydrogen $S_2(1)$ line strength. [E, $h\nu$, H_2; 8604.2 cm^{-1}]

O C. Chackerian, Jr. and L. P. Giver : J. Mol. Spectrosc. 58, 339-343 (1975)
Density-dependent frequency shift of the $S_2(1)$ quadrupole line. [E, $h\nu$, H_2; 293 K]

N. Chandra and S. K. Joshi : in Advances in Astronomy and Astrophysics, Vol. 7, Academic Press 2-55 (1970)・
Scattering of electrons by diatomic molecules. [review of the theory]

E N. Chandra : J. Phys. B8, 1953-1958 (1975)
R On the relationship between the adiabatic-nuclei and the frame-
V transformation theories of e^- - molecule scattering. [general theory]

O N. Chandra : J. Phys. B10, L489-L492 (1977)
Selection rule for parity-unfavoured transitions in molecular photo-ionisation. [T, $h\nu$, H_2]

I S. Chandra, H. P. Mital and U. Narain : Physica C83, 384-388 (1976)・
Ionization cross sections and rate coefficients for atoms, ions and molecules. [empirical, H_2, N_2, O_2, CO, NO, Ar - Xe, Hg]

R E. S. Chang and A. Temkin : Phys. Rev. Lett. 23, 399-403 (1969)
Rotational excitation of diatomic molecules by electron impact. [T, H_2]

R E. S. Chang : Phys. Rev. A2, 1403-1406 (1970a)
Study of e - H_2 scattering near the rotational threshold. [T, H_2]

R E. S. Chang and A. Temkin : J. Phys. Soc. Jpn. 29, 172-179 (1970b)
Rotational excitation of diatomic molecular systems. II. H_2^+.
[T, H_2^+]

E E. S. Chang and U. Fano : Phys. Rev. A6, 173-185 (1972)
R Theory of electron-molecule collisions by frame transformations.
[T, general theory]

E E. S. Chang : Phys. Rev. A9, 1644-1655 (1974a)・
Elastic scattering of very slow electrons by molecules. [T, H_2, N_2, O_2]

R E. S. Chang : Phys. Rev. A10, 1911-1912 (1974b)
Scattering of electrons from H_2 near rotational threshold. [T, H_2]

R E. S. Chang : Phys. Rev. Lett. 33, 1644-1647 (1974c)・
V Comments on rotational and vibrational excitation of H_2 by electron impact. [T, H_2]

V E. S. Chang : Phys. Rev. A12, 2399-2401 (1975)・
New interpretation of resonances in H_2^-. [T, H_2; 11 - 13 eV resonances]

R E. S. Chang and S. F. Wong : 10th ICPEAC, Paris I, 120-121 (1977a)・
V Isotope effects in molecular scattering by electrons. [T, H_2]

R E. S. Chang and S. F. Wong : Phys. Rev. Lett. 38, 1327-1330 (1977b)・
V Isotope effects in molecular scattering by electrons.
[T, H_2, D_2, T_2, HD, HT, DT]

O E. S. Chang : J. Phys. B11, L69-L74 (1978)
Angular distributions of photoelectrons with analysis on the rotational states of H_2. [T, $h\nu$, H_2]

V T. N. Chang, R. T. Poe and P. Ray : Phys. Rev. Lett. 31, 1097-1099 (1973)・
Glauber-theory approach for molecular vibrational excitations.
[T, H_2 only; DCS, 20 - 81.6 eV]

α L. M. Chanin and G. D. Rork : Phys. Rev. 132, 2547-2553 (1963)
Measurements of the first Townsend ionization coefficient in neon and hydrogen. [E, H_2, Ne]

D M. Checkrahamatoula : Compt. Rend. Acad. Sci. 260, 1391-1394 (1965)
Dissociation de l'hydrogene dans une source d'hydrogen atomique.
[, H_2]

V J. C. Y. Chen and J. L. Magee : J. Chem. Phys. 36, 1407-1411 (1962)
Excitation of molecular vibration by slow electron impact. [T, H_2 only]

A J. C. Y. Chen : Phys. Rev. 129, 202-210 (1963)
Theory of electron capture by molecules : Dissociative attachment.
[T, H_2]

V J. C. Y. Chen : J. Chem. Phys. 40, 3507-3520 (1964) Erratum 41, 3263-3264 (1964)
Theory of subexcitation electron scattering by molecules. I. Formalism and the compound negative-ion states. [general theory]

A J. C. Y. Chen : Phys. Rev. 148, 66-73 (1966)
Dissociative attachment in rearrangement electron collision with molecules. [T, H_2, HD, D_2]]

A J. C. Y. Chen and J. L. Peacher : Phys. Rev. 163, 103-111 (1967)·
Survival probability in dissociative attachment. [T, H_2, HD, D_2]

O J. C. Y. Chen and J. L. Peacher : Phys. Rev. 167, 30-38 (1968)·
Interaction potential between the ground states of H and H^-.
[T, H_2, HD, D_2]

A J. C. Y. Chen : in Advances in Radiation Chemistry, Vol. 1, Wiley 245-367 (1969)·
Theory of transient negative ions of simple molecules.
[T, H_2, N_2, O_2, CO, NO, H_2O, CO_2, CH_4, SF_6; mostly H_2, N_2, O_2]

O V. T. Chiplonker and R. G. Shah : Indian. J. Pure Appl. Phys. 6, 128-129 (1968)
Plasma parameters by rf conductivity measurements. [,

O L.-Y. C. Chiu : J. Chem. Phys. 40, 2276-2285 (1964)
Electron magnetic perturbation in diatomic molecules of Hund's case b.
[T, H_2]

A L. G. Christophorou and J. A. D. Stockdale : J. Chem. Phys. 48, 1956-1960 (1968)
Dissociative electron attachment to molecules.
[compilation, H_2, HI, BCl_3, etc.; q_a for 30 molecules are summarized]

O L. G. Christophorou : Atomic and Molecular Radiation Physics, Wiley Interscience (1971)

D S. Chung, C. C. Lin and E. T. P. Lee : Phys. Rev. A12, 1340-1349 (1975)·
Dissociation of the hydrogen molecule by electron impact.
[T, H_2; Born-Ochkur-Rudge]

EX S. Chung and C. C. Lin : Phys. Rev. A17, 1874-1891 (1978)·
D Application of the close-coupling method to excitation of electronic states and dissociation of H_2 by electron impact. [T, H_2]

O W. A. Chupka, M. E. Russell and K. Refaey : J. Chem. Phys. 48, 1518-1527 (1968a)
Ion-molecule and chemi-ionization reactions in H_2 by photoionization.
[E, $h\nu$, H_2]

O W. A. Chupka and J. Berkowitz : J. Chem. Phys. 48, 5726-5728 (1968b)
Photoionization of the H_2 molecule near threshold.
[E, $h\nu$, H_2, HD, D_2; 745 - 810 A, 300 and 78 K]

O W.A.Chupka and J.Berkowitz : J.Chem.Phys.51, 4244-4268 (1969)
High-resolution photoionization study of the H_2 molecule near threshold.
[E, $h\nu$, H_2]

O W.A.Chupka, P.M.Dehmer and W.T.Jivery : J.Chem.Phys.63, 3929-3944 (1975)
High resolution photoionization study of ion-pair formation in H_2, HD, and D_2. [E, $h\nu$, H_2, HD, D_2]

EX R.Clampitt and A.S.Newton : J.Chem.Phys.50, 1997-2001 (1969a)
Metastable species produced by electron excitation of N_2, H_2, N_2O and CO_2.
[E, H_2, N_2, N_2O, CO_2]

EX R.Clampitt : Phys.Lett.28A, 581-582 (1969b)・
H(2S) atoms produced by dissociative excitation of molecules. [E, H_2]

R.Clampitt : Entropie 30, 36- (1969c)
Time of flight resolution of fast excited atoms. [E, H_2,

S L.W.Cochran and D.W.Forester : Phys.Rev.126, 1785-1788 (1962)
Diffusion of slow electrons in gases. [E, H_2, N_2, CO_2, CH_4, C_2H_4, C_3H_8]

O R.F.Code and N.F.Ramsey : Phys.Rev.A4, 1945-1959 (1971)
Molecular-beam magnetic resonance studies of HD and D_2. [E, HD, D_2]

O S.Cohen, J.R.Hiskes and R.J.Riddell : Phys.Rev.119, 1025-1027 (1960)
Vibrational states of the hydrogen molecular ion. [T, H_2^+]

O A.Cohn : J.Chem.Phys.57, 2456-2458 (1972)
Photoionization of excited H_2 molecules. [T, $h\nu$, H_2]

O E.A.Colbourn : J.Phys.B6, 2618-2624 (1973)
Singlet-triplet differences in the lowest Π_u states of H_2. [T, H_2]

I J.E.Collin : Can.J.Chem.40, 2172-2175 (1962)
The Franck-Condon principle and the ionization of molecules.
[compilation, H_2, CO, CO_2, N_2, O_2, NO, F_2 - I_2, HF - HI]

E L.A.Collins, W.D.Robb and M.A.Morrison : J.Phys.B11, L777-L781 (1978)・
Low-energy electron scattering by H_2 and N_2 : an iterative static-exchange calculation. [T, H_2, N_2; 0.01 - 1 Ryd]

I J.Comer : 10th ICPEAC, Paris 43-50 (1970)
Experimental studies of autoionizing states in molecules. [E, H_2]

V J.Comer and F.H.Read : J.Phys.B4, 368-388 (1971)
Potential curves and symmetrics of some resonant states of H_2^-.
[E, H_2, D_2]

O J.Comer and G.J.Schulz : Phys.Rev.A10, 2100-2106 (1974)・
Measurements of electron-detachment cross sections from O^- and S^-.
[E, not e^-, H_2, CO, O_2, N_2, CO_2, NO, He, C_2H_2, C_2H_4, CH_4]

0 F. J. Comes und W. Lessmann : Z. Naturforsch. 19a, 508-509 (1964)
Die Photoionisation des Wasserstoffmolekuls. [E, hν, H_2]

0 F. J. Comes : Phys. Lett. A24, 465-466 (1967)
Spectroscopic study of molecular hydrogen above its first ionization potential. [E, hν, H_2; 765 - 805 A]

0 F. J. Comes und H. O. Wellern : Z. Naturforsch. 23a, 881-887 (1968a)
Die Spektroskopie des Wasserstoffmolekuls in der Nahe seiner Ionisierungsgrenze. [E, hν, H_2; 792 - 850 A]

0 F. J. Comes, B. Schmitz, H. O. Wellern und U. Wenning : Ber. Bunsenges. Phys. Chem. 72, 986-991 (1968b)
Die Photodissoziation des Wasserstoffmolekuls. [E, hν, H_2]

0 F. J. Comes und U. Wenning : Z. Naturforsch. 24a, 587-596 (1969)
Photoinduzierte Stossprozesse metastabiler Wasserstoffatome mit H_2 im Energiebereich von 0.05 - 0.47 eV. [E, hν, H_2]

0 F. J. Comes and U. Wenning : Z. Naturforsch. 25a, 237-242 (1970a)
Photodissociation of H_2 near threshold energies. [E, hν, H_2]

0 F. J. Comes und U. Wenning : Z. Naturforsch. 25a, 406-411 (1970b)
Pradissoziation im elektrischen Feld — ein neues Phanomen in der Molekulspektroskopie. [E, H_2, D_2]

0 F. J. Comes und G. Schumpe : Z. Naturforsch. 26a, 538-546 (1971)
Einfluss der Rotation auf die Lebensdauer pradissoziierender Molekule. [E, hν, H_2, D_2]

S K. T. Compton : Phys. Rev. 22, 432-444 (1923)
Mobilities of electrons in gases. [T, H_2, N_2, O_2, He, Ar, CO_2]

1 K. T. Compton and C. C. van Voorhis : Phys. Rev. 26, 436-453 (1925)
Probability of ionization of gas molecules by electron impact. [E, ; relative, th. - 330 eV]

0 G. R. Cook and P. H. Metzer : 6th ICPEAC, Paris 1, 149-152 (1963)
Improved photoionization and absorption spectra of several gases in the 600 to 1000 A region. [E, hν, H_2,

0 G. R. Cook and P. H. Metzer : J. Opt. Soc. Am. 54, 968-972 (1964)
Photoionization and absorption cross sections of H_2 and D_2 in the vacuum ultraviolet region. [E, hν, H_2, D_2]

0 A. S. Coolidge, H. M. James and R. D. Present : J. Chem. Phys. 4, 193-211 (1936).
A study of the Franck-Condon principle. [T, H_2]

0 A. S. Coolidge and H. M. James : J. Chem. Phys. 6, 730-734 (1938)
Wave functions and potential curves for excited H_2. [T, H_2]

EX A. P. Coolidge : Phys. Rev. 65, 236-246 (1944)
Experimental verification of the theory of the continuous spectra of H_2 and D_2. [E, H_2, D_2]

O V. G. Cooper, A. D. May, E. H. Hara and H. F. P. Knaap : Can. J. Phys. 46, 2019-2023 (1968)
Dicke narrowing and collisional broadening of the $S_0(0)$ and $S_0(1)$ Raman line of H_2. [E, $h\nu$, H_2]

O V. G. Cooper, A. D. May and B. K. Gupta : Can. J. Phys. 48, 725-729 (1970)
Interferometric measurement of line widths and frequencies of the $S_0(0)$ and $S_0(1)$ rotational Raman lines of H_2. [E, H_2, H_2 + He, H_2 + Ar]

α R. J. Corbin and L. Frommhold : Phys. Rev. A10, 2273-2279 (1974)
Electron avalanches in oxygen and in mixtures of O_2 and H_2 : Determination of the first Townsend coefficient α. [E, H_2 + O_2, O_2]

EX S. J. B. Corrigan and A. von Engel : Proc. Roy. Soc. London A245, 335-351 (1958)
S Excitation and dissociation of hydrogen by an electron swarm. [E, H_2]

D S. J. B. Corrigan : J. Chem. Phys. 43, 4381-4386 (1965) Z
Dissociation of molecular hydrogen by electron impact. [E, H_2]

O H. Costa : Z. Phys. 113, 531-546 (1939)
Uber die Nachlieferungselektronen durch Photoeffekt in einer unselbstandigen Wasserstoffentladung. [E, H_2]

I W. B. Cottingham and S. J. Buchsbaum : Phys. Rev. 130, 1002-1006 (1963a)
Electron ionization frequency in hydrogen. [E, H_2]

I W. B. Cottingham and S. J. Buchsbaum : 6th ICPIG, Paris 2, 471-472 (1963b)
Electron ionization frequency in deuterium. [E, D_2]

I I. R. Cowling and J. Fletcher : J. Phys. B6, 665-674 (1973)
α Electron-molecule collision ionization in hydrogen and deuterium.
[E, H_2, D_2; 16 - 500 eV]

EX D. M. Cox : Thesis, University of Colorado, Boulder 1- (1970)
The absolute and relative measurement of the dissociative excitation cross section for production of metastable 2S atoms by electron impact upon molecular deuterium. [E, D_2]

EX D. M. Cox and S. J. Smith : Phys. Rev. A5, 2428-2442 (1972)
Absolute measurement of 2S atom production by dissociative excitation of molecular deuterium. [E, D_2]

E J. D. Craggs and H. S. W. Massey : in Handbuch der Physik, Bd. 37/1, Springer
EX 314-415 (1959)
I The collisions of electron with molecules.
[review, T and E, H_2, N_2, NO, CO, HCl, N_2O, CO_2, NH_3, H_2O, H_2S, BF_3, BCl_3, CH_4, CH_3OH, C_2H_5OH, CCl_2F_2, CF_4, SiF_4, $SiCl_4$, CCl_4, SF_6, etc.]

O R. D. Craig and J. D. Craggs : Proc. Phys. Soc. London 66B, 500-511 (1953)
Some properties of hydrogen spark channels. [E, H_2]

EX I T. E. Cravens, G. A. Victor and A. Dalgarno : Planet. Space Sci. 23, 1059-1070 (1975)・
The absorption of energetic electrons by molecular hydrogen gas.
[T, H_2]

I C. K. Crawford and C. E. Woodward : Tech. Rep. 175, MIT, Ad-291 454, 1-36 (1962)
The multiple-crossed-beam method for measuring electron-ionization cross sections. [E, H_2,]

S R. P. Creaser : Aust. J. Phys. 20, 547-555 (1967)
Measurement of the magnetic drift velocity and magnetic deflection coefficient for slow electrons in hydrogen and deuterium at 293 K.
[E, H_2, D_2]

S R. W. Crompton and D. J. Sutton : Proc. Roy. Soc. London A215, 467-480 (1952)
Experimental investigation of the diffusion of slow electrons in nitrogen and hydrogen. [E, H_2, N_2]

S R. W. Crompton, J. Dutton and S. C. Haydon : Nature 176, 1079-1079 (1955)
α Growth of pre-breakdown ionization currents in hydrogen. [E, H_2]

S R. W. Crompton, J. Dutton and S. C. Haydon : Proc. Phys. Soc. London B69, 2-13 (1956)
α Precision measurements of ionization coefficients in uniform static fields.
[E, H_2; E/N = 60 - 69 Td]

S R. W. Crompton, B. I. H. Hall and W. C. Macklin : Aust. J. Phys. 10, 366-372 (1957)
α A source of inaccuracy encountered when measuring drift velocities of electrons in gases by an electrical shutter method. [E, H_2]

S R. W. Crompton and R. L. Jory : Aust. J. Phys. 15, 451-469 (1962)・
On the swarm method for determining the ratio of electron drift velocity to diffusion coefficient. [E, H_2; E/N = 0.3 - 15 Td]

S R. W. Crompton and M. T. Elford : 6th ICIPG, Paris 1, 337-341 (1963)・
The ratio of drift speed to diffusion coefficient for quasi-thermal electrons in nitrogen and hydrogen. [E, H_2, N_2]

S R. W. Crompton, M. T. Elford and J. Gascoigne : Aust. J. Phys. 18, 409-436 (1965)
Precision measurements of the Townsend energy ratio for electron swarms in highly uniform electric fields. [E, H_2

S R. W. Crompton, B. S. Liley, A. I. McIntosh and C. A. Hurst : 7th ICPIG, Belgrade 1, 86-91 (1966)
The extension of swarm techniques to the measurement of electron energy for conditions near electrical breakdown. [E,

S R. W. Crompton and A. I. McIntosh : Phys. Rev. Lett. 18, 527-528 (1967)
Electron transport coefficients in gaseous parahydrogen. [E, p-H_2]

S R. W. Crompton, M. T. Elford and A. I. McIntosh : Aust. J. Phys. 21, 43-63 (1968a)
Electron transport coefficients in hydrogen and deuterium. [E, H_2, D_2]

S R.W.Crompton and A.I.McIntosh : Aust.J.Phys. 21, 637-647 (1968b)
Electron drift and diffusion in parahydrogen at 77 K. [E, p-H_2]

S R.W.Crompton, D.K.Gibson and A.I.McIntosh : Aust.J.Phys. 22, 715-731 (1969a) ○Z
R The cross section for the J = 0→2 rotational excitaion of hydrogen by slow electrons. [E, H_2]

S R.W.Crompton : in Advances in Electronics and Electron Physics, Vol.27, Academic Press 1-18 (1969b)
Contribution of swarm techniques to the solution of some problems in low-energy electron physics. [review]

S R.W.Crompton, D.K.Gibson and A.G.Robertson : Phys.Rev. A2, 1386-1395 (1970) ○
V Vibrational excitation of H_2 by low-energy electrons. [E, H_2]

S R.W.Crompton and A.G.Robertson : Aust.J.Phys. 24, 543-553 (1971)
The density dependence of electron drift velocities in normal and para hydrogen, deuterium and helium at 77 k. [E, H_2, D_2, He]

O C.J.Cronin and M.C.Sexton : Proc.Roy.Irish Acad. 69A, 1-9 (1970)
Mechanism of electron loss in a hydrogen afterglow. [, H_2]

O H.M.Crosswhite (Ed) : The Hydrogen Molecule Wavelength Tables of Gerhard Heinrich Dieke, Wiley-Interscience NY (1972)

I A.Crowe and J.W.McConkey : Phys.Rev.Lett. 31, 192-196 (1973a)
Experimental evidence for new dissociation channels in electron-impact ionization of H_2. [E, H_2]

I A.Crowe and J.W.McConkey : J.Phys. B6, 2088-2107 (1973b)
Dissociative ionization by electron impact. I. Protons from H_2. [E, H_2]

EX J.W.Czarnik and C.E.Fairchild : Phys.Rev.Lett. 26, 807-810 (1971)
New data on the velocity distribution of H(2S) atoms produced by dissociative excitation of H_2. [E, H_2]

O I.Dabrowski and G.Herzberg : Can.J.Phys. 52, 1110-1133 (1974)
The absorption spectrum of D_2 from 1100 to 840 A. [E, hν, D_2]

O I.Dabrowski and G.Herzberg : Can.J.Phys. 54, 525-567 (1976)
The absorption and emission spectra of HD in the vacuum ultraviolet.
[E, hν, HD;

R A.Dalgarno and R.J.Moffett : Proc.Natl.Acad.Sci.India A33, 511-521 (1963)
The rotational excitation of molecular nitrogen by slow electrons.
[T, N_2

R A.Dalgarno and R.J.W.Henry : Proc.Phys.Soc.London 85, 679-684 (1965)
The rotational excitation of molecular hydrogen by slow electrons.
[T, H_2]

O A. Dalgarno and A. C. Allison : Astrophys. J. 154, L95-L97 (1968)
Band oscillator strengths of the Lyman system of molecular hydrogen.
[T, H_2]

O A. Dalgarno and A. C. Allison : J. Geophys. Res. 74, 4178-4180 (1969)
Photodissociation of molecular hydrogen on Venus. [T, $h\nu$, H_2]

O A. Dalgarno and T. L. Stephens : Astrophys. J. 160, L107-L109 (1970)
Discrete absorption and photodissociation of molecular hydrogen.
[T, $h\nu$, H_2]

EX A. Dalgarno, G. Herzberg and T. L. Stephens : Astrophys. J. 162, L49-L53 (1970)
A new continuous emission spectrum of the hydrogen molecule.
[T, H_2, D_2]

EX A. Dalgarno and E. L. Wright : Astrophys. J. 174, L49-L51 (1972)
Infrared emissivities of H_2 and HD. [T, H_2, HD]

D A. Dalgarno and W. G. Roberge : Astrophys. J. 233, L25-L27 (1979)
Collision-induced dissociation of interstellar molecules.
[T, H_2, CO; dissociation rate coefficient, not e]

S V. Dallacasa : Phys. Lett. A57, 245-246 (1976)
Single site scattering and drift velocity of electrons in gases.
[T, H_2, He, Ar; pressure dependence]

E R. Damburg and E. Karule : Proc. Phys. Soc. London 90, 637-640 (1967)
A modification of the close-coupling approximation for e - H_2 scattering allowing for the long-range interactions. [T, H_2]

O J. W. Davenport : Int. J. Quant. Chem. : Quant. Chem. Symp. 11, 89-96 (1977)
Multiple scattering theory of photoemission. [T, $h\nu$, H_2, N_2, CO]

V J. W. Davenport, W. Ho and J. R. Schrieffer : Phys. Rev. B17, 3115-3127 (1978)
O Theory of vibrationally inelastic electron scattering from oriented molecules. [T, H_2, N_2, CO]

O E. R. Davidson : J. Chem. Phys. 35, 1189-1202 (1961)
First excited $^1\Sigma_g^+$ state of the hydrogen molecule. [T, H_2]

O E. R. Davidson : in Physical Chemistry, An Advanced Treatise, V. Ⅲ.,
D. Henderson (Ed), Academic, Chap. 3 (1969)

α D. E. Davies and J. G. C. Milne : Brit. J. Appl. Phys. 10, 301-306 (1959)
First ionization coefficients in hydrogen, neon, and argon.
[E, H_2, He, Ar; E/N = 120 - 1500 Td]

α D. E. Davies, J. G. C. Milne and J. Myatt : 4th ICIPG, Uppsala 1, 161-163 (1960)
The effect of gas purity, tube geometry, and method of calculation on the ionization coefficients in hydrogen and in the inert gases.
[E, H_2,]

α D. E. Davies, D. Smith and J. Myatt : 5th ICPIG, Munich 1, 678 (1962)
Townsend ionization coefficients and the breakdown of Paschen's law in hydrogen, deuterium, and mercury vapour. [E, H_2, D_2, Hg]

O R. L. Day, R. J. Anderson and F. A. Sharpton : J. Chem. Phys. 69, 5518-5520 (1978)
Radiative decay constants of the H_2 Fulcher bands. [E, H_2; 25 - 300 eV]

EX R. L. Day, R. J. Anderson and F. A. Sharpton : J. Chem. Phys. 71, 3683-3688 (1979)
Electron excitation of the singlet-g states of H_2.
[E, H_2; optical method and time-resolved spectroscopy]

S H. D. Deas and K. G. Emeleus : Phil. Mag. 40, 460-465 (1949)
α Determination of the electron energy distribution in gases from Townsend's ionization coefficient. [, H_2, N_2, N_2 + O_2]

α D. J. de Bitetto and L. H. Fisher : Phys. Rev. 104, 1213-1220 (1956)
O Townsend ionization coefficients and uniform field breakdown in hydrogen and nitrogen at high pressures. [E, H_2, N_2]

EX F. J. de Heer, H. R. Moustafa Moussa and M. Inokuti : Chem. Phys. Lett. 1, 484-486 (1967)
Production of Lyman-α radiation in collisions of electrons on molecular hydrogen (0.05 - 3 keV). [E, H_2]

EX F. J. de Heer and J. D. Carriere : J. Chem. Phys. 55, 3829-3835 (1970)・
Emission of the Werner band system and Lyman-α radiation for 0.05 - 6-keV electrons in H_2. [E, H_2]

E R. C. Dehmel, M. A. Fineman and D. R. Miller : Phys. Rev. A9, 1564-1568 (1974)・
Ratios of forward to back scattering of low-energy electrons by neutral gases. [E, H_2, He, O, Ar, N_2, O_2; 3 - 20 eV]

O P. M. Dehmer and W. A. Chupka : J. Chem. Phys. 65, 2243-2273 (1976)
Very high resolution study of photoabsorption, photoionization, and predissociation in H_2. [E, hν, H_2]

I F. De La Ripelle : J. Phys. Radium 10, 319-329 (1949)
Etude sur les coefficients specifiques d'ionisation. [,

O J. L. Delcroix : 8th ICPIG, Vienna 611-643 (1968)
Donnees de la physique des gaz ionises.
(Basic data of ionized gas physics.) [compilation,

A Yu. N. Demkov : Phys. Lett. 15, 235-236 (1965)・
Isotope effect in the resonance dissociative capture of an electron and quasistationary states of molecules. [T, H_2, O_2]

E Yu. N. Demkov and V. N. Ostrovskii : Sov. Phys. JETP 32, 959-963 (1971)・
EX Zero-radius-potential approximation and inelastic scattering of electrons by a molecule. The e + H_2 scattering. [T, H_2]

O D. R. Denne : J. Phys. D3, 1392-1398 (1970)
Measurements of the ultrasoft X-ray absorption of Ar, Ne, N_2, O_2, CH_4, He and H_2. [E, $h\nu$, H_2, N_2, Ar, Ne, O_2, CH_4, He]

I S. Dey, I. E. McCarthy, P. J. O. Teubner and E. Weigold : Phys. Rev. Lett. 34, 782-785 (1975)・
(e, 2e) probe for hydrogen-molecule wave functions.
[T, H_2, D_2; 300 - 1200 eV]

E S. S. Dhal, B. B. Srivastava and R. Shingal : J. Phys. B12, 2211-2216 (1979)
Elastic scattering electrons by hydrogen molecule at intermediate energies using optical eikonal theory. [T, H_2]

O V. H. Dibeler, F. L. Mohler, E. J. Wells, Jr. and R. M. Reese : J. Res. Natl. Bur. Stand. 45, 288-291 (1950)
Mass spectra of some simple isotope molecules.
[E, H_2, HD, D_2, HT, T_2, CO, CO_2; 50 eV]

O V. H. Dibeler, R. M. Reese and M. Krauss : J. Chem. Phys. 42, 2045-2048 (1965)
Mass-spectrometric study of photoionization. II. H_2, HD, and D_2.
[E, $h\nu$, H_2, HD, D_2]

O K. A. Dick and U. Fink : J. Quant. Spectrosc. Radiat. Transf. 18, 433-446 (1977)
Photoelectric absorption spectra of methane (CH_4), methane and hydrogen (H_2) mixtures, and ethane (C_2H_6).
[E, $h\nu$, H_2 + CH_4, CH_4, C_2H_6; 4200 - 10600 A]

O G. H. Dieke and R. W. Blue : Phys. Rev. 47, 261-272 (1935)
The Fulcher bands of HD and D_2. [E, $h\nu$, H_2, HD, D_2]

O G. H. Dieke : Phys. Rev. 48, 606-609 (1935b)
The $3p^3\Sigma \rightarrow 2s^3\Sigma$ bands of HD and D_2. [E, $h\nu$, HD, D_2]

O G. H. Dieke : Phys. Rev. 48, 610-614 (1935c)
The triplet 3p complex of the hydrogen molecule.
[compilation, $h\nu$, H_2, HD, D_2]

O G. H. Dieke : Phys. Rev. 50, 797-805 (1936)
The $2s^1\Sigma \rightarrow 2p^1\Sigma$ bands of the hydrogen molecule. [E, $h\nu$, H_2, HD, D_2]

O G. H. Dieke and M. N. Lewis : Phys. Rev. 52, 100-125 (1937)
Bands of HD and D_2 ending of the $2p^1\Sigma$ state. [E, $h\nu$, H_2, HD, D_2]

O G. H. Dieke : Phys. Rev. 54, 439-445 (1938)
Bands of H_2 ending on the $2p^1\Pi$ level. [E, $h\nu$, H_2]

O G. H. Dieke : Phys. Rev. 76, 50-57 (1949a)
Bands from doubly excited levels of the hydrogen molecules. [E, $h\nu$, H_2]

O G. H. Dieke and F. S. Tomkins : Phys. Rev. 76, 283-289 (1949b)
The molecular spectrum of hydrogen. The Fulcher bands of TH and T_2.
[E, $h\nu$, TH, T_2]

O G. H. Dieke : Phys. Rev. 82, 796-807 (1951)
The $3p^3\Sigma \rightarrow 2s^3\Sigma$ bands of TH and T_2. [E, TH, T_2]

O G. H. Dieke, S. P. Cunningham and F. T. Byrne : Phys. Rev. 92, 81-87 (1953)
The Zeeman effect in the molecular spectra of hydrogen.
[E, $h\nu$, H_2, DH, D_2, TH, TD, T_2]

O G. H. Dieke : J. Phys. Radium 15, 393-397 (1954)
Nouveaux resultats pour le spectre des molecules de l'hydrogene et de ses isotopes. [E, $h\nu$, H_2, DH, D_2, TH, TD, T_2]

O G. H. Dieke : J. Mol. Spectrosc. 2, 494-517 (1958)
The molecular spectrum of hydrogen and its isotopes.
[E, $h\nu$, H_2, HD, D_2, TH, TD, T_2]

O G. H. Dieke and S. P. Cunnigham : J. Mol. Spectrosc. 18, 288-320 (1965)
Bands of D_2 and T_2 originating from the lowest excited $^1\Sigma_g$ states $(1s\sigma)(2s\sigma)\,^1\Sigma_g$ and $(2p\sigma)^2\,^1\Sigma_g$. [T, $h\nu$, D_2, T_2]

A J. D. Dillard : Chem. Rev. 73, 589-643 (1973)
Negative ion mass spectroscopy.
[review, H_2, CO, CO_2, F_2, Cl_2, HF, HCl, NO, O_2, H_2O, N_2O, NO_2, etc.]

I K. T. Dolder : Contemp. Phys. 17, 237-248 (1976)
Crossed beam experiments. [,

EX A. G. Domenicucci and K. J. Miller : J. Chem. Phys. 66, 3927-3937 (1977)
Generalized oscillator strengths and total cross sections for H_2, N_2 and O_2 with an independent particle model. [T, H_2, N_2, O_2; Born]

O P. H. Doolittle and R. I. Schoen : Phys. Rev. Lett. 14, 348-349 (1965)
Autoionization and the vibrational excitation of H_2^+.
[E, $h\nu$, H_2; 790, 780, 772 A lines]

O K. E. Dorsch und H. Kallmann : Z. Phys. 53, 80-91 (1929)
Uber die Bildung von Wasserstoffatomen durch Stoss langsamer Elektronen.
[E, H_2]

R D. A. Douthat : J. Phys. B12, 663-678 (1979)·
V Energy deposition and electron energy degradation in molecular hydrogen.
EX [T, H_2; 2 - 30 keV]

EX J. T. Dowell and T. E. Sharp : J. Chem. Phys. 47, 5068-5073 (1967)
Electron impact excitation of the $C^3\Pi_u$ states of H_2 and D_2 by trapped-electron method. [E, H_2, D_2]

A J. T. Dowell and T. E. Sharp : Phys. Rev. 167, 124-127 (1968)
Vibrational structure in the dissociative attachment of electrons in hydrogen. [E, H_2]

I H. W. Drawin : Z. Phys. 164, 513-521 (1961)
Zur formelmassigen Darstellung der Ionisierungsquerschnitte gegenuber Elektronenstoss. [empirical, H_2, H, He, Li]

O K. Dressler, R. Gallusser, P. Quadrelli and L. Wolniewicz : J. Mol. Spectrosc. 75, 205-219 (1979)
The EF and GK $^1\Sigma_g^+$ states of hydrogen. Calculation of nonadiabatic coupling. [T, H_2, HD, D_2]

O R. W. Dreyfus and R. T. Hodgson : Phys. Rev. A9, 2635-2648 (1974) ·, Erratum A10, 1010-1010 (1974)
Molecular-hydrogen laser : 1098 - 1613 A.
[E, $h\nu$, H_2; see R. T. Hodgson (1970)]

V G. F. Drukarev : 9th ICPEAC, Seattle 231-240 (1976)
Multiple scattering approach to the vibrational excitation of molecules by slow electrons. [

R G. F. Drukarev and I. Y. Yurova : J. Phys. B10, 3551-3558 (1977a)
V Multiple-scattering approach to the vibrational-rotational excitation of molecules by slow electrons. [T, H_2, Li_2, Na_2, K_2]

A G. F. Drukarev and S. A. Pozdneev : Vestn. Leningr. Univ. Ser. Fiz. Khim. 3, 29-32 (1977b)
The dissociative attachment of electron to diatomic molecules.
[T, H_2

A G. F. Drukarev and S. A. Pozdneev : Sov. Phys. JETP 47, 1045-1049 (1978)
Application of the Faddeev equations to calculations of dissociative attachment cross sections. [T, H_2, HD, D_2]

I R. D. DuBois and M. E. Rudd : Phys. Rev. A17, 843-848 (1978)
Absolute doubly differential cross sections for ejection of secondary electrons from gases by electron impact. II. 100 - 500-eV electrons on neon, argon, molecular hydrogen, and molecular nitrogen.
[E, H_2, Ne, Ar, N_2]

L. V. Dubovoi and O. M. Shvets : Bull. Acad. Sci. USSR 24, 1020-1024 (1960)
Procedure for measuring total particle collision cross sections in dense plasma. [, H_2,

A G. V. Dubrovskii, V. D. Obedkov and R. K. Yanev : Theor. Exp. Chem. 3, 361-363 (1967a)
Dissociative electron capture and level width of quasistationary molecular states. [, H_2,

A G. V. Dubrovskii, V. D. Obedkov and R. K. Yanev : Theor. Exp. Chem. 3, 601- (1967b)
Dissociative electron capture and level width of quasistationary molecular states. [, H_2,

O G. H. Dunn : Phys. Rev. Lett. 8, 62-64 (1962)
Anisotropies in angular distributions of molecular dissociation products.
[general theory]

O G. H. Dunn : J. Chem. Phys. 44, 2592-2594 (1966)
Franck-Condon factors for the ionization of H_2 and D_2. [T, H_2, D_2]

I G. H. Dunn and L. J. Kieffer : Phys. Rev. 132, 2109-2117 (1963)
Dissociative ionization of H_2 : A study of angular distributions and energy distributions of resultant fast protons. [E, H_2]

O J. Durup et F. Heitz : J. Chim. Phys. 61, 470-479 (1964)
Etude de la distribution en energies cinetiques des ions formes par impact electronique. I. — Principes generaux. Appareillage et resultats preliminaires.
(Study of the kinetic energy distribution of ions formed by electron bombardment. I. General principles. Apparatus and preliminary results.)
[T and E, H_2, N_2, NO, etc.]

O J. Durup : J. Physique 39, 941-950 (1978)
On isotope effects in the predissociations of HD. [T, $h\nu$, HD]

S J. Dutton : J. Phys. Chem. Ref. Data 4, 577-856 (1975)○
α A survey of electron swarm data. [compilation]

O S. Dworetsky, R. Novick, W. W. Smith and N. Tolk : Rev. Sci. Instrum. 39, 1721-1723 (1968)
Electron bomberdment ion source for low energy beams. [E, H_2, N_2, H, Ar]

O J. Dyke, N. Jonathan, A. Morris and T. Sears : J. Chem. Soc. Faraday Trans. II, 72, 597-603 (1976)
Vacuum ultra-violet photoelectron spectroscopy of transient species. Part 6. A study of vibrationally excited hydrogen and nitrogen.
[E, $h\nu$, $H_2(v)$, $N_2(v)$; discharge and undischarged H_2]

α D. Edelson, S. F. Barna and K. B. McAfee : 7th ICPIG, Belgrade I, 91- (1965)
Townsend ionization coefficients in tritium. [E, T_2]

EX L. A. Edelstein : Nature 182, 932-932 (1958)
Anomalous dissociation of molecular hydrogen by electron impact.
[T, H_2; ex. c. s. for $b^3\Sigma_u$, 10 - 26.7 eV]

O A. W. Ehler and G. L. Weissler : Tech. Rep. No. 2, PB 129356, Univ. of Southern California 1-5 (1957)
Absorption cross sections of H_2 between 500 and 633 A. [E, $h\nu$, H_2]

O S. Ehrenson and P. E. Phillipson : J. Chem. Phys. 34, 1224-1231 (1961)
Theoretical molecular transition probabiliities. I. The V-N transition in H_2. [T, H_2]

R H. Ehrhardt and F. Linder : Phys. Rev. Lett. 21, 419-421 (1968a)·
Rotational excitation of H_2 by slow electrons in a beam experiment.
[E, H_2]

E H. Ehrhardt, L. Langhans, F. Linder and H. S. Taylor : Phys. Rev. 173, 222-230 (1968b)○Z
Resonance scattering of slow electrons from H_2 and CO angular distributions. [E, H_2, CO; rel. DCS]

V H. Ehrhardt and A. Weingartshofer : Z. Phys. 226, 28-33 (1969)
A new resonance in the e - H_2-scattering. [E, H_2]

H. Ehrhardt : in Recent Developments in Mass Spectroscopy, K. Ogata and T. Hayakawa (Ed), University of Tokyo Press, 860-871 (1970)
Recent progress in electron impact spectroscopy. [review, H_2, N_2]

S M. T. Elford and A. G. Robertson : Aust. J. Phys. 26, 685-687 (1973)
A note on end effects in electron drift tube experiments. [E, H_2]

S M. T. Elford : in Case Studies in Atomic Collision Physics 2, North-Holland Publishing Co., Chapter 2, 91-158 (1972)·
Precision measurements of electron transport coefficients.
[review, H_2, D_2, He - Xe, N_2, O_2, CO, CO_2]

V I. Eliezer, H. S. Taylor and J. K. Williams : J. Chem. Phys. 47, 2165-2177 (1967)
A Resonant states of H_2^-. [T, H_2]

EX S. B. Elston, S. A. Lawton and F. M. J. Pichanick : Phys. Rev. A10, 225-230 (1974)·Z
High resolution studies of total electron excitation functions near threshold for the states $B^1\Sigma_u^+$ and $c^3\Pi_u$ of molecular hydrogen.
[E, H_2; 10 - 13 eV]

α K. G. Emeleus, R. W. Lunt and C. A. Meek : Proc. Roy. Soc. London A156, 394-411 (1936)
Ionization, excitation, and chemical reactions in uniform electric fields. I. - The Townsend coefficient of ionization.
[T, H_2, N_2, N_2 + O_2, O_2, Ar; assumed Maxwellian]

O K. G. Emeleus : Proc. Phys. Soc. London 73, 822-824 (1959)
Note on the cathode glow. [T, H_2]

S A. G. Engelhardt and A. V. Phelps : Phys. Rev. 131, 2115-2128 (1963)○
Elastic and inelastic collision cross sections in hydrogen and deuterium from transport coefficients. [E, H_2, D_2]

S A. G. Engelhardt and A. V. Phelps : Phys. Rev. 133, 375-380 (1964)·
Transport coefficients and cross sections in argon and hydrogen-argon mixtures. [E, H_2 + Ar, Ar]

I P. Englander-Golden and D. Rapp : Lockheed Missiles and Space Company,
A LMSC6-74-64-12, 1-50 (1964)
Total cross sections for ionizaiton of atoms and molecules by electron impact. [E, H_2, D_2, He, Ne, Ar, Kr, Xe, N_2, O_2, CO, NO, N_2O, CO_2, CH_4]
(Care! These data are different from D. Rapp (1965b))

O T. C. English and K. B. MacAdam : Phys. Rev. Lett. 24, 555-557 (1970)
Molecular-beam resonance measurement of deuterium polarizability anisotropy. [E, D_2]

O T. C. English and D. L. Albritton : J. Phys. B8, 2123-2132 (1975)
Theory of the Stark effect of metastable parahydrogen.
[T, $h\nu$, H_2; $c^3\Pi_u$ state]

S W.N.English and G.C.Hanna : Can.J.Phys.31,768-797 (1953)
Grid ionization chamber measurements of electron drift velocities in gas mixtures. [E]

O S.P.Erkovich : Opt.Spectrosc.8,162-164 (1960)
Coefficient of continuous absorption of radiation by quasi molecules of hydrogen. [T, H_2]

S D.D.Errett : Thesis, Purdue University, Indiana 1-81 (1951)
The drift velocity of electrons in gases. [, H_2,]

O W.Fabian and B.R.Lewis : J.Quant.Spectrosc.Radiat.Transf.14,523-535 (1974)
Experimentally determined oscillator strengths for molecular hydrogen— I. The Lyman and Werner bands above 900 A. [E, $h\nu$, H_2]

V F.H.M.Faisal and A.Temkin : Phys.Rev.Lett.28,203-206 (1972)
Application of the adiabatic-nuclei theory of vibrational excitation.
[T, H_2 only; 1.2 - 8.7 eV]

O U.Fano : Phys.Rev.124,1866-1878 (1961)
Effects of configuration interaction on intensities and phase shifts.
[T,

O U.Fano : Phys.Rev.A2,353-365 (1970)
Quantum defect theory of l uncoupling in H_2 as an example of channel-interaction treatment. [T, H_2]

O A.Farkas : Orthohydrogen, Parahydrogen and Heavy Hydrogen, Cambridge University Press (1935)

S L.Ferrari : Physica C85,161-179 (1977)
Inelastic collisions and velocity distribution function of electrons in a gas in an electric field. [T, H_2; B.Eq.]

O H.Feshbach : Ann.Physics 5,357-390 (1958)
Unified theory of nuclear reactions. [T, Feshbach resonance]

O H.Feshbach : Ann.Physics 19,287-313 (1962)
A unified theory of nuclear reactions. [T, Feshbach resonance]

I F.H.Field and J.L.Franklin : Electron Impact Phenomena and the Properties of Gaseous Ions, Academic Press (1957)

E M.Fink, K.Jost and D.Herrmann : Phys.Rev.A12,1374-1382 (1975)・Z
Differential cross sections for elastic electron scattering. Charge-cloud polarization in H_2.
[E, H_2; relative DCS, 100 - 1000 eV, 3 - 130°]

O U.Fink, T.A.Wiggins and D.H.Rank : J.Mol.Spectrosc.18,384-395 (1965)
Frequency and intensity measurements on the quadrupole spectrum of molecular hydrogen. [E, $h\nu$, H_2]

EX T. G. Finn, B. L. Carnahan, W. C. Well and E. C. Zipf : J. Chem. Phys. 63, 1596-1604 (1975)
Dissociation of CH_4 and CD_4 by electron impact : Production of metastable and high-Rydberg hydrogen and carbon fragments. [E, H_2, CH_4, CD_4]

I F. Fiquet-Fayard and J. Chiari : Phys. Lett. 26A, 512-513 (1968)・
Ionisation de l'hydrogene par impact electronique entre 250 et 2200 eV.
[E, H_2]

O F. Fiquet-Fayard et O. Gallais : Mol. Phys. 20, 527-539 (1971)
Calculs numerique de factears de Franck-Condon et effets isotopiques : perturbation de H_2 $C^1\Pi_u$ et predissociation de H_2 $D^1\Pi_u$.
[T, $h\nu$, H_2, HD, D_2]

O F. Fiquet-Fayard and O. Gallais : Chem. Phys. Lett. 16, 18-19 (1972)
Predissociation of H_2 and D_2 ($D^1\Pi_u$) : Comparison of calculated and experimental line-widths. [T, H_2, D_2]

A F. Fiquet-Fayard : Vacuum 24, 533-547 (1974)・
Theoretical problems in the interpretation of dissociative attachment experiments. [T, H_2, O_2, NO, OH, HCl, H_2O, SO_2]

A I. Fischer-Hjalmars : Ark. Fys. 13, 481- (1958)
On the possible formation of H^- by way of H_2^-. [, H_2]

E J. B. Fisk : Phys. Rev. 49, 167-173 (1936)・
Theory of the scattering of slow electrons by diatomic molecules.
[T, H_2, N_2, O_2; 0 - 25 eV]

EX W. L. Fite and R. T. Brackmann : Phys. Rev. 112, 1151-1156 (1958b)
Collisions of electrons with hydrogen atoms. II. Excitation of Lyman-alpha radiation. [E, H_2 and H; th. - 500 eV]

O M. R. Flannery and U. Opik : Proc. Phys. Soc. London 86, 491-500 (1965)
The photoionization of the hydrogen molecule from the ground electronic and vibrational state. [T, $h\nu$, H_2; 804 - 430 A]

O M. R. Flannery, H. Tai and D. L. Albritton : Atomic Data Nucl. Data Tables 20, 563-585 (1977)・
Cross sections for the photoionization of $H_2(X^1\Sigma_g^+, v_i = 0\text{-}14)$ with the formation of $H_2^+(X^2\Sigma_g^+, v_f = 0\text{-}18)$ and vibrational overlaps and Rn-centroids for the associated vibrational transitions. [T, $h\nu$, H_2]

α J. Fletcher and D. E. Davis : 6th ICPIG, Paris 2, 217-222 (1963)
Ionization coefficients in hydrogen, helium and neon. [E, H_2, He, Ne]

S J. Fletcher and S. C. Haydon : Aust. J. Phys. 19, 615-628 (1966a)
α Transport and ionization properties of molecular gases in a transverse magnetic field. [E, H_2, N_2]

α J. Fletcher and S. C. Haydon : 7th ICPIG, Belgrade 1, 100-104 (1966b)
Electron impact ionization of molecular gases in crossed electric and strong magnetic fields. [E, H_2

E A.W.Fliflet and V.McKoy : Phys.Rev.A18,1048-1054 (1978)
Variationally corrected discrete-basis-set calculation for electron-molecule scattering in the static-exchange approximation.
[T, H_2; see T.N.Rescigno (1974)]

O V.Fock : Z.Phys.61,126-148 (1930)
Naherungsmethode zur Losung des quantenmechanischen Mehrkorperproblems.
[T, general theory]

S M.A.Folkard and S.C.Haydon : Aust.J.Phys.23,847-861 (1970)
Monte Carlo investigations of non-equilibrium effects at high values of E/p in swarm experiments in hydrogen. [E, H_2]

α M.A.Folkard and S.C.Haydon : Aust.J.Phys.24,519-526 (1971a)
The validity of fundamental ionization data for electrons at high values of E/p. [E, H_2

α M.A.Folkard and S.C.Haydon : Aust.J.Phys.24,527-542 (1971b)
An investigation of the influence of non-equilibrium effects on the growth of ionization in hydrogen. [E, H_2]

S M.A.Folkard and S.C.Haydon : 10th ICPIG, Oxford 1,51- (1971c)
The validity of fundamental ionization data derived from swarm experiments.
[E,

O J.V.Foltz,D.H.Rank and T.A.Wiggins : J.Mol.Spectrosc.21,203-216 (1966)
Determinations of some hydrogen molecular constants. [E, $h\nu$, H_2]

O A.L.Ford and J.C.Browne : Atomic Data 5,305-313 (1973)
Rayleigh and Raman cross sections for the hydrogen molecule.
[compilation, $h\nu$, H_2]

O A.L.Ford : J.Mol.Spectrosc.53,364-369 (1974)
Lambda-doubling in the $C^1\Pi_u$ state of H_2. [T, $h\nu$, H_2]

O A.L.Ford,K.K.Docken and A.Dalgarno : Astrophys.J.195,819-824 (1975a)
The photoionization and dissociative photoionization of H_2, HD and D_2.
[T, $h\nu$, H_2, HD, D_2]

O A.L.Ford,K.K.Docken and A.Dalgarno : Astrophys.J.200,788-789 (1975b)
Cross sections for photoionization of vibrationally excited molecular hydrogen. [T, $h\nu$, $H_2(v)$]

O A.L.Ford,J.C.Browne,E.J.Shipsey and P.DeVries : J.Chem.Phys.63.362-365 (1975c)
Adiabatic ab initio potential curves for the $B'^1\Sigma_u^+$ state of H_2.
[T, H_2]

O A.L.Ford : J.Mol.Spectrosc.56,251-256 (1975d)
Rotational line strengths in the Lyman and Werner bands of H_2.
[T, $h\nu$, H_2]

O A. L. Ford, E. M. Greenawalt and J. C. Browne : J. Chem. Phys. 67, 983-988 (1977)
The computation of nuclear motion and mass polarization adiabatic energy corrections for several states of the hydrogen molecule. [T, H_2, D_2]

EX L. Ford and J. C. Browne : J. Chem. Phys. 55, 1053-1055 (1971)
Excitation of parity-forbidden transitions in H_2 by energetic electrons. [T, H_2; 34 keV]

E L. Ford and J. C. Browne : Chem. Phys. Lett. 20, 284-290 (1973)
Elastic scattering of electrons by H_2 in the Born approximation. [T, H_2]

S D. W. Forester and L. W. Cochsan : Report ORNL-3091, UC-34-Phys., Oak Ridge 1-109 (1961)
Diffusion of slow electrons in gases. [E, H_2, N_2, CO_2, CH_4, C_2H_4, c-C_3H_8]

O E. W. Foster and O. Richardson : Proc. Roy. Soc. London A217, 433-450 (1953)
The fine structure of the $4d^3\Sigma$, $^3\Pi_{cd}$, $^3\Delta_d \rightarrow 2p^3\Pi_{cd}$ transitions of the H_2 spectrum. [E, $h\nu$, H_2]

O R. G. Fowler and T. M. Holzberlein : J. Chem. Phys. 42, 3723-3724 (1965)
Lifetime studies of the radiative dissociation of excited H_2. [E, H_2]

O R. G. Fowler and T. M. Holzberlein : J. Chem. Phys. 45, 1123-1125 (1966)·
Transition probabilities for H_2, D_2, N_2, N_2^+, and CO. [E, H_2, D_2, CO, etc.]

O S. Fraga and B. J. Ransil : J. Chem. Phys. 35, 669-678 (1961a)
Studies in molecular structure. V. Computed spectroscopic constants for selected diatomic molecules of the first row. [T, H_2, HF, N_2, F_2, etc.]

O S. Fraga and B. J. Ransil : J. Chem. Phys. 35, 1967-1977 (1961b)
Studies in molecular structure. VI. Potential curve for the interaction of two hydrogen atoms in the LCAO MO SCF approximation. [T, H_2]

S J. L. A. Francey and P. K. Stewart : Aust. J. Phys. 24, 841-846 (1971)
Inelastic collisions in the Townsend-Huxley diffusion experiment. [T, H_2; B. Eq.]

S J. L. A. Francey and D. A. Jones : Aust. J. Phys. 30, 303-313 (1977)
The effect of inelastic collisions on diffusion coefficients for electron swarms. [T, H_2, CO, CO_2]

O G. Franck, R. Held and H.-D. Pfeil : Z. Phys. 256, 73-91 (1972)
Velocity distribution of plasma electrons in the negative H_2- and He-glow with superimposed longitudinal magnetic field. [T and E, H_2, He]

R. H. Freeman and J. A. Roberts : Plasma Phys. 16, 377-383 (1974)·
Electron collision frequency observation in H_2, D_2, N_2O, CO_2 and argon at pressures of 0.4 - 2 Torr. [E, H_2, D_2, N_2O, CO_2, Ar]

EX R. S. Freund, J. A. Schiavone and D. F. Brader : J. Chem. Phys. 64, 1122-1127 (1976)
Dissociative excitation of H_2 : Spectral line shapes and electron impact cross sections of the Balmer lines. [E, H_2]

O R. S. Freunt and T. A. Miller : J. Chem. Phys. 56, 2211-2219 (1972)
Microwave optical magnetic resonance induced by electrons (MOMRIE) in H_2 G($3d\ ^1\Sigma_g^+$). [E, $h\nu$, H_2]

O R. S. Freunt and T. A. Miller : J. Chem. Phys. 58, 3565-3573 (1973a)
Fine structure of para-H_2 d(3p) $^3\Pi_u$ (v = 0 ~ 3) via microwave optical magnetic resonance induced by electrons. [T and E, $h\nu$, H_2]

O R. S. Freunt and T. A. Miller : J. Chem. Phys. 59, 4073-4077 (1973b)
Fine structure of ortho- and para-D_2 d(3p) $^3\Pi_u$ via microwave optical magnetic resonance induced by electrons. [E, $h\nu$, D_2]

O R. S. Freunt and T. A. Miller : J. Chem. Phys. 59, 5770-5776 (1973c)
Fermi-contact hyperfine interaction and the electron spin g factor in H_2 d(3p) $^3\Pi_u$. [E, $h\nu$, H_2; MOMRIE experiments]

O R. S. Freunt, T. A. Miller and B. R. Zegarski : Chem. Phys. Lett. 23, 120-122 (1973d)
Fine structure of para H_2, k(4p) $^3\Pi_u$. [E, $h\nu$, H_2; MOMRIE spectrum]

O R. S. Freunt and T. A. Miller : J. Chem. Phys. 60, 4900-4908 (1974)
Anticrossings and microwave transitions between electronic states of H_2. [E, $h\nu$, H_2]

α L. Friedland : J. Phys. D7, 2246-2253 (1974)
Electron multiplication in a gas discharge at high values of E/p. [T, H_2, N_2, He, Ne, Hg]

S L. Frommhold : Z. Phys. 160, 554-567 (1960)
Eine Untersuchung der Elektronenkomponete von Elektronenlawinen im homogenen Feld. II. [E, H_2, N_2, O_2, CO_2, $(C_2H_5)_2O$]

S L. Frommhold : Phys. Rev. 172, 118-125 (1968)
Resonance scattering and the drift motion of electrons through gases. [E, H_2, N_2]

O D. C. Frost, C. A. McDowell and D. A. Vroom : Phys. Rev. Lett. 15, 612-614 (1960)
Photoelectron spectroscopy with a spherical analyzer. The vibrational energy levels of H_2^+. [E, $h\nu$, H_2^+]

O D. C. Frost, C. A. McDowell and D. A. Vroom : Proc. Roy. Soc. London A296, 566-579 (1967)
Photoelectron kinetic energy analysis in gases by means of a spherical analyser. [E, $h\nu$, H_2, HD, D_2, N_2, O_2, Ar ~ Xe]

S L. S. Frost and A. V. Phelps : Phys. Rev. 127, 1621-1633 (1962a)○
E Rotational excitation and momentum transfer cross sections for electrons
R in H_2 and N_2 from transport coefficients. [E, H_2, N_2]

S L. S. Frost and A. V. Phelps : 5th ICIPG, Munich 1, 192-202 (1962b)
E Molecular excitation of hydrogen and nitrogen from electron swarm
R experiments. [E, H_2, N_2]

O J. Fryar and R. Browning : Planet. Space Sci. 21, 709-711 (1973)
Molecular photoionisation at 584 A and 304 A. [E, $h\nu$, H_2, N_2, O_2, CO_2]

QT H. Gaertner : Ann. Phys. 8, 135-162 (1931)
Wirkungsquerschnittsmessungen an Argon und Wasserstoff gegenuber Elektronen von 0.2 - 6 volt. [E, H_2, Ar]

O J. W. Gallagher, J. R. Rumble, Jr. and E. C. Beaty : NBS Special Publ. 426, Suppl. 1, 1-106 (1979)
Bibliography of low energy electron and photon cross section data. (January 1975 through December 1977).
[compilation, see L. J. Kieffer (1976)]

G. Gallup and J. Macek : 1st Asilomar Cong. on Electron-Molecule and Photon-Molecule Collisions, Plenum Press 109-121 (1979)
The separable approximation in multichannel electron-molecule collisions.
[T,

O J. L. Gardner and J. A. R. Samson : J. Elect. Spectrosc. Relat. Phenom. 8, 123-127 (1976)
Vibrational intensity distributions in the photoelectron spectrum of hydrogen. [E, $h\nu$, H_2; 584 A, v' = 0-15]

O J. L. Gardner and J. A. R. Samson : Phys. Rev. A12, 1404-1407 (1975)
Proton kinetic-energy distributions from dissociative photoionization of hydrogen. [E, $h\nu$, H_2]

O W. R. Garrett : Chem. Phys. Lett. 5, 393-397 (1970)
Critical binding of an electron to a non-stationary electric dipole.
[T, general theory]

R W. R. Garrett : Phys. Rev. A11, 509-515 (1975)
Rotational resonances in molecular scattering of ultra-low-energy electrons. [general theory, 10^{-6} - 2 × 10^{-4} Ryd]

R W. R. Garrett : Phys. Rev. A16, 2305-2314 (1977)·
Rotational resonances in low-energy electron scattering by H_2 and D_2.
[T, H_2, D_2]

EX R. H. Garvey : J. Appl. Phys. 48, 190-193 (1976a)·
I An analytic degradation spectrum for H_2. [T, H_2; 25 eV - 50 keV]

V R. H. Garvey and A. E. S. Green : Phys. Rev. A14, 946-953 (1976b)·
EX Energy-apportionment techniques based upon detailed atomic cross sections.
I [T, H_2; calculate the W values, 20 - 1000 eV]

EX R. H. Garvey, H. S. Porter and A. E. S. Green : J. Appl. Phys. 48, 4353-4359 (1977)
I Relativistic yield spectra for H_2. [T, H_2; 10 - 10^7 eV]

I M. Gavriel : Bull. Soc. Roy. Sci. Belg. 32, 751-7 (1963)
A study of the ionization of hydrogen at high pressure and low temperatures. [, H_2]

EX R. Geballe : Phys. Rev. 66, 316-320 (1944)
O The production of photons relative to ionization by collision in a Townsend gap. [E, H_2]

EX J. Geiger : Z. Phys. 181, 413-425 (1964)
I Streuung von 25 keV-Elektronen an Gasen. Ⅲ. Streuung an Molekularem Wasserstoff. [E, H_2; 25 keV]

O J. Geiger und M. Topschowsky : Z. Naturforsch. 21A, 626-634 (1966)
R Übergangswahrscheinlichkeiten im Elektroden- und Schwingungsspektrum des
V Wasserstoffmolekuls. [E, H_2; 30 keV]

EX J. Geiger and H. Schmoranzer : J. Mol. Spectrosc. 32, 39-53 (1969)
I Electronic and vibrational transition probabilities of isotopic hydrogen molcules H_2, HD and D_2 based on electron energy loss spectra. [E, H_2, HD, D_2; 34 keV]

R S. Geltman and K. Takayanagi : Phys. Lett. 13, 135-137 (1964)・
Excitation of molecular rotation by slow electrons. [T, H_2]

R S. Geltman and K. Takayanagi : Phys. Rev. 143, 25-30 (1966)・
Excitation of moleuclar rotation by slow electrons. Ⅱ. [T, H_2, N_2, O_2]

EX D. E. Gerhart : J. Chem. Phys. 62, 821-832 (1975b)・
I Comprehensive optical and collision data for radiation action. Ⅰ. H_2. [T, H_2]

R E. Gerjuoy and S. Stein : Phys. Rev. 98, 1848-1851 (1955)
Rotational excitation by slow electrons. Ⅱ. [T, p-H_2, n-D_2]

α E. Gerjuoy and G. W. Stuart : Phys. Fluids 3, 1008-1015 (1960)
Ionization growth in a gas with a constant electric field. [T, H_2]

E E. Gerjuoy and K. Thomas : Rep. Progr. Phys. 37, 1345-1431 (1974)・
EX Application of the Glauber approximation to atomic collisions. [T, review, H_2, H, He, Li, Na]

R F. A. Gianturco, U. T. Lamanna and N. K. Rahman : J. Chem. Phys. 68, 5538-5547 (1978)
The Glauber approximation in molecular scattering. Ⅱ. Rotational excitation by electron impact. [T, H_2, N_2, O_2, CO_2, N_2O]

E F. A. Gianturco, U. T. Lamanna and S. Salvini : Int. J. Quant. Chem. : Quant. Chem. Sympo. No. 13, 579-600 (1979)
Electron-molecule scattering at low and intermediate energies : A Glauber-eikonal approximation for simple targets. [T, H_2, N_2, CO_2; DCS]

R D. K. Gibson : Aust. J. Phys. 23, 683-697 (1970)○
The cross sections for rotational excitation of H_2 and D_2 by low energy electrons. [E, H_2, D_2]

E T.T.Gien : Phys.Lett.68A,33-35 (1978b)・
Elastic scattering of electrons by hydrogen molecule in a modified Glauber theory. [T, H_2; 100 eV]

O A.L.Gilardini : Low Energy Electron Collisions in Gases, John Wiley & Sons (1972)

O E.W.B.Gill and A.von Engel : Proc.Roy.Soc.London A197,107-124 (1949)
Starting potentials of electrodeless discharges. [E, H_2, N_2, Ne, He]

EX F.R.Gilmore,E.Bauer and J.W.McGowan : J.Quant.Spectrosc.Radiat.Transf.9, 157-183 (1969)・
A review of atomic and molecular excitation mechanisms in nonequilibrium gases up to 20000 °K. [review, H_2, N_2, CO, CO_2]

O M.L.Ginter and R.Battino : J.Chem.Phys.42,3222-3229 (1965)
On the calculation of potential curves by the Rydberg-Klein-Rees method. I. Experimental limitations, extrapolation procedures, and applications to the third-group hydrides. [T, H_2, O_2, GaH, etc.]

O M.L.Ginter : J.Chem.Phys.46,3687-3688 (1967)
Molecular constants for the l-uncoupled electronic states $3d\ ^{1,3}\Delta_g$ and $3d\ ^{1,3}\Pi_g$ of the hydrogen molecule. [T, H_2]

EX M.Glass-Maujean : J.Physique Lett.38,L427-L428 (1977a)・
Two-step excitation of molecular hydrogen. [E, H_2; metastable $c^3\Pi_u$]

EX M.Glass-Maujean : Comments At.Mol.Phys.7,83-91 (1977b)
D Dissociative excitation of H_2 by electron impact. [comments, H_2]

EX M.Glass-Maujean : J.Phys.B11,431-440 (1978a)
Electron impact dissociation of H_2 and D_2 studied from the anticrossing signals and by the Doppler-profile technique. [E, H_2, D_2]

EX M.Glass-Maujean,J.Breton and P.M.Guyon : Phys.Rev.Lett.40,181-183 (1978b)
Accidental predissociation of the $4p\pi\ ^1\Pi_u^+$ state of H_2. [E, $h\nu$, H_2]

O G.Glockler,W.P.Baxter and R.H.Dalton : J.Am.Chem.Soc.49,58-65 (1927)
The activation of molecular hydrogen by electron impact.
[E, H_2; 11.4 eV]

O P.Gloersen and G.H.Dieke : J.Mol.Spectrosc.16,191-204 (1965)
Molecular spectra of hydrogen and helium in the infrared.
[E, $h\nu$, H_2, D_2, He_2]

O R.M.Glover and F.Weinhold : J.Chem.Phys.66,303-305 (1977)
G + K $^1\Sigma_g^+$ double-minimum excited state of H_2. [T, H_2]

V D. E. Golden and W. H. Bandel : Phys. Rev. Lett. 14, 1010-1013 (1965a)・
A Resonance phenomena in the scattering of electrons by H_2 and D_2.
[E, H_2, D_2; 10 - 13 eV]

α D. E. Golden, H. Nakano and L. H. Fisher : Phys. Rev. 138, A1613-A1616 (1965b)
First Townsend ionization coefficient in hydrogen. [E, H_2]

V D. E. Golden and H. Nakano : Phys. Rev. 144, 71-74 (1966a)・
A Absence of quasibound negative-ion ground states of He and H_2 in electron scattering.
[E, H_2, He; resonances in N_2 from 1.73 to 3.55 eV are also observed]

QT D. E. Golden, H. W. Bandel and J. A. Salerno : Phys. Rev. 146, 40-42 (1966b)○
Absolute total electron scattering cross section in H_2 and D_2 for low electron energies. [E, H_2, D_2; 0.25 - 15 eV, 3 %]

V D. E. Golden : Phys. Rev. Lett. 27, 227-230 (1971a)
A Temporary formation of H_2^- above the H_2^+ threshold by electron impact.
[E, H_2; 11 - 16.4 eV]

E D. E. Golden, N. F. Lane, A. Temkin and E. Gerjuoy : Rev. Mod. Phys. 43, 642-678 (1971b)
R Low energy electron-molecule scattering experiments and the theory of
V rotational excitation. [review, H_2, D_2, N_2, O_2, CO, CO_2]

V D. E. Golden : in Advances in Atomic and Molecular Physics Vol. 14, Academic
A Press 1-85 (1978)
Resonances in electron atom and molecule scattering.
[review, H_2 p. 55 - 67; H, He, H_2, N_2]

D G. Golubkov, F. I. Dalidchik and G. K. Ivanov : Sov. Phys. JETP 44, 679-683 (1976)・
Decay and excitation of a quantum system following two successive sudden changes in the Hamiltonian. [T, H_2; isotope effect]

I J.-C. Gomet : Compt. Rend. Acad. Sci. B287, 77-79 (1978)
Determination experimentale des sections efficaces absolues partielles d'ionisation de l'hydrogene (H_2) par impact electronique.
(Experimental determination of partial absolute ionisation cross sections due to electron impact.) [E, H_2]

O C. C. Goodyear and A. von Engel : Proc. Phys. Soc. London 79, 732-740 (1962)
Dissociation and ionization of hydrogen in high frequency discharges.
[E, H_2]

O G. Grandsire : Ann. d'Astrophys. 17, 287-295 (1954)
Experimental and theoretical study of the continuous spectrum of molecular hydrogen. [E and T, $h\nu$, H_2; 4000 - 6000 A]

EX A. E. S. Green and L. R. Peterson : J. Geophys. Res. 73, 233-241 (1968)
Energy loss functions for electrons and photons in planetary gases.
[T, H_2, O_2, N_2, He - Kr, C, N, O, H_2O, CO_2, CH_4, etc.]

EX A. E. S. Green, C. H. Jackman and R. H. Garvey : J. Geophy. Res. 82, 5104-5111 (1977a)
I Electron impact on atmospheric gases. 2. Yield spectra.
[T, H_2, Ar, H_2O, O_2, N_2, O, CO, CO_2, He]

I A. E. S. Green, R. H. Garvey and C. H. Jackman : Int. J. Quant. Chem. : Quant. Chem. Sympo.
O 11, 97-103 (1977b)
Analytic yield spectra for electrons on H_2. [T, H_2; 50 eV - 25 keV]

QT M. C. Green : Phys. Rev. 36, 239-247 (1930)
The effect of small angle scattering on the electron absorption coefficient. [E, H_2, Ar, Hg, He; 11 - 196 eV]

EX F. Gresteau, R. I. Hall, J. Mazeau and D. Vichon : J. Phys. B10, L545-L548 (1977)·
Electron impact excitation of high vibrational levels of the H_2, NO and O_2 ground states. [E, H_2, NO, O_2]

O R. E. Grojean and J. F. Rendina : Anal. Chem. 43, 162-171 (1971)
Quantitative gas phase analysis by means of electron impact spectrometry.
[E, H_2, Ar, Kr, N_2, CO, NO, NO_2]

S R. Grunberg : Z. Phys. 204, 12-16 (1967)
Bestimmung der Driftgeschwindigkeit von Elektronen in Wasserstoff und Stickstoff bei hohem Druck. [E, H_2, N_2]

S R. Grunberg : Z. Naturforsch. 23A, 1994-2004 (1968)·
Messungen der Elektronenbeweglichkeit bei hohen Gasdrucken in Ar, He, N_2 und H_2. [E, H_2, He, Ar, N_2]

I M. Gryzinski : Phys. Rev. 115, 374-383 (1959)
Classical theory of electronic and ionic inelastic collisions.
[T, H_2, He, Ar, Na, Hg, etc. ; th. - 280 eV for H_2]

M. Gryzinski : 6th ICPIG, Paris 1, 117-121 (1963)
Basic relations for Coulomb interaction and its application to atomic collisions. [T,

I M. Gryzinski : in Atomic Collision Processes, North-Holland Pub. Co., 3rd
O ICPEAC, London 226-236 (1964)
Further development of classical theory of atomic collisions.
[review, T, H_2, He, Ar]

I M. Gryzinski : Phys. Rev. 138, A336-A358 (1965)
Classical theory of atomic collisions. I. Theory of inelastic collisions. [T, H_2, Li, Ar, etc.]

QT M. Gryzinski : J. Chem. Phys. 62, 2620-2628 (1975)·
E Classical theory of atomic collisions. II. Low energy scattering.
[T, H_2, Ne - Xe, H_2O, NH_3, CH_4 - C_4H_{10}, etc.]

O B. K. Gupta : Physica 25, 190-194 (1959)
The $^2\Sigma_u^+$ state of the negative molecular ion H_2^-. [T, H_2]

E P. Gupta and S. P. Khare : J. Chem. Phys. 68, 2193-2198 (1978)
Elastic scattering of electrons by molecular hydrogen for incident energies 100 - 2000 eV. [T, H_2]

O G. N. Haddad, K. H. Lokan, A. J. D. Farmer and J. H. Carver : J. Quant. Spectrosc. Radiat. Transf. 8, 1193-1200 (1968)
An experimental determination of the oscillator strengths for some transitions in the Lyman bands of molecular hydrogen. [E, H_2]

S W. B. Haines : Phil. Mag. 30, 503-509 (1915)
Ionic mobilities in hydrogen and nitrogen. [E, H_2, N_2]

I H. D. Hagstrum and J. T. Tate : Phys. Rev. 59, 354-370 (1941)
Ionization and dissociation of diatomic molecules by electron impact. [E, H_2, N_2, O_2, CO, NO]

I H. D. Hagstrum : Rev. Mod. Phys. 23, 185-203 (1951)
Ionization by electron impact in CO, N_2, NO, and O_2. [review, some confirmatory work in H_2, and CO, NO, N_2, O_2]

α D. H. Hale : Phys. Rev. 55, 815-819 (1939a)
The Townsend coefficients for ionization collision in pure and contaminated hydrogen as a function of the cathode material. [E, H_2]

α D. H. Hale : Phys. Rev. 56, 1199-1202 (1939b)
The Townsend ionization coefficients for Ni and Al cathodes in an atmosphere of hydrogen. [E, H_2]

S B. I. H. Hall : Proc. Phys. Soc. London B68, 334-341 (1955a)
Experimental investigation of the motions of electrons in a gas in the presence of a magnetic field. [E, H_2]

S B. I. H. Hall : Aust. J. Phys. 8, 468-473 (1955b)
The diffusion of slow electrons in deuterium. [E, D_2]

V R. I. Hall, J. Mazeau and J. Reinhardt : Phys. Lett. A30, 427-428 (1969)・
EX Threshold excitation of H_2 and D_2 by electron impact. [E, H_2, D_2; 11 - 15 eV]

V R. I. Hall, J. Mazeau and J. Reinhardt : Phys. Lett. A31, 145-146 (1970)・
EX Resonances in electron impact excitation of H_2 by a trapped electron method. [E, H_2; 11 - 13.5 eV]

A R. I. Hall : 8th Int. Summer School on Phys. Ionized Gases, Dubrovnik 59-70 (1976)・
Dissociative electron attachment. [review, H_2, O_2, CO, NO, H_2O]

V R. I. Hall : 10th ICPEAC, Paris 25-41 (1978)・
A Recent experiments concerning dissociative resonant states in electron-molecule collisions. [review, H_2, D_2, NO, O_2]

O M. Halmann and I. Laulicht : J. Chem. Phys. 43, 1503-1509 (1965)
Isotope effects on vibrational transition probabilities. Ⅲ. Ionization of isotopic H_2, N_2, O_2, NO, CO, and HCl molecules.
[T, H_2, N_2, O_2, NO, CO, HCl]

O M. Halmann and I. Laulicht : J. Chem. Phys. 44, 2398-2405 (1966)
Isotope effects on Franck-Condon factors. Ⅴ. Electronic transitions of isotopic O_2, N_2, C_2 and H_2 molecules. [T, $h\nu$, H_2, N_2, O_2, C_2]

O M. Halmann and I. Laulicht : J. Chem. Phys. 46, 2684-2689 (1967)
Isotope effects on Franck-Condon factors. ⅤⅡ. Vibrational intensity distribution in the H_2 Lyman, H_2 Werner, O_2 Schumann-Runge, N_2 first positive, N_2 Vegard-Kaplan, and LiH (A-X) systems based on RKR potentials. [T, H_2, O_2, N_2, LiH; Rydberg-Klein-Rees]

E J. M. Hammer : Thesis, New York University 1-67 (1956)
Low energy elastic scattering of electrons by atomic hydrogen.
[, H, H_2]

O E. Hantzsche and L. W. Wieczorek : 7th ICPIG, Belgrade 1, 339-342 (1966a)
Energy distribution functions in abnormal glow discharges. [T, H_2]

O E. Hantzsche : Beitr. Plasmaphys. 6, 331-343 (1966b)
Energieverteilungsfunktionen im Fallraum von Glimmentladungen.
[T, H_2]

E S. Hara : J. Phys. Soc. Jpn. 22, 710-718 (1967)・
The scattering of slow electrons by hydrogen molecules. [T, H_2]

E S. Hara : J. Phys. Soc. Jpn. 27, 1009-1019 (1969a)・
A two-center approach in the low energy electron - H_2 scattering. [T, H_2]

O S. Hara : J. Phys. Soc. Jpn. 27, 1262-1267 (1969b)・
The dipole-polarization potential in H_2-electron system. [T, H_2]

R S. Hara : J. Phys. Soc. Jpn. 27, 1592-1597 (1969c)・
Rotational excitation of H_2 by slow electrons. [T, H_2]

R S. Hara : J. Phys. Soc. Jpn. 30, 819-823 (1971)
Rotational excitation of the HD molecule by slow electrons. [T, HD]

O R. C. Harney, J. E. Randolph and F. P. Milanovich : Astrophys. J. 200, L179-L181 (1975)
Relative Raman cross sections for the S(0) through S(4) rotational transitions in hydrogen. [E, $h\nu$, H_2; 4880 and 5145 A]

E G. P. Harnwell : Phys. Rev. 33, 559-571 (1929a)
EX Angular scattering of electrons in helium, neon, hydrogen and nitrogen.
[E, H_2, He, Ne, N_2; 75, 150 eV]

O G. P. Harnwell : Phys. Rev. 34, 661-672 (1929b)
Electron scattering in atomic and molecular hydrogen.
[E, H_2, H; 40 - 180 eV; discharge on and off]

O N. J. Harrick and N. F. Ramsey : Phys. Rev. 88, 228-232 (1952)
Rotational magnetic moment, magnetic susceptibilities and electron distribution in the hydrogen molecule. [E, $h\nu$, H_2; rotational spectrum]

O N. J. Harrick, R. G. Barnes, P. J. Bray and N. F. Ramsey : Phys. Rev. 90, 260-266 (1953)
Nuclear radiofrequency spectra of D_2 and H_2 in intermediate and strong magnetic fields. [E, $h\nu$, H_2, D_2]

S S. Harris : Phil. Mag. 17, 131-145 (1934)
Measurement of ionic mobilities in the positive column.
[E, H_2, N_2 + O_2]

I A. G. Harrison, E. G. Jones, S. K. Gupta and G. P. Nagy : Can. J. Chem. 44, 1967-1973 (1966)·
Total cross sections for ionization by electron impact.
[E, H_2, N_2, O_2, Ne - Xe, CO_2, CH_4, etc.; 75 eV]

S H. R. Harrision and B. E. Springett : Chem. Phys. Lett. 10, 418-421 (1971a)
Electron mobility variation in dense hydrogen gas. [E, H_2; 26 - 32 K]

S H. R. Harrision : Thesis, University of Michigan 1-117 (1971b)
Electron mobility and scattering in cold, dense helium and hydrogen gases. [E, H_2, He]

EX H. J. Hartfuss, J. Neumann and H. D. Schneider : Z. Naturforsch. 31a, 1292-1297 (1976)·
Intensity ratios within the Balmer lines Hα and Hβ after dissociative excitation of C_6H_6 and H_2. [E, H_2, C_6H_6; 110 - 440 eV]

EX H. J. Hartfuss and A. Schmillen : 10th ICPEAC, Paris I, 584-585 (1977)
Excitation cross sections for the H-state 3s, 3p, 3d after the dissociative excitation of some H-containing molecules after e^- impact.
[E, H_2, D_2, H_2O, D_2O, CH_4, C_6H_6, C_6D_6]

O D. R. Hartree : Proc. Cambridge Phil. Soc. 24, 89-110 (1928a)
The wave mechanics of an atom with a non-Coulomb central field. Part I. Theory and methods. [T, general theory]

O D. R. Hartree : Proc. Cambridge Phil. Soc. 24, 111-132 (1928b)
The wave mechanics of an atom with a non-Coulomb central field. Part II. Some results and discussion. [T, He, Rb^+, Na^+, Cl^-]

O J. E. Hasser : J. Chem. Phys. 48, 2518-2535 (1968)
Absolute transition probabilities in ultraviolet molecular spectra.
[E, H_2, N_2, CO_2, CO, NO, etc.]

E J. B. Hasted : Contemp. Phys. 14, 357-387 (1973)
Electron scattering spectroscopy.
[review, H_2, He - Xe, N_2, O_2, CO, CS_2, N_2O, H_2O, C_6H_6]

I Y. Hatano : Sympo. on Electron-Molecule Collisions, Tokyo 135-147 (1979)
Translational spectroscopy of electron-impact dissociation of some simple molecules by Doppler profile measurements of Balmer-emission.
[E, H_2, D_2]

O G. Hayakawa : Proc. Phys.-Math. Soc. Jpn. 23, 318-335 (1941)
Stark effect on hydrogen molecule (Part 1). [E, $h\nu$, H_2]

I T. Hayakawa and T. Sugiura : Bull. Naniwa Univ. (Japan) 3, 193-202 (1955)
Ionization and dissociation of molecules and atoms by electron impact. I. Relative abundace, relative efficiency of ionization, and natural isotope abundance. [E,

S M. Hayashi : J. Physique C7, 40, 45-46 (1979)
Monte Carlo simulation of electron avalanche in hydrogen. [T, H_2]

E S. Hayashi and K. Kuchitsu : J. Phys. Soc. Jpn. 41, 1724-1732 (1976)
Elastic scattering of electrons by molecules at intermediate energies. I. General theory. [T, general theory]

E S. Hayashi and K. Kuchitsu : J. Phys. Soc. Jpn. 42, 1319-1326 (1977)
Elastic scattering of electrons by molecules at intermediate energies. II. Application to hydrogen molecule. [T, H_2; 50 - 400 eV, DCS]

α S. C. Haydon and A. G. Robertson : Proc. Phys. Soc. London 78, 92-102 (1961)
Pre-breakdown ionization in hydrogen at low pressures. [E, H_2]

α S. C. Haydon and A. G. Robertson : 5th ICPIG, Munich 1, 75-84 (1962a)
Ionization coefficients for hydrogen in crossed electric and magnetic fields. [E, H_2]

S S. C. Haydon : 5th ICPIG, Munich 1, 763 (1962b)
The equivalent pressure concept for ionization in a transverse magnetic field. [

S S. C. Haydon and A. G. Robertson : Proc. Phys. Soc. London 82, 343-352 (1963)
The effective collision frequency in molecular hydrogen in the presence of a transverse magnetic field. [E, H_2]

α S. C. Haydon and H. M. P. Stock : Aust. J. Phys. 19, 795-803 (1966)
Non-equilibrium ionization growth in molecular hydrogen. [E, H_2]

S S. C. Haydon, A. I. McIntosh and A. A. Simpson : J. Phys. D4, 1257-1265 (1971)
The effect of magnetic fields on electron energy distribution functions and derived collision frequencies. [T, H_2]

I A. U. Hazi : J. Chem. Phys. 60, 4358-4361 (1974a)
Distribution of final state resulting from autoionization of the $^1\Sigma_g$ state of H_2 and D_2. [T, H_2, D_2; populations of vib. levels]

I A. U. Hazi : Chem. Phys. Lett. 25, 259-262 (1974b)
New channel for dissociative ionization of H_2. [T, H_2; $<$ 29 eV]

I A.U.Hazi : J.Phys.B8,L262-L264 (1975)・
Comment on the dissociative ionization of H_2.
[T, H_2; $^1\Pi_u(1\sigma_u 2\pi_g)$ state]

D A.U.Hazi and K.Wiemers : J.Chem.Phys.66,5296-5305 (1977)
Velocity distribution of H(2s) resulting from the electron impact dissociation of H_2. [T, H_2]

V M.G.Heaps and A.E.S.Green : J.Appl.Phys.46,4718-4725 (1975)
EX Energy spreading and angular distribution of a beam of electrons in
I molecular hydrogen. [T, H_2; c.s. set for H_2, 1 - 10^3 eV]

O D.W.Heddle : J.Quant.Spectrosc.Radiat.Transf.2,349-357 (1962)
Photon-scattering processes. [E, $h\nu$, H_2, N_2, Ar]

EX H.G.M.Heideman,C.E.Kuyatt and G.E.Chamberlain : J.Chem.Phys.44,440-441 (1966)
Inelastic electron scattering from H_2. [E, H_2; 13.7 - 50.7 eV]

I W.Henkes and F.Mikosch : Int.J.Mass Spectrom.Ion Phys.13,151-161 (1974)
The effective cross section for ionization by electron of molecules in hydrogen clusters. [E, $(H_2)_N$; N = 340 - 85000; 30 - 500 eV]

E R.J.W.Henry and N.F.Lane : Phys.Rev.183,221-231 (1969)○
R Polarization and exchange effects in low-energy electron - H_2 scattering.
[T, H_2; 0.005 - 1 Ry; close coupling cal.]

R R.J.W.Henry : Phys.Rev.A2,1349-1358 (1970)
V Vibrational and rotational excitation of molecular hydrogen by electron impact. [T, H_2; DCS, th. - 10 eV]

R R.J.W.Henry and N.F.Lane : Phys.Rev.A4,410-411 (1971)
Polarization and exchange effects in low-energy-electron-D_2 scattering.
[T, D_2]

R R.J.W.Henry and E.S.Chang : Phys.Rev.A5,276-284 (1972)
V Rotational-vibrational excitation of H_2 by slow electrons. [T, H_2]

O G.Herzberg : Nature 166,563-563 (1950a)
Rotation-vibration spectrum of the HD molecule. [E, $h\nu$, HD]

O G.Herzberg : Can.J.Res.A28,144-152 (1950b)
Forbidden transitions in diatomic molecules. I. The quadrupole rotation-vibration spectrum of H_2. [E, $h\nu$, H_2]

O G.Herzberg : Molecular Spectra and Molecular Structure. I. Spectra of Diatomic Molecules, Van Nostrand Reinhold Company, 2nd ed. (1950)

O G.Herzberg and L.L.Howe : Can.J.Phys.37,636-659 (1959)
The Lyman bands of molecular hydrogen. [E, $h\nu$, H_2]

O G,Herzberg and A.Monfils : J.Mol.Spectrosc.5,482-498 (1960)
The dissociation energies of the H_2, HD, and D_2 molecules.
[E, $h\nu$, H_2, HD, D_2]

O G. Herzberg : Sci. Light 16, 14-21 (1967)・
A new predissociation of the H_2 molecule. [E, $h\nu$, H_2]

O G. Herzberg : Phys. Rev. Lett. 23, 1081-1083 (1969)
Dissociation energy and ionization potential of molecular hydrogen.
[E, $h\nu$, H_2, HD, D_2]

O G. Herzberg : J. Mol. Spectrosc. 33, 147-168 (1970)
The dissociation energy of the hydrogen molecule.
[E, $h\nu$, H_2, HD, D_2; $D(H_2)$ = 36118.3 cm^{-1}]

O G. Herzberg and Ch. Jungen : J. Mol. Spectrosc. 41, 425-486 (1972)
Rydberg series and ionization potential of the H_2 molecule.
[E, $h\nu$, ortho- and para-H_2; 835 - 765 A, 80 K]

O G. Herzberg : Science 177, 123-138 (1972)
Spectroscopic studies of molecular structure.
[review, $h\nu$, Nobel prize lecture, H_2, O_2, CH, C_2H_2, CH_3, CH_4, etc.]

V A. Herzenberg and F. Mandl : Proc. Roy. Soc. London A270, 48-71 (1962)
Vibrational excitation of molecules by resonance scattering of electrons.
[T, general theory; N_2, no data for H_2]

O J. E. Hesser and K. Dressler : J. Chem. Phys. 45, 3149-3150 (1966)
Radiative lifetimes of ultraviolet molecular transitions.
[E, H_2, CO, N_2, NO, CO_2, etc.]

O J. E. Hesser : J. Chem. Phys. 48, 2518-2535 (1968a)
Absolute transition probabilities in ultraviolet molecular spectra.
[E, $h\nu$, H_2, N_2, NO, CO, BF, CF, BCl, etc.]

EX J. E. Hesser, M. H. Brooks and G. M. Lawrence : J. Chem. Phys. 49, 5388-5394 (1968b)
H_2 Lyman-band oscillator strengths. [E, H_2]

O J. E. Hesser, M. H. Brooks and G. M. Lawrence : Astrophys. J. 153, L65-L66 (1968c)
The oscillator strength of the molecular hydrogen (4, 0) Lyman band.
[E, $h\nu$, H_2; $B^1\Sigma_u^+ \leftarrow X^1\Sigma_g^+$ (4, 0)]

S A. E. D. Heylen : Proc. Phys. Soc. London 76, 779-782 (1960a)
Calculated electron mobility in hydrogen. [T, H_2]

S A. E. D. Heylen and T. J. Lewis : 4th ICPIG, Uppsala IB 156-160 (1960b)・
α Theoretical determinations of the electron energy distributions, drift velocity and Townsend α coefficient for hydrogen. [T, H_2]

O A. E. D. Heylen : Brit. J. Appl. Phys. 16, 1151-1159 (1965)
The influence of a crossed magnetic field on a gaseous Townsend discharge. [T, H_2]

S A. E. D. Heylen and C. L. Dargan : Brit. J. Appl. Phys. 17, 1075-1082 (1966)
Calculated magnetic electron drift velocities in H_2, N_2, O_2, air and C_2H_6 for $10 < E/p < 10^4$ V m^{-1} $torr^{-1}$. [T, H_2, N_2, O_2, $N_2 + O_2$, C_2H_6]

S A. E. D. Heylen and K. A. Bunting : Int. J. Elect. 27, 1-12 (1969)
Electron drift velocities in a moderate and in a strong crossed magnetic field. [T, H_2]

O A. E. D. Heylen : Int. J. Elect. 41, 209-220 (1976)
Criterion for Townsend breakdown in a crossed electric and magnetic field with wall losses. [T, H_2, He, Ar, N_2]

EX P. J. Hicks, J. Comer and F. H. Read : J. Phys. B6, L65-L69 (1973)
Autoionizing transitions in N_2 and H_2 produced by electron impact. [E, H_2, N_2]

E. R. Hill : Aust. J. Sci. 4, 437-449 (1951)
Collision processes involving highly ionized atoms. [,

O F. Hirota : J. Elect. Spectrosc. Relat. Phenom. 9, 149-167 (1976)
Calculation of the molecular photoionization cross sections in the UV region. I. Diatomic molecules. [T, $h\nu$, H_2, N_2, O_2, CO]

O R. T. Hodgson : Phys. Rev. Lett. 25, 494-497 (1970)
Vacuum-ultraviolet laser action observed in the Lyman bands of molecular hydrogen. [E, $h\nu$, H_2]

O R. T. Hodgson and R. W. Dreyfus : Phys. Rev. Lett. 28, 536-539 (1972)
Vacuum-UV laser action observed in H_2 Werner bands : 1161-1240 A.
[E, $h\nu$, H_2; see R. W. Dreyfus (1974), Hodson → Hodgson]

O G. Hofmann : J. Quant. Spectrosc. Radiat. Transf. 8, 729-734 (1968)
Eine Strahlungswuelle hoher Leistung unter 800 A zur Photoionisation von Wasserstoff als Vorionisation eines Thetapinches. [E, $h\nu$, H_2]

I R. E. Honig : J. Chem. Phys. 16, 837-838 (1948)
A comparison of the ionization cross sections of H_2 and D_2. [E, H_2, D_2]

O J. J. Hopfield : Phys. Rev. 35, 1133-1134 (1930a)
Absorption and emission spectra in the region λ 600 - 1100.
[E, $h\nu$, H_2]

O J. J. Hopfield : Nature 125, 927-927 (1930b)
New spectrum of the hydrogen molecule.
[E, $h\nu$, H_2; note of Phys. Rev. May 1 (1930)]

O J. J. Hopfield : Phys. Rev. 47, 788-789 (1935)
Extension of the absorption spectrum of hydrogen molecule.
[E, $h\nu$, H_2]

α W. Hopwood, N. J. Peacock and A. Wilkes : Proc. Roy. Soc. London A235, 334-348 (1956)
A study of ionization coefficients and electrical breakdown in hydrogen.
[E, H_2; 30 - 120 Td]

O T. Hori : Z. Phys. 44, 834-854 (1927)
Uber die Analyse des Wasserstoffbandenspektrums im aussersten Ultraviolett.
[E, $h\nu$, H_2]

O H. Hotop and A. Niehaus : Int. J. Mass Spectrom. Ion Phys. 5, 415-441 (1970)
Reactions of excited atoms and molecules with atoms and molecules. V. Comparison of Penning electron and photoelectron spectra of H_2, N_2 and CO. [E, $h\nu$, H_2, N_2, CO]

E J. T. J. Huang and F. T. Chan : Phys. Rev. A15, 1782-1784 (1977)
Glauber e^- - H_2 elastic cross sections using the model of independent scattering centers. [T, H_2; 30 - 200 eV]

O K. P. Huber and G. Herzberg : Molecular Spectra and Molecular Structure IV. Constants of Diatomic Molecules. Van Nostrand Reinhold Company 240-253 (1979)

O R. D. Hudson : Rev. Geophys. Space Phys. 9, 305-406 (1971)
Critical review of ultraviolet photoabsorption cross sections for molecules of astrophysical and aeronomic interest.
[review, $h\nu$, H_2, O_2, O_3, N_2, H_2O, CO, NO, CO_2, NH_3, H_2S, N_2O, NO_2, CH_4, CS_2, SO_2, COS, C_2H_2, C_2H_4, C_2H_6]

EX A. L. Hughes and P. Lowe : Phys. Rev. 21, 292-300 (1923)
Intensities in the hydrogen spectrum. [E, H_2]

I A. L. Hughes and E. Klein : Phys. Rev. 23, 450-463 (1924)
Ionization of gases as a function of the energy of electron impacts.
[E, H_2, N_2, He - Ar, CH_4; 17 - 300 eV for H_2]

D A. L. Hughes and A. M. Skellet : Phys. Rev. 30, 11-25 (1927)
Dissociation of hydrogen by electrons. [E, H_2]

E A. L. Hughes and J. H. McMillen : Phys. Rev. 41, 39-48 (1932)
EX Elastic and inelastic electron scattering in hydrogen.
I [E, H_2; 35 -412 eV]

O F. Hund : Z. Phys. 40, 742-764 (1927a)
Zur Deutung der Molekelspektren. I. [T, general theory]

O F. Hund : Z. Phys. 42, 93-120 (1927b)
Zur Deutung der Molekelspektren. II. [T, H_2, CO, CO^+, etc.]

O F. Hund : Z. Phys. 43, 805-826 (1927c)
Zur Deutung der Molekelspektren. III. Bemerkung uber das Schwingungs- und Rotationsspektrum bei Molekeln mit Mehr als zwei Kernen.
[T, H_2O, O_3, NH_3, CH_4]

O F. Hund : Z. Phys. 51, 759-795 (1928)
Zur Deutung der Molekelspektren. IV. [T, H_2, H_2^+, LiH, O_2, F_2, etc.]

O F. Hund : Z. Phys. 63, 719-751 (1930)
Zur Deutung der Molekelspektren. V. Die angeregten Elektronenterme von Molekeln mit zwei gleichen Kernen (H_2, He_2, Li_2, N_2^+, N_2 ····). [T, H_2, etc.]

O F. Hund : Z. Phys. 73, 1-30 (1931)
Zur Frage der chemischen Bindung. [T, H_2]

O G. Hunter : J. Chem. Phys. 45, 3022-3028 (1966)
Adiabatic dissociation energies for the ground states of the H_2, HD, and D_2 molecules. [T, H_2, HD, D_2]

O G. Hunter and H. O. Pritchard : J. Chem. Phys. 46, 2153-2158 (1967)
Born-Oppenheimer separation for three-particle systems. Ⅲ. Applications. [T, H_2, HD, D_2]

S S. R. Hunter : Aust. J. Phys. 30, 83-104 (1977)·
Monte Carlo simulation of electron swarms in H_2. [T, H_2]

O A. C. Hurley : Proc. Roy. Soc. London A226, 170-178 (1954a)
The electrostatic calculation of molecular energies. Ⅰ. Methods of calculating molecular energies. [T, H_2]

O A. C. Hurley : Proc. Roy. Soc. London A226, 179-192 (1954b)
The electrostatic calculation of molecular energies. Ⅱ. Approximate wave functions and the electrostatic method. [T, H_2, H_2^+]

S G. S. Hurst and J. E. Parks : J. Chem. Phys. 45, 282-295 (1966)
Time-of-flight determinations of electron diffusion coefficients and electron drift velocities in ethylene, water vapor and in hydrogen. [E, H_2, H_2O, C_2H_4]

S L. G. H. Huxley and R. W. Crompton : Proc. Phys. Soc. London B68, 381-383 (1955)
A note on the diffusion in a gas of electrons from a small source. [T, H_2]

S L. G. H. Huxley : Aust. J. Phys. 9, 44-53 (1956)·
Formulae for the mean losses of energy in collisions of slow electrons moving in diatomic gases. [T, H_2, N_2, O_2]

S L. G. H. Huxley and R. W. Crompton : The Diffusion and Drift of Electrons in Gases, John Wiley and Sons (1974)

O R. E. Imhof and F. H. Read : J. Phys. B4, 1063-1069 (1971)
Measured lifetimes of the $C^3\Pi_u$ state of N_2 and the $a^3\Sigma_g^+$ state of H_2. [E, H_2, N_2]

O M. Inokuti : Rev. Mod. Phys. 43, 297-347 (1971)·
Inelastic collisions of fast charged particles with atoms and molecules — The Bethe theory revisited. [general theory]

O M. Inokuti, Y. Itikawa and J. E. Turner : Rev. Mod. Phys. 50, 23-35 (1978)・
Addenda : Inelastic collisions of fast charged particles with atoms and molecules — The Bethe theory revisited [Rev. Mod. Phys. 43, 297 (1971)].
[general theory]

I M. Inokuti : Radiat. Res. 64, 6-22 (1975)
Ionization yields in gases under electron irradiation.
[T,

E S. Ishi and K. Tanaka : J. Phys. Soc. Jpn. 37, 1073-1076 (1974),
Erratum 41, 1800-1800 (1976)
Calculation of the fast electron scattering cross sections from the hydrogen molecules. [T, H_2; 1st Born]

E Y. Itikawa : Planet. Space Sci. 19, 993-1007 (1971)
Effective collision frequency of electrons in atmospheric gases.
[T, H_2, N_2, O_2, CO_2, H_2O, O, H, He]

E Y. Itikawa : Argonne Natl. Labo. Report ANL-7939, 1-32 (1972)・
Momentum transfer cross sections for electron collisions with atoms and molecules and their application to effective collision frequencies.
[compilation, H_2, H, He - Xe, O, Cs, Hg, N_2, O_2, CO, NO, H_2O, CO_2, N_2O, NH_3, CH_4; 0.01 - 10 eV]

O Y. Itikawa : J. Elect. Spectrosc. Relat. Phenom. 2, 125-142 (1973)
Calculation of the cross sections for the photoionization of H_2 and D_2 into different vibrational states of the ion. [T, $h\nu$, H_2, D_2]

E Y. Itikawa : Atomic Data and Nucl. Data Tables 14, 1-10 (1974)
Momentum-transfer cross sections for electron collisions with atoms and molecules. [compilation, H_2, etc., same as Y. Itikawa (1972)]

E Y. Itikawa : Atomic Data and Nucl. Data Tables 21, 69-75 (1978)
Momentum-transfer cross sections for electron collisions with atoms and molecules. Revision and supplement, 1977.
[compilation, H_2, He, O, Ne, Ar, Hg, CO, H_2O, CO_2, Li, K; 0.01 - 10 eV]

O Y. Itikawa : Chem. Phys. 28, 461-471 (1978a)
Vibrational-rotational structure in the angular distribution and intensity of photoelectrons from diatomic molecules. I. General theory.
[T, $h\nu$, general theory]

O Y. Itikawa : Chem. Phys. 30, 109-117 (1978b)
Vibrational-rotational structure in the angular distribution and intensity of photoelectrons from diatomic molecules. II. H_2.
[T, $h\nu$, H_2; 584 and 736 A]

O Y. Itikawa : Chem. Phys. 37, 401-410 (1979)
Vibrational-rotational structure in the angular distribution and intensity of photoelectrons from diatomic molecules. III. Effects of higher partial waves of ejected electrons from H_2. [T, $h\nu$, H_2]

EX K. Ito, N. Oda, Y. Hatano and T. Tsuboi : Chem. Phys. 17, 35-43 (1976), Erratum 21, 311-311 (1976)
Doppler profile measurements of Balmer-α radiation by electron impact on H_2. [E, H_2]

EX K. Ito, N. Oda, Y. Hatano and T. Tsuboi : Chem. Phys. 21, 203-210 (1977)・
The electron energy dependence of the Doppler profiles of the Balmer-α emission from H_2, D_2, CH_4 and other simple hydrocarbons by electron impact. [E, H_2, D_2, CH_4, C_2H_2, C_3H_6, C_3H_8]

E A. Jaegle and A. Duguet : J. Chim. Phys. 68, 1154-1158 (1971)
Mesure des sections efficaces differentielles de diffusion des electrons par une cible moleculaire. Estimation de l'energie de liaison des molecules. II. - Molecules diatomiques : H_2, N_2, O_2, CO, NO.
(Measurement of the differential electron cross sections in a molecular target. Estimation of the binding energy of the molecules. II. Diatomic molecules H_2, N_2, O_2, CO, NO.) [E, H_2, N_2, O_2, CO, NO]

S G. Jager and W. Otto : Z. Phys. 169, 517-525 (1962)・
Driftgeschwindigkeiten von Ionen und Elektronen in Argon und Wasserstoff. [E, H_2, Ar; E/N = 54 - 90 Td]

E A. Jain, A. N. Tripathi and M. K. Srivastava : Phys. Rev. A20, 2352-2355 (1979)・
Elastic scattering of electrons by molecule hydrogen at intermediate and high energies. [T, H_2; independent-atom model, DCS, 75 - 700 eV]

E D. K. Jain and S. P. Khare : Phys. Lett. 63A, 237-238 (1977)・
Diffraction of medium energy electrons by hydrogen molecule. [T, H_2]

O H. James and A. Coolidge : Phys. Rev. 55, 184-190 (1939)
Continuous spectra of H_2 and D_2. [T, $h\nu$, H_2, D_2]

O T. C. James : J. Mol. Spectrosc. 32, 512-514 (1969)
Intensity of the quadrupole rotation-vibration spectrum of molecular hydrogen. [T, $h\nu$, H_2]

O J. Janca : Czech. J. Phys. 18B, 919-927 (1968)
Energy exchange in high-pressure discharge plasmas excited in diatomic gases. [, H_2, N_2; effect of vib. temp.]

E G. Janzen, W. Staib, G. Kruppa, U. Schuker and H. Suhr : Ber. Bunsenges. Phys. Chem. 79, 63-66 (1975)
Messung der Stossfrequenz in Gasentladungen verschiedener mehratomiger Gase. [E, H_2, He, Ar, N_2, CO, O_2, H_2O, CO_2, NH_3, CH_4, CH_3OH, $(CH_3)_2CO$]

O C. R. Jeppesen : Phys. Rev. 44, 165-184 (1933)
The emission spectrum of molecular hydrogen in the extreme ultraviolet. [E, $h\nu$, H_2]

O C. R. Jeppesen : Phys. Rev. 49, 797-803 (1936)
The emission spectrum of D_2 in the extreme ultraviolet. [E, $h\nu$, D_2]

I W. P. Jesse : Phys. Rev. 26, 208-220 (1925)・
The relative ionization in different gases for slow-moving electrons.
[E, H_2, N_2, CO, He - Ar, CH_4]

I W. P. Jesse : J. Chem. Phys. 38, 2774-2775 (1963)
Isotope effect in the ionization of polyatomic gases by beta particles.
[E, H_2, D_2, CH_4, C_2H_4, C_2H_6]

O A. N. Jette : J. Chem. Phys. 61, 816-819 (1974a)
Spin-other-orbit and spin-spin interactions in the metastable, $C^3\Pi_u$ (1s, 2p) state of H_2. [T, H_2]

O A. N. Jette and T. A. Miller : Chem. Phys. Lett. 29, 547-550 (1974b)
Fine structure in Rydberg states of the H_2 molecule. [T, H_2]

O A. N. Jette : J. Chem. Phys. 65, 4325-4327 (1976),
Erratum 67, 2934-2934 (1977)
The ab initio calculation of the spin-rotational coupling in the metastable $c^3\Pi_u$ (1s, 2p) state of molecular hydrogen. [T, H_2]

O B. Jeziorski and W. Kolos : Chem. Phys. Lett. 3, 677-678 (1969)
On the ionization potential of H_2. [T, H_2]

O T. L. John : Astron. Astrophys. 67, 395-398 (1978)
Neutral bremsstrahlung from molecular hydrogen and nitrogen. [T, H_2, N_2]

O C. E. Johnson : Phys. Rev. A5, 1026-1030 (1972)
Lifetime of the $c^3\Pi_u$ metastable state of H_2, D_2, and HD.
[E, H_2, D_2, HD; 1.02 ms]

O C. E. Johnson : Phys. Rev. A9, 576-577 (1974)
Quenching of the $c^3\Pi_u$ metastable state of H_2 and D_2 by an electric field. [E, H_2, D_2]

O V. A. Johnson : Phys. Rev. 60, 373-377 (1941)・
Correction for nuclear motion in H_2^+. [T, H_2, H_2^+]

E. A. Jones : Thesis, Ohio State University 1-112 (1948)
Inelastic scattering of electrons by molecular hydrogen. [, H_2]

α E. Jones and F. Llewellyn-Jones : Proc. Phys. Soc. London 72, 363-368 (1958)
The experimental determination of the primary ionization coefficients at low gas pressures. [E, H_2; E/N = 120 -1050 Td]

EX H. Jones and R. Whiddington : Phil. Mag. 6, 889- (1928)
The energy losses of electrons in hydrogen. [, H_2]

EX W. M. Jones : J. Chem. Phys. 59, 5688-5695 (1973)
I Some calculated quantities in the radiation chemistry of molecular hydrogen : Average energy per ion pair and numbers of singlet and triplet excitations per ion pair. [T, H_2; W values, 75 - 1500 eV]

I W. M. Jones and D. F. Dever : J. Chem. Phys. 60, 2900-2906 (1974)
Number of atoms formed per ion pair in tritium gas. Correlation with molecular processes. [E, T_2]

O R. Jost and M. Lombardi : Phys. Rev. Lett. 33, 53-56 (1974)
Determination of the singlet-triplet separation of H_2 by a "level-anticrossing" technique. [E, $h\nu$, H_2]

O R. Jost, M. Lombardi, J. Derouard, R. S. Freund, T. A. Miller and B. R. Zegarski : Chem. Phys. Lett. 37, 507-511 (1976)
Singlet-triplet anticrossings and the electronic isotope shift in D_2.
[E and T, D_2]

O H. W. Joy and R. G. Parr : J. Chem. Phys. 28, 448-453 (1958)
A one-center wave function for the hydrogen molecule. [T, H_2]

R G. Joyez, J. Comer and F. H. Read : J. Phys. B6, 2427-2440 (1973)
Resonant rotational excitation of H_2 by electron impact.
[E, H_2; 11 - 12.25 eV]

D J. Julien, M. Glass-Maujean and J. P. Descoubes : J. Phys. B6, L196-L200 (1973)
On the dissociation of the H_2 molecule following electron impact and leading to the obtention of atomic hydrogen in the n = 3 levels.
[E, H_2; 20 - 55 eV]

O P. S. Julienne : Chem. Phys. Lett. 8, 27-28 (1971)
Predissociation of the H_2 $D^1\Pi_u$ state. [T, H_2; Hartree-Fock approxi.]

O P. S. Julienne : J. Mol. Spectrosc. 48, 508-529 (1973)
Nonadiabatic effects in the B, C, B', and D states of H_2. [T, H_2]

I K. Jung, E. Schubert, D. A. L. Paul and H. Ehrhardt : J. Phys. B8, 1330-1337 (1975)
Anglar correlation of outgoing electrons following ionization of H_2 and N_2 by electron impact. [E, H_2, N_2]

O Ch. Jungen and O. Atabek : J. Chem. Phys. 66, 5584-5609 (1977)
Rovibronic interactions in the photoabsorption spectrum of molecular hydrogen and deuterium : An application of multichannel quantum defect methods. [T, $h\nu$, H_2, D_2]

I K. Kadota and Y. Kaneko : J. Phys. Soc. Jpn. 38, 524-531 (1975)
Neutralization method for detection of metastable ions and its application to the production of metastable rare gas ions by electron impact.
[E, H_2, He - Xe, N_2, O_2, CO]

O R. H. Kagann and T. C. English : Phys. Rev. A13, 1451-1462 (1976)
Stark-Zeeman effect of metastable orthohydrogen and parahydrogen.
[E, H_2; $c^3\Pi_u$ state]

I H. Kallmann und M. A. Bredig : Z. Phys. 43, 16-26 (1927)
Uber die Ionisationsvorgange im Wasserstoff und Stickstoff.
[E, H_2, N_2; 16 - 23 eV]

EX C. Karolis and E. Harting : J. Phys. B11, 357-369 (1978)・
Electron impact dissociation cross sections in hydrogen and deuterium, leading to Balmer alpha and beta emission.
[E, H_2, D_2; emission c.s., th. - 100 eV]

EX W. E. Kauppila, P. J. O. Teubner, W. L. Fite and R. J. Girnius : J. Chem. Phys. 55, 1670-1672 (1971)・
Lyman-alpha emission induced by the collisions of electrons with molecular hydrogen. [E, H_2]

I L. Kerwin and P. Marmet : J. Appl. Phys. 31, 2071-2076 (1960)
Recent appearance potential measurements using an electrostatic electron selector. [E, H_2, N_2, Ar]

E S. P. Khare and B. L. Moiseiwitsch : Proc. Phys. Soc. London 85, 821-839 (1965)
The angular distribution of electrons elastically scattered by helium atoms and by hydrogen molecules. [T, H_2, He]

EX S. P. Khare and B. L. Moiseiwitsch : Proc. Phys. Soc. London 88, 605-610 (1966a)
The dissociation of hydrogen molecules by electron impact. [T, H_2]

EX S. P. Khare : Phys. Rev. 149, 33-37 (1966b)
Excitation of hydrogen molecules by electron impact. [T, H_2]

EX S. P. Khare : Phys. Rev. 152, 74-75 (1966c)
Excitation of hydrogen molecules by electron impact. II. Excitaiton of $D(3p\pi\ ^1\Pi_u)$ state. [T, H_2]

EX S. P. Khare : Phys. Rev. 157, 107-112 (1967)
Excitation of hydrogen molecules by electron impact. III. Singet-triplet excitations. [T, H_2]

I S. P. Khare and B. D. Padalia : J. Phys. B3, 1073-1082 (1970)
Total ionization cross sections of He, N_2, H_2 and O_2 due to electron impact.
[T, H_2, He, N_2, O_2]

E S. P. Khare and P. Shobha : J. Phys. B5, 1938-1949 (1972)
Elastic scattering of electrons by hydrogen molecules. [T, H_2]

E S. P. Khare and P. Shobha : J. Phys. B7, 420-427 (1974)
Elastic scattering of electrons by neon and argon atoms and hydrogen molecules. [T, H_2, Ne, Ar]

E S. P. Khare, R. Shingal and B. B. Srivastava : J. Phys. Soc. Jpn. 43, 2036-2041 (1977)
Absorption effects in electron-hydrogen molecule elastic scattering at intermediate energies. [T, H_2; DCS, 30 - 200 eV]

EX G. A. Khayrallah and S. J. Smith : 9th ICPEAC, Seattle 808-809 (1975)
Production of excited hydrogen atoms (n = 3, 4, 5) in dissociative excitation of molecular hydrogen by electron impact.
[E, H_2; emission c.s. of Balmer α, β and γ radiation]

EX G. A. Khayrallah : Phys. Rev. A13, 1989-2003 (1976a)・
Electron impact dissociation of molecular hydrogen and deuterium : Production of atomic hydrogen and deuterium α, β, and γ Balmer lines.
[E, H_2, D_2; th. - 540 eV]

EX G. A. Khayrallah and S. J. Smith : Bull. Am. Phys. Soc. 21, 575-575 (1976b)
The isotope effect in the dissociative excitation of H_2 and D_2 by electron impact. [E, H_2, D_2; 1 - 500 eV]

EX G. A. Khayrallah and S. J. Smith : Chem. Phys. Lett. 48, 289-293 (1977)
The cross section for production of the 3s state of atomic hydrogen in dissociative excitation of H_2 by electrons. [E, H_2; 20 - 500 eV]

A V. I. Khvostenko and V. M. Dukel'skii : Sov. Phys. JETP 6, 657-660 (1958a)・
Formation of negative H^- ions in collisions of electrons with hydrogen molecules. [E, H_2; 3 - 38 eV]

O V. I. Khvostenko and V. M. Dukel'skii : Sov. Phys. JETP 7, 709-710 (1958b)・
The negative ion H_2^-. [, H_2]

O M. H. Kibel, F. J. Leng and G. L. Nyberg : J. Elect. Spectrosc. Relat. Phenom. 15, 281-286 (1979)・
Angular-distribution He(I)/Ne(I) photoelectron spectra of H_2, N_2 and other small molecules. [E, H_2, N_2, O_2, CO, CO_2, Ar, Xe]

I L. J. Kieffer and D. H. Dunn : Rev. Mod. Phys. 38, 1-35 (1966)
Electron impact ionization cross-section data for atoms, atomic ions, and diatomic molecules : I. Experimental data.
[review, H_2, D_2, N_2, CO, NO, O_2]

I L. J. Kieffer and G. H. Dunn : Phys. Rev. 158, 61-65 (1967), Erratum 164, 270 (1967)
Dissociative ionization of H_2 and D_2. [E, H_2, D_2]

V L. J. Kieffer : Atomic Data 1, 19-89 (1969a), Erratum 1; 359-359 (1970)
I Low-energy electron-collision cross-section data. Part I : Ionization, dissociation, vibrational excitation.
[compilation, H_2, 23 atoms, 18 molecules]

EX L. J. Kieffer : Atomic Data 1, 121-287 (1969b),
Errata and addenda 2, 393-399 (1971)
Low-energy electron-collision cross-section data. Part II : Electronic-excitation cross sections.
[compilation, H_2 (line ex. c. s.), 14 atoms, 5 molecules]

QT L. J. Kieffer : Atomic Data 2, 293-391 (1971)
E Low-energy electron-collision cross-section data. Part III : Total scattering : Differential elastic scattering.
[compilation, H_2, 17 atoms, 14 molecules]

D L. J. Kieffer : Proc. of the Workshop on Dissociative Excitation of Simple Molecules, JILA Inform. Center Report, No. 12, 1-165 (1972)
Line and band emission cross section data for low energy electron impact.
[compilation, H_2, D_2, N_2, O_2, CO, NO, H_2O, CO_2, CH_4, CD_4, C_2H_4, C_2H_6, NH_3]

O L. J. Kieffer : NBS Special Publ. 426, 1-212 (1976)
Bibliography of low energy electron and photon cross section data (through December 1974). [compilation, of references]

O T. Kihara : Rev. Mod. Phys. 24, 45-61 (1952)
The mathematical theory of electrical discharges in gases.
[review,

O G. W. King and J. H. Van Vleck : Phys. Rev. 55, 1165-1172 (1939)
Dipole-dipole resonance forces. [T, H_2, Na_2, Cd_2, Hg_2]

O G. C. King, F. H. Read and R. E. Imhof : J. Phys. B8, 665-673 (1975)
The measurement of molecular lifetimes by the photon-photon delayed coincidence method. [E, $h\nu$, H_2; $a^3\Sigma_g^+$ state, 10.45 ns]

O K. Kirby, S. Guberman and A. Dalgarno : J. Chem. Phys. 70, 4635-46 (1979)
Resonant dissociative photoionization of H_2. [, H_2]

O Z. J. Kiss, H. P. Gush and W. L. Welsh : Can. J. Phys. 37, 362-376 (1959a)
The pressure-induced rotational absorption spectrum of hydrogen. I.
A study of the absorption intensities.
[E, $h\nu$, H_2, H_2 + (N_2, He - Xe); 85 - 300 K, 300 - 1400 cm^{-1}]

O Z. J. Kiss and W. L. Welsh ; Can. J. Phys. 37, 1249-1259 (1959b)
The pressure induced rotational absorption spectrum of hydrogen. II.
Analysis of the absorption profiles.
[T, $h\nu$, H_2, ; 85 - 300 K]

O D. J. Kligler and C. K. Rhodes : Phys. Rev. Lett. 40, 309-313 (1978)
Observation of two-photon excitation of the H_2 E, F $^1\Sigma_g^+$ state.
[E, $h\nu$, H_2; 193 nm]

E A. Klonover and U. Kaldor : J. Phys. B11, 1623-1632 (1978)・
R Ab initio electron-molecule scattering theory including polarisation : elastic scattering and rotational excitation of H_2. [T, H_2]

V A. Klonover and U. Kaldor : J. Phys. B12, L61-L65 (1979a)
Zero-point vibration in low-energy electron-molecule scattering theory.
[T, H_2]

V A. Klonover and U. Kaldor : J. Phys. B12, 323-330 (1979b)・
Ab initio electron-molecule scattering theory including polarisation : vibrational and vibrational-rotational excitation of H_2. [T, H_2]

V A. Klonover and U. Kaldor : J. Phys. B12, 3797-3803 (1979c)
Excitation of H_2 vibrational levels ($v \leqq 4$) by low-energy electron impact.
[T, H_2]

O H. P. Knauss : Phys. Rev. 32, 417-426 (1928)
Band spectra in the extreme ultra-violet excited by active nitrogen.
[E, $h\nu$, H_2, N_2, NO, CO, O_2]

E D.A.Kohl and R.A.Bonham : J.Chem.Phys. 47, 1634-1646 (1967)
EX Effect of bond formation on electron scattering cross sections for
I molecules. [E, H_2, N_2, O_2; 40 keV]

O H.J.Kolker and M.Karplus : J.Chem.Phys. 41, 1259-1266 (1964)
Theory of nuclear magnetic shielding in diatomic molecules.
[T, H_2, N_2, F_2, HF, LiF, etc.]

E R.Kollath : Ann.Phys. 87, 259-284 (1928)
Uber die senkrechte Ablenkung langsamer Elektronen an Gasmolekuln.
[E, H_2, He - Kr, N_2, CO, N_2O, CH_4; DCS(ε) at 90°]

I K.Kollmann : J.Chem.Phys. 63, 1314-1316 (1975a)
Ion pain production by electron impact on H_2 and CO : Kinetic energy distributions and threshold behavior. [E, H_2, CO; 150 eV]

I K.Kollmann : Int.J.Mass Spectrom.Ion Phys. 17, 261-285 (1975b)
Dissociative ionization of H_2, N_2 and CO by electron impact measurement of kinetic energy, angular distributions, and appearance potentials.
[E, H_2, N_2, CO; 40 - 150 eV]

I K.Kollmann : J.Phys. B11, 339-355 (1978)
Energetic protons from autoionising states of H_2. [E, H_2; th. - 40 eV]

O P.Kolodner and E.Yablonovitch : Phys.Rev.Lett. 37, 1754-1757 (1976)
Proof of the resonant acceleration mechanism for fast electrons in gaseous laser targets. [E, H_2; 10 - 20 keV]

O W.Kolos and C.C.J.Roothaan : Rev.Mod.Phys. 32, 205-210 (1960a)
Correlated orbitals for the ground state of the hydrogen molecules.
[T, H_2]

O W.Kolos and C.C.J.Roothaan : Rev.Mod.Phys. 32, 219-232 (1960b)
Accurate electronic wave functions for the H_2 molecule. [T, H_2]

O W.Kolos and L.Wolniewicz : J.Chem.Phys. 41, 3663-3673 (1964a)
Accurate adiabatic treatment of the ground state of the hydrogen molecule. [T, H_2]

O W.Kolos and L.Wolniewicz : J.Chem.Phys. 41, 3674-3678 (1964b)
Acculate computation of vibronic energies and of some expectation values for H_2, D_2, and T_2. [T, H_2, D_2, T_2]

O W.Kolos and L.Wolniewicz : J.Chem.Phys. 43, 2429-2441 (1965)
Potential-energy curves for the $X^1\Sigma_g^+$, $b^3\Sigma_u^+$, and $C^1\Pi_u$ states of the hydrogen molecule. [T, H_2]

O W.Kolos and L.Wolniewicz : J.Chem.Phys. 45, 509-514 (1966a)
Potential-energy curve for the $B^1\Sigma_u^+$ state of the hydrogen molecule.
[T, H_2]

O W.Kolos and L.Wolniewicz : J.Chem.Phys. 46, 1426-1432 (1966b)
Polarizability of the hydrogen molecule. [T, H_2]

0 W. Kolos : Chem. Phys. Lett. 1, 19-20 (1967a)
Relative location of the triplet and singlet states in H_2.
[T, H_2; $a^3\Sigma_g^+$ state]

0 W. Kolos : Int. J. Quant. Chem. 1, 169-186 (1967b)
Long-range interaction between 1s and 2s or 2p hydrogen atoms.
[T, H_2, D_2, HD]

0 W. Kolos and L. Wolniewicz : J. Chem. Phys. 48, 3672-3680 (1968a)
Vibrational and rotational energies for the $B^1\Sigma_u^+$, $C^1\Pi_u$, and $a^3\Sigma_g^+$ states of the hydrogen molecule. [T, H_2]

0 W. Kolos and L. Wolniewicz : J. Chem. Phys. 49, 404-410 (1968b)
Improved theoretical ground-state energy of the hydrogen molecule.
[T, H_2]

0 W. Kolos : Int. J. Quant. Chem. 2, 471-481 (1968c)
Recent developments in the theory of one- and two-electron molecules.
[T, H_2, H_2^+]

0 W. Kolos and L. Wolniewicz : J. Chem. Phys. 50, 3228-3240 (1969)
Theoretical investigation of the lowest double-minimum state E, $F^1\Sigma_g^+$ of the hydrogen molecule. [T, H_2; potential energy curve]

0 W. Kolos : in Advances in Quantum Chemistry, Vol. 5, 99- (1970)

0 W. Kolos and L. Wolniewicz : Chem. Phys. Lett. 24, 457-460 (1974)
Variational calculation of the long-range interaction between two ground state hydrogen atoms. [T, H_2]

0 W. Kolos : Chem. Phys. Lett. 31, 43-45 (1975a)
Revised theoretical energy for the $a^3\Sigma_g^+$ state of H_2. [T, H_2]

0 W. Kolos and L. Wolniewicz : Can. J. Phys. 53, 2189-2197 (1975b)
New ab initio potential energy curve and vibrational levels for the $B^1\Sigma_u^+$ state of the hydrogen molecule. [T, H_2, HD, D_2]

0 W. Kolos and L. Wolniewicz : J. Mol. Spectrosc. 54, 303-311 (1975c)
Improved potential energy curve and vibrational energies for the electronic ground state of the hydrogen molecule. [T, H_2, HD, D_2]

0 W. Kolos and J. Rychlewski : J. Mol. Spectrosc. 62, 109-121 (1976a)
Ab initio potential energy curves and vibrational levels for the C and D $^1\Pi_u$ states of the hydrogen molecule. [T, H_2, HD, D_2]

O W. Kolos : J. Mol. Spectrosc. 62, 429-441 (1976b)
Ab initio potential energy curves and vibrational levels for the B", B, and B' $^1\Sigma_u^+$ states of the hydrogen molecule. [T, H_2]

O W. Kolos : Chem. Phys. Lett. 39, 416-417 (1976c)
Long-range interaction in the D and D' states of H_2.
[T, H_2; R = 12 - 25 bohr]

O W. Kolos and J. Rychlewski : J. Mol. Spectrosc. 66, 428-440 (1977)
Ab initio potential energy curves and vibrational levels for the c, l, and i states of the hydrogen molecule. [T, H_2, HD, D_2]

O H. G. Kolsky, T. E. Phipps, Jr., N. F. Ramsey and H. B. Silsbee : Phys. Rev. 87, 395-403 (1952)
Nuclear radiofrequency spectra of H_2 and D_2 in high and low magnetic fields. [E, $h\nu$, H_2, D_2]

S N. Kontoleon, J. Lucas and L. E. Virr : 10th ICPIG, Oxford 1, 54 (1971)
Measurement of discharge parameters for electron swarms in hydrogen.
[E, H_2]

S N. Kontoleon, J. Lucas and L. E. Virr : J. Phys. D5, 956-965 (1972)
α The measurement of the ratio of radial diffusion coefficient to mobility and the amplification coefficient for electrons at high E/p.
[E, H_2; 90 - 1050 Td]

S D. J. Kouri, W. W. Sams and L. Frommhold : Phys. Rev. 184, 252-254 (1969)·
A Resonance scattering and the drift motion of electrons through gases. II.
[E, H_2, N_2; see L. Frommhold (1968)]

I M. Krauss and A. Kropf : J. Chem. Phys. 26, 1776-1777 (1957)
Vibrational structure in the ionization efficiency curves of hydrogen and deuterium molecules. [T, H_2, D_2]

EX A. A. Kruithof und L. S. Ornstein : Physica 2, 611-622 (1935)
Anregung einiger Spektrallinien des Wasserstoffmolekules druch Elektronenstoss. [E, H_2; 15 - 50 eV]

A V. V. Kuchinskii, V. G. Mishakov, A. S. Tibilov and A. M. Shukhtin : Opt. Spectrosc. 39,
O 598-601 (1975)
Luminescence of atomic lines under ion-ion recombination conditions and kinetics of formation of H^- ions.
[T, H_2; effective mechanism of H^- formation]

I V. I. Kukulin, A. P. Osipov and Yu. M. Chyvil'skii : Sov. Phys. Tech. Phys. 24, 883-885
ME (1979)·
Calculation of the cross sections for electron-impact ionization of H_2 from the ground state and N_2^* from the $A^3\Sigma_u^+$ metastable state.
[T, H_2, N_2]

O A. Kuppermann and L. M. Raff : J. Chem. Phys. 37, 2497-2498 (1962)
Determination of electronic energy levels of molecules by low-energy electron impact spectroscopy. [E, H_2, He, Ar, C_2H_4]

O A. Kuppermann and L. M. Raff : Discuss. Faraday Soc. 35, 30-42 (1963)・
Electron-impact spectroscopy. [E, H_2, He, Ar, C_2H_4]

E A. Kuppermann, J. K. Rice and S. Trajmar : J. Phys. Chem. 72, 3894-3903 (1968)
Low-energy, high-angle electron-impact spectrometry.
[E, H_2, He, N_2, CO, NO, C_2H_2; 25 - 60 eV, 0 - 80°]

E G. J. Kutcher and A. E. S. Green : J. Appl. Phys. 47, 2175-2183 (1976)
Multiple elastic scattering of slow electrons : Parametric study for H_2.
[T, H_2; 2 - 50 eV]

E C. E. Kuyatt, S. R. Mielczarek and J. A. Simpson : Phys. Rev. Lett. 12, 293-295 (1964)・
Energy losses and elastic resonances in electron scattering from H_2.
[E, H_2; 8 - 16 eV]

V C. E. Kuyatt, J. A. Simpson and S. R. Mielczarek : J. Chem. Phys. 44, 437-439 (1966)
Resonances in electron scattering from H_2, HD, and D_2.
[E, H_2, HD, D_2; 11 - 13 eV]

I S. E. Kupriyanov : High Energy Chem. 3, 13- (1969)
Mass-spectrometric study of reactions of excited atoms and molecules. II. Ionization processes in water, acetylene, and mixtures of water and acetylene with deuterium and hydrogen.
[E, H_2 + H_2O, D_2 + C_2H_2, H_2O, C_2H_2, etc.]

O N. E. Kuz'menko, L. A. Kuznetsova, A. P. Monyakin, Yu. Ya. Kuzyakov and Yu. A. Plastinin : Sov. Phys. Usp. 22, 160-173 (1979)
Electronic transition probabilities and lifetimes of electronically excited states of diatomic molecules. [review, H_2; about 200 molecules]

O L. A. Kuznetsova, N. E. Kuz'menko, Yu. Ya. Kuzyakov and Yu. A. Plastinin : Sov. Phys. Usp. 17, 405-423 (1974)
Probabilities of optical transitions in electronic vibtation-rotation spectra of diatomic molecules.
[review, H_2, etc. ; see N. E. Kuz'menko (1979)]

O P. Laborie, J. -M. Rocard, J. A. Rees, J. L. Delcroix and J. D. Craggs : Electronic Cross-Sections and Macroscopoic Coefficients. 1 - Hydrogen and Rare Gases, Dunod 1-52 (1968)

S C. S. Lakshminarasimha, J. Lucas and R. A. Snelson : Proc. Inst. Electr. Eng. 122, 1162-1165 (1975)・
Time-of-flight electron-swarm studies of ionization and attachment in gases. [E, H_2, N_2, He, O_2, CF_4]

I F. W. Lampe, J. L. Franklin and F. H. Field : J. Am. Chem. Soc. 79, 6129-6132 (1957)
Cross sections for ionization by electrons.
[E, H_2, He - Xe, N_2, O_2, CO, NO, etc. ; 75 eV]

E J. E. Land and W. Raith : in Atomic Physics 3, Plenum Press 553-559 (1973)
Study of e - O_2 and e - H_2 scattering by electron time-of-flight spectroscopy. [E, H_2, O_2]

R N. F. Lane and S. Geltman : Phys. Rev. 160, 53-67 (1967)
Rotational excitation of diatomic molecules by slow electrons — Application to H_2. [T, H_2]

E N. F. Lane and R. J. W. Henry : Phys. Rev. 173, 183-190 (1968)
R Polarization potential in low-energy electron - H_2 scattering. [T, H_2]

E N. F. Lane and R. J. W. Henry : Phys. Rev. 183, 221-231 (1969a)
R Polarization and exchange effects in low-energy electron - H_2 scattering. [T, H_2]

E N. F. Lane and S. Geltman : Phys. Rev. 184, 46-51 (1969b)
R Differential elastic and rotational excitation cross sections for electron - H_2 scattering. [T, H_2]

E N. Lane : in Electron-Molecule Scattering, Wiley-Interscience 147-183 (1979)
V The state of the theory. [review, H_2, N_2, F_2, CO_2, HCl, LiF]

O P. W. Langhoff : Int. J. Quant. Chem. : Quant. Chem. Symp. 11, 301-310 (1977)
Applications of the Stieltjes-Tchebycheff procedure for atomic and molecular photoionization calculations in Hilbert space.
[T, $h\nu$, H_2, Li, N_2, CO]

E I. Langmuir and H. A. Jones : Phys. Rev. 31, 357-404 (1928)
EX Collisions between electrons and gas molecules. [E, H_2, He - Ar, Hg, N_2]

O E. N. Lassettre and J. M. Peek : J. Chem. Phys. 38, 2395-2399 (1963)
One-electron potential function for H_2. [T, H_2]

EX E. N. Lassettre and S. A. Francis : J. Chem. Phys. 40, 1208-1217 (1964a)
Inelastic scattering of 390-V electrons by helium, hydrogen, methane, ethane, cyclohexane, ethylene, and water.
[E, H_2, He, CH_4, C_2H_6, C_6H_{12}, C_2H_4, H_2O]

EX E. N. Lassettre and E. A. Jones : J. Chem. Phys. 40, 1222-1231 (1964b)
Determination of generalized oscillator strengths for molecular hydrogen by electron impact. [E, H_2]

EX E. N. Lassettre and S. Skerbele : in Methods of Experimental Physics, Vol. 3, Part B, Academic 868-951 (1974)
Inelastic electron scattering.
[review, H_2, He, Hg, N_2, CO, O_2, H_2O, NH_3]

I U. Lauterbach : Z. Naturforsch. 23a, 1790-1799 (1968)
Ionisierungskurven von Sekundarionen in Massenspektrometer-Ionenquellen.
[E, D_2; th. - 17.7 eV; Kr, KrD]

EX B. P. Lavrov : Opt. Spectrosc. 42, 250-253 (1977)
Role of dissociative excitation in populating the atomic levels in a hydrogen plasma with a small degree of dissociation.
[E, H_2; 15 - 300 eV]

O B. P. Lavrov and D. K. Otorbaev : Opt. Spectrosc. 44, 360-361 (1978a)
Identification of various lines of the Fulcher system of the H_2 molecules.
[E, H_2]

O B. P. Lavrov and D. K. Otorbaev : Opt. Spectrosc. 45, 859-862 (1978b)
Determination of the gas temperature of a low-pressure plasma from the intensities of the H_2 and D_2 molecular bands. I : Rotational structure of the Fulcher band system. [E, H_2, D_2]

O B. P. Lavrov, V. N. Ostrovskii and V. I. Ustimov : Opt. Spectrosc. 47, 30-34 (1979)
EX Determination of the gas temperatures of a low-pressure plasma from the intensities of the H_2 and D_2 molecular bands ; Rotational transitions under electron-impact excitation. [E, H_2, D_2]

S P. A. Lawson and J. Lucas : Proc. Phys. Soc. London 85, 177-183 (1965a)
Electron diffusion in hydrogen at high electric fields and low gas pressures. [E, H_2]

S P. A. Lawson and J. Lucas : Brit. J. Appl. Phys. 16, 1813-1820 (1965b)
Electron diffusion in hydrogen at high electric fields and low gas pressures : II. [E, H_2]

O L. C. Lee and D. L. Judge : Phys. Rev. A14, 1094-1100 (1976a)
Balmer-series fluorescence from photodissociation fragments of H_2 and D_2.
[E, $h\nu$, H_2, D_2]

O L. C. Lee, R. W. Carlson and D. J. Judge : J. Quant. Spectrosc. Radiat. Transf. 16, 873-877 (1976b)
The absorption cross sections of H_2 and D_2 from 180 to 780 A.
[E, $h\nu$, H_2, D_2]

O P. Lee and G. L. Weissler : Astrophys. J. 115, 570-571 (1952)
Absolute absorption of the H_2 continuum. [E, $h\nu$, H_2]

S W. Legler : Z. Phys. 173, 169-183 (1963)
EX Anregung von UV-Strahlung in Stickstoff und Wasserstoff durch einen Elektronenshwarm. [T, H_2, N_2, He, CH_4]

S W. Legler : Phys. Lett. A31, 129-131 (1970)
Multiple scattering and drift of electrons in gases of high density.
[T, H_2, N_2, He, CH_4]

O J. E. Lennard-Jones : Trans. Faraday Soc. 25, 668-686 (1929)
The electronic structure of some diatomic molecules.
[T, H_2, N_2, O_2, etc.]

O J. E. Lennard-Jones : Proc. Roy. Soc. London A158, 280-296 (1937)
The electronic structure of some polyenes and aromatic molecules. I —
The nature of the links by the method of molecular orbitals.
[T, general theory, C_2H_4, etc.]

O H.D.Leppert and H.Schluter : Phys.Lett.A55,146-148 (1975)
Measurements of the high frequency resistance of a deuterium plasma near the lower hybrid resonance. [E, D_2]

O R.J.LeRoy and M.G.Barwell : Can.J.Phys.53,1983-1990 (1975)
Ground state D_2 dissociation energy from the near-dissociation behavior of rotational level spacings. [E, D_2; $D_0(D_2)$ = 36748.88 cm^{-1}]

EX M.Leventhal,R.T.Robiscoe and K.R.Lea : Phys.Rev.158,49-56 (1967)
Velocity distribution of metastable H atoms produced by dissociative excitation of H_2. [E, H_2; 28 - 60 eV]

R D.A.Levin,A.W.Fliflet and V.McKoy : Phys.Rev.A20,491-498 (1979)・
V Low-energy rotational and vibrational-rotational excitation cross sections for H_2 by electron impact. [T, H_2; DCS, 0.2 - 6 eV]

O B.R.Lewis : J.Quant.Spectrosc.Radiat.Transf.14,537-546 (1974)
Experimentally-determined oscillator strengths for molecular hydrogen — II. The Lyman and Werner bands below 900 A, the B' - X and the D - X bands. [E, $h\nu$, H_2]

O J.W.Lewis : J.Quant.Spectrosc.Radiat.Transf.16,939-946 (1976)
Collisional deactivation of atomic and molecular hydrogen.
[E, H_2, H; 40 keV]

α T.J.Lewis : Proc.Roy.Soc.London A244,166-185 (1958)
Electron energy distributions in uniform electric fields and the Townsend ionization coefficient. [T, H_2]

O W.Lichten : J.Chem.Phys.26,306-313 (1957)
Lifetime measurements of metastable states in molecular nitrogen.
[E, H_2, N_2, Ar, Kr, Xe, CO]

EX W.Lichten and S.Schultz : Phys.Rev.116,1132-1139 (1959)
Cross sections for the excitation of the metastable 2s state of atomic hydrogen by electron collision. [E, H_2, H]

O W.Lichten : Phys.Rev.120,848-853 (1960)・
Metastable hydrogen molecules. [E, H_2; c($^1\sigma_g$, $^1\pi_u$)$^3\Pi_u$, 11.9 eV]

O W.Lichten : Phys.Rev.126,1020-1027 (1962a)
Metastable hydrogen molecules. II. Fine structure of parahydrogen.
[E, p-H_2]

O W.Lichten : Bull.Am.Phys.Soc.7,43-43 (1962b)
Measurements of lifetimes of metastable hydrogen molecules : A forbidden predissociation in H_2. [E, H_2]

EX W.Lichten,T.Wik and T.A.Miller : J.Chem.Phys.71,2441-2445 (1979)
Fine structure of 3s, 3d $^3\Sigma$, $^3\Pi$, $^3\Delta$ complex of H_2 by Doppler-free, laser spectroscopy. [E, H_2]

V A. A. Likal'ter and A. Kh. Mnatsakanyan : High Temp. 11, 176-178 (1973)・
Vibrational distribution of molecules due to collisions with electrons and heavy particles. [T, H_2, N_2, CO, CO_2]

O C. S. Lin : J. Chem. Phys. 60, 4660-4664 (1974)
Theoretical analysis of the vibrational structure of the electronic transitions involving a state with double minimum : E, F $^1\Sigma_g^+$ of H_2.
[T, H_2]

O C. S. Lin : Can. J. Phys. 53, 310-319 (1975)
Calculation of the Franck-Condon factors : Single-α approximation method. [T, H_2, LiH]

R F. Linder and H. Schmidt : Z. Naturforsh. 26a, 1603-1617 (1971)○Z
V Rotational and vibrational excitation of H_2 by slow electron impact.
[E, H_2]

E J. W. Liu : Phys. Rev. A7, 103-109 (1973a)・
Total inelastic cross section for collisions of H_2 with fast charged particles. [T, H_2]

E J. W. Liu and V. H. Smith, Jr. : J. Phys. B6, L275-L279 (1973b)
The differential cross section for elastic scattering of electrons by H_2 in the first Born approximation. [T, H_2]

E J. W. Liu : J. Chem. Phys. 59, 1988-1998 (1973c)
Electron scattering from diatomic molecules in the first Born approximation. [T, H_2, N_2; high electron energies]

E J. W. Liu and V. H. Smith, Jr. : Chem. Phys. Lett. 45, 59-63 (1977)
EX A critical study of high energy electron scattering from H_2.
I [T, H_2; 1st Born, see D. A. Kohl (1967), A. Jaegle (1971), R. C. Ulsh (1974)]

E C. R. Lloyd, P. J. O. Teubner, E. Weigold and B. R. Lewis : Phys. Rev. A10, 175-181 (1974)
Differential cross sections for the elastic scattering of electrons from atomic hydrogen. Ⅱ. Medium energies.
[E, H_2; DCS, 30 - 200 eV, 15 - 130°]

A R. Locht and J. Momigny : Int. J. Mass Spectrom. Ion Phys. 2, 425-440 (1969)
Mass spectrometric study of dissociative attachment in diatomic molecules. I. CO and H_2. [E, H_2, CO]

I R. Locht and J. Momigny : Int. J. Mass Spectrom. Ion Phys. 7, 121-144 (1971)・
Mass spectrometric study of ion-pair processes in diatomic molecules : H_2, CO, NO and O_2. [E, H_2, CO, NO, O_2; th. - 26 eV]

S L. B. Loeb : Phys. Rev. 20, 397-404 (1922)
The mobilities of electron in hydrogen. [E, H_2]

S L. B. Loeb : Phys. Rev. 23, 157-168 (1924)
The mobilities of electron in helium. [E, H_2, N_2, He]

I F. P. Lossing and G. P. Semeluk : Int. J. Mass Spectrom. Ion Phys. 2, 408-413 (1969)
Threshold ionization efficiency curves for monoenergetic electron impact on H_2, D_2, CH_4 and CD_4. [E, H_2, D_2, CH_4, CD_4]

S J. J. Lowke : Aust. J. Phys. 16, 115-135 (1963)
The drift velocity of electrons in hydrogen and nitrogen. [E, H_2, N_2]

S J. J. Lowke and J. H. Parker : Phys. Rev. 181, 302-311 (1969)
Theory of electron diffusion parallel to electric fields. Ⅱ. Application to real gases. [T, H_2, D_2, He, Ar, N_2, O_2, CO_2, H_2O, CO, Kr, Xe]

I W. W. Lozier : Phys. Rev. 36, 1285-1292 (1930a)
A study of the velocities of H^+ ions formed in hydrogen by dissociation following electron impact. [E, H_2]

A W. W. Lozier : Phys. Rev. 36, 1417-1418 (1930b)
Negative ions in hydrogen and water vapor. [E, H_2, H_2O]

S J. Lucas : Int. J. Elect. 27, 201-220 (1969)
Energy distributions for electron swarms in hydrogen at high values of E/p. [E, H_2]

S J. Lucas : Int. J. Elect. 28, 463-479 (1970a)
The energy distribution equation for electron swarms in uniform electric fields. [T, H_2; B. Eq., 30 - 150 Td]

S J. Lucas : Int. J. Elect. 29, 465-477 (1970b)
The spatial/time variation of energies of the electrons in an electron swarm. Part 2. [T, H_2; B. Eq., 60 - 360 Td]

S J. Lucas : Internat. Sympo. Gaseous Dielectrics, Knoxville 28-46 (1978)
Electron swarm parameters in gases and vapours. [E, review,

EX R. W. Lunt and C. A. Meek : Proc. Roy. Soc. London A157, 146-166 (1936)
I Ionization excitation, and chemical reaction in uniform electric field. Ⅱ.
O The energy balance and energy efficiencies for the prinicipal electron processes in hydrogen. [T, H_2]

S R. W. Lunt, C. A. Meek and E. C. W. Smith : Proc. Roy. Soc. London A158, 729-738 (1937)
EX Ionization, excitation, and chemical reaction in uniform electric field. Ⅲ.
The excitation of the continuous spectrum of hydrogen. [T, H_2]

EX R. W. Lunt : Tech. Rep., Univ. College London, AFCRL-62-1077, AD-298 703, 1-50
I (1962)
Research on effects of electron collisions in atmospheric gases.
[T, H_2,

O M. Lu Van, G. Mainfray, C. Manus and I. Tugov : Phys. Rev. Lett. 29, 1134-1137 (1972)
Multiphoton ionization and dissociation of molecular hydrogen at 1.06 μm.
[E, $h\nu$, H_2]

O M. Lu Van, G. Mainfray, C. Manus and I. Tugov : Phys. Rev. A7, 91-98 (1973)
Multiphoton ionization of atomic and molecular hydrogen at 0.53 μ.
[E, hν, H_2, H]

O T. Lyman : Astrophys. J. 33, 98-107 (1911)
Spectra of gases in extreme ultra-violet.
[E, hν, H_2, N_2, O_2, He, Ar]

O T. Lyman : Spectroscopy of the Extreme Ultra-Violet, (1914)

O A. D. MacDonald and S. C. Brown : Phys. Rev. 76, 1634-1639 (1947)
High frequency gas discharge breakdown in hydrogen. [E, H_2]

O J. W. Mactaggart and J. L. Hunt : Can. J. Phys. 47, 65-70 (1969)
An analysis of the profile of the pressure induced pure rotational spectrum of hydrogen gas. [E, hν, H_2; 77 - 298 K, 500 - 1400 cm^{-1}]

S M. P. Madan, E. I. Gordon, S. J. Buchsbaum and S. C. Brown : Phys. Rev. 106, 839-843
O (1957)
Determination of the coefficient of diffusion and frequency of ionization in microwave discharges. [E, H_2; ν_i/p, D-p]

EX I. C. Malcolm and J. W. McConkey : J. Phys. B12, L67-L70 (1979a)
Electron-polarised-photon coincidence study of $H_2(^1\Sigma_g^+ - {}^1\Pi_u)$ excitation.
[E, H_2]

EX I. C. Malcolm, H. W. Dassen and J. W. McConkey : J. Phys. B12, 1003-1017 (1979b)
Polarisation of radiation from H_2 excited by electron impact : Lyman and Werner emission and Lyman-α. [E, H_2]

EX M. A. Marechal and A. Jourdan : Phys. Lett. 30A, 31-31 (1969a)
Magnetic resonance of hydrogen molecular levels excited by electron impact.
[E, H_2; $^3\Pi_u$(1s, 3p) state]

EX M. A. Marechal, A. Jourdan, O. Nedelec and J.-C. Pebay-Peyroula : Compt. Rend. Acad. Sci. B268, 1428-1431 (1969b)
Depolarisation magnetique sur des transitions moleculaires de l'hydrogene excite par bomberdment electronique. [E, H_2]

O M. A. Marechal, R. Jost and M. Lombardi : Phys. Rev. A5, 732-740 (1972)
Lifetimes, g factors, and collision cross sections of hydrogen molecules in the (1s3p) $^3\Pi_u$ level. [E, H_2]

O J. S. Margolis : J. Mol. Spectrosc. 48, 409-410 (1973)
Measurement of some 1 - 0 H_2 quadrupole transition strengths.
[E, hν, H_2]

O P. Marmet and L. Kerwin : Can. J. Phys. 38, 972-974 (1960)
Experimentally measured vibrational levels in H_2^+. [E, H_2]

O P. H. S. Martin, T. N. Rescigno, V. McKoy and W. H. Henneker : Chem. Phys. Lett. 29, 496-501 (1974)
Photoionization cross sections for H_2 in the randome phase approximation with a square-integrable basis. [T, $h\nu$, H_2]

O P. H. S. Martin, W. H. Henneker and V. McKoy : J. Chem. Phys. 62, 69-79 (1975)
Dipole properties of atoms and molecules in the random phase approximation. [T, H_2, He]

E H. S. W. Massey : Proc. Roy. Soc. London A129, 616-627 (1930)
Theory of elastic scattering of electrons in molecular hydrogen. [T, H_2]

E H. S. W. Massey and C. B. O. Mohr : Proc. Roy. Soc. London A135, 258-275 (1932a)
EX The collision of electrons with molecules. [T, H_2, N_2]

E H. S. W. Massey and C. B. O. Mohr : Proc. Roy. Soc. London A136, 289-311 (1932b)
The collision of slow electrons with atoms. I. General theory and elastic collisions. [T, general theory, H, He]

V H. S. W. Massey : Trans. Faraday Soc. 31, 556-563 (1935)
The excitation of molecular vibration by impact of slow electrons. [T, general theory, H_2]

H. S. W. Massey and R. O. Ridley : Proc. Phys. Soc. London A69, 659-667 (1956)
Application of variational methods to the theory of the scattering of slow electrons by hydrogen molecules. [T, H_2; exchange interaction]

R H. S. W. Massey : Phil. Mag. 4, 336-340 (1959)
V The excitation of molecular vibration and rotation by impact of slow electrons. [T, general theory]

A H. S. W. Massey : Advances in Atomic and Molecular Physics, Vol. 15, Academic 1-36 (1979)
Negative ions. [review,

QT H. F. Mayer : Ann. Phys. 64, 451-480 (1921)
Uber das Verhalten von Molekulen gegenuber freien langsamen Elektronen. [E, H_2, He, Ar, N_2, CO_2; 0.2 - 8 eV for H_2]

EX D. J. McCaa and D. E. Rothe : AIAA J 7, 1648-1651 (1969) [Aeronau. Astronau.]
Emission spectra of atmospheric gases excited by an electron beam. [E, H_2, N_2, NO, O_2, H_2O, CO_2, CO; 2800 - 6600 A]

I I. E. McCarthy : J. Phys. B6, 2358-2367 (1973)
Theory of the (e, 2e) reaction on molecules. [T, H_2, CH_4]

I I. E. McCarthy and E. Weigold : Phys. Rep. 27C, 275-371 (1976)
(e, 2e) spectroscopy.
[review, H_2, D_2, He - Xe, N_2, CO, H_2O, NH_3, CH_4, C_2H_6]

I G. W. McClure : Sandia Lab. Tech. Memorandum SCTM 176-59(51), (1959)
A survey of the literature on inelastic collisions of electrons and hydrogen ions with hydrogen molecules. [compilation, H_2]

EX J.W.McConkey and F.G.Donaldson : Can.J.Phys.50,2211-2261 (1972a)
Vacuum ultraviolet excitation of H(2p) by electron impact on H_2.
[E, H_2]

I J.W.McConkey, A.Crowe and M.A.Hender : Phys.Rev.Lett.29,1-4 (1972b)
Differential cross sections in the electron impact ionization of atoms and molecules.
[E, H_2, He, Ar, N_2, CO_2, NH_3; 50 - 300 eV, data shown only for He and Ar]

I K.E.McCulloh and H.M.Rosenstock : J.Chem.Phys.48,2084-2089 (1968a)
Experimental test of the Franck-Condon principle : Double ionization of molecular hydrogen. [E, H_2]

I K.E.McCulloh : J.Chem.Phys.48,2090-2093 (1968b)
Franck-Condon calculations for double ionization of molecular hydrogen.
[T, H_2]

E C.W.McCurdy, Jr., T.N.Rescigno and V.McKoy : J.Phys.B9,691-698 (1976)·
A simple method for evaluating low-energy electron-molecule scattering cross sections using discrete basis functions. [T, H_2, N_2]

EX J.W.McGowan and L.Kerwin : Can.J.Phys.42,972-979 (1964)
I The effect of vibrational excitation of H_2^+ on its collision-induced dissociation. [E, H_2]

I J.W.McGowan and M.A.Fineman : Phys.Rev.Lett.15,179-181 (1965a)
Rotational structure at threshold in the H_2^+ electron-impact ionization spectrum. [E, H_2; 15.3 - 15.9 eV]

I J.W.McGowan and M.A.Fineman : 4th ICPEAC, Quebec 429-434 (1965b)
Details of electron-impact ionization of H and H_2 near threshold.
[E, H_2, H]

I J.W.McGowan, M.A.Fineman, E.M.Clarke and H.P.Hanson : Phys.Rev.167,52-60 (1968)·
Direct and auto-ionization of H_2 near threshold. [E, H_2; th.- 16.25 eV]

EX J.W.McGowan, J.F.Williams and D.A.Vroom : Chem.Phys.Lett.3,614-616 (1969a)·
Lyman-α radiation from electron collisions with simple hydrogen containing molecules. [E, H_2, H_2O, NH_3, CH_4, C_6H_6]

O J.W.McGowan, D.A.Vroom and A.R.Comeaux : J.Chem.Phys.51,5626-5635 (1969b)
Atomic and molecular photoelectron angular distributions measured near threshold. [E, $h\nu$, H_2, N_2, O_2, Ar - Xe]

EX J.W.McGowan, J.F.Williams and W.Meckbach : Can.J.Phys.52,2076-2082 (1974)
Electron resonances associated with the Lyman system of H_2 and D_2.
[E, H_2, D_2]

S A.I.McIntosh : Aust.J.Phys.19,805-811 (1966)
Electron drift and diffusion in deuterium at 293 K. [E, D_2]

EX R.W.McLaughlin : PhD Thesis, University of Pittsburgh 1- (1977)
Vacuum ultraviolet and visible radiation from electron impact excitation of nitrogen, hydrogen, oxygen, the light hydrocarbons and the rare gases.
[E, H_2, N_2, O_2, CH_4, etc.]

O A.D.McLean, A.Weiss and M.Yoshimine : Rev.Mod.Phys. 32, 211-218 (1960)
Configuration interaction in the hydrogen molecule - The ground state.
[review, H_2]

O J.C.McLennan, H.G.Smith and C.A.Lea : Proc.Roy.Soc.London A113, 183-195 (1927)
The band spectra of helium and hydrogen at low temperatures.
[E, $h\nu$, H_2, He_2; 85 and 300 K for H_2]

E J.H.McMillen : Phys.Rev. 36, 1034-1043 (1930)
Angle and energy distibution of electrons scattered by helium, argon and hydrogen. [E, H_2, He, Ar]

O M.-A.Melieres-Marechal and M.Lombardi : J.Chem.Phys. 61, 2600-2608 (1974)
Weak hyperfine structure measurement using the magnetic repolarization effect : Application to N = 1 v = 1 $(1s3d)^1\Sigma$ level of H_2.
[T and E, H_2]

V M.G.Menendez and H.K.Holt : J.Chem.Phys. 45, 2743-2744 (1966)
Resonances in inelastic electron scattering from H_2.
[E, H_2; 0.4 - 1.4 eV, 11 - 13.5 eV]

O J.E.Mentall and E.P.Gentieu : J.Chem.Phys. 52, 5641-5645 (1970)
Lyman-α fluorescence from the photodissociation of H_2. [E, $h\nu$, H_2]

O J.E.Mentall and P.M.Guyon : J.Chem.Phys. 67, 3845-3850 (1977)
H(2s) and H(2p) branching ratio in the photodissociation of H_2 near threshold. [E, $h\nu$, H_2]

O R.H.Messner : Z.Phys. 85, 727-740 (1933)
Der Einfluss der chemischen Bindung auf den Absorptionskoeffizienten leichter Elemente im Gebiete ultrameicher Rontgenstrahlen.
[E, $h\nu$, H_2, N_2, O_2, CO, CO_2, CH_4 - C_3H_8, C_2H_2, C_2H_4]

S P.Michel und R.Winkler : Beitr.Plasmaphys. 16, 233-250 (1976)
Geschwindigkeitsverteilungsfunction und makroskopische Bilanzkoeffizienten der Elektronen im molekularen Wasserstoffplasma. [T, H_2]

S P.Michel, S.Pfau und R.Winkler : Beitr.Plasmaphys. 18, 131-146 (1978)
Mikrophysikalische Bestimung elektronenkinetischer Kenngrossen im binaren Molekul-Mischplasma von Stickstoff und Wasserstoff. I. Geschwindigkeitsverteilungsfunktion, Transportgrossen und Stossfrequenzen fur die Direktionisation im Mischplasma. [T, H_2, N_2]

V W.T.Miles, R.Thompson and A.E.S.Green : J.Appl.Phys. 43, 678-686 (1972)
EX Electron-impact cross sections and energy deposition in molecular hydrogen. [T, H_2]

EX K. J. Miller and M. Krauss : J. Chem. Phys. 47, 3754-3762 (1967)
Born inelastic differntial cross sections in H_2. [T, H_2; 300 eV]

O T. A. Miller and R. S. Freund : J. Chem. Phys. 58, 2345-2357 (1973a)
Fine structure and hyperfine structure of ortho-H_2 d(3p) $^3\Pi_u$ (v = 0 - 3) via microwave optical magnetic resonance induced by electrons.
[T and E, H_2]

O T. A. Miller : J. Chem. Phys. 58, 2358-2365 (1973b)
Line shape and intensity consideration in microwave optical magnetic resonance induced by electrons and related experiments. [T, H_2]

O T. A. Miller : J. Chem. Phys. 59, 4078-4092 (1973c)
Born-Oppenheimer breakdown and isotope effects in $^3\Pi$ electronic states.
[T, H_2, D_2]

O T. A. Miller and R. S. Freund : J. Chem. Phys. 59, 4093-4104 (1973d)
Fine structure and perturbations in the d(3p) $^3\Pi_u$ states of H_2 and D_2.
[T, H_2, D_2]

O T. A. Miller, R. S. Freund and B. R. Zegarski : J. Chem. Phys. 60, 3195-3202 (1974a)
Fine and hyperfine structure of ortho-H_2, k(4p) $^3\Pi_u$.
[E, $h\nu$, H_2; MOMRIE spectrum]

O T. A. Miller and R. S. Freund : J. Chem. Phys. 61, 2160-2162 (1974b)
Singlet-triplet anticrossings in H_2. [E, $h\nu$, H_2]

O T. A. Miller and R. S. Freund : J. Chem. Phys. 63, 256-263 (1974c)
Ultranarrow, forbidden, singlet-triplet anticrossings in H_2.
[E, $h\nu$, H_2]

O T. A. Miller and R. S. Freund : J. Chem. Phys. 62, 2240-2244 (1975a)
Anticrossings and microwave transitions between the k(4p) $^3\Pi_u$, v = 1, N = 3 and the p(4d) $^3\Sigma_g^+$, v = 1, N = 5 levels of H_2. [E, $h\nu$, H_2]

O T. A. Miller, R. S. Freund and B. R. Zegarski : J. Chem. Phys. 64, 1842-1847 (1976a)
A forbidden singlet-triplet anticrossing in D_2. [E, $h\nu$, D_2]

O T. A. Miller and R. S. Freund : J. Mol. Spectrosc. 63, 193-204 (1976b)
Singlet-triplet anticrossing between ungerade states of H_2.
[E, $h\nu$, H_2]

EX M. Misakian and J. C. Zorn : Phys. Rev. Lett. 27, 174-177 (1971)
Final states in the dissociative excitation of molecular hydrogen.
[E, H_2; 15 - 160 eV]

EX M. Misakian and J. C. Zorn : Phys. Rev. A6, 2180-2196 (1972)
Dissociative excitation of molecular hydrogen by electron impact.
[E, H_2]

V A. K. Mnatsakanyan : High Temp. 12, 745-762 (1974)·
Elementary process kinetics in a plasma of inert gases, molecules, and alkali vapors (Review). [review, H_2, D_2, N_2, O_2, CO, CO_2, etc.]

EX G. R. Mohlmann and F. J. de Heer : Chem. Phys. Lett. 43, 240-244 (1976a) Z
Emission cross sections of the $H_2(3p^3\Pi_u \rightarrow 2s^3\Sigma_g^+)$ transition for electron impact on H_2. [E, H_2; 10 - 100 eV]

EX G. R. Mohlmann, S. Tsurubuchi and F. J. de Heer : Chem. Phys. 18, 145-154 (1976b)
Excitation cross sections for 3s, 3p and 3d sublevels of atomic hydrogen split from simple molecules by high-energy electron impact.
[E, H_2, HCl, H_2O, NH_3, CH_4; 1000 - 2000 eV]

EX G. R. Mohlmann, F. J. de Heer and J. Los : Chem. Phys. 25, 103-116 (1977a)
Emisson cross sections of Balmer - α, β, γ radiation for electrons (0 - 2000 eV) on H_2 and D_2. [E, H_2, D_2]

EX G. R. Mohlmann and F. J. de Heer : 10th ICPEAC, Paris I, 574-575 (1977b)
Dissociative excitation of H_2 and D_2 by electrons.
[E, H_2, D_2; emission, th. - 100 eV]

D G. R. Mohlmann, K. H. Shima and F. J. de Heer : Chem. Phys. 28, 331-341 (1978)
Production of H, D(2s, 2p) by electron impact (0 - 2000 eV) on simple hydrogen containing molecules.
[E, H_2, HD, D_2, HCl, H_2O, NH_3, CH_4; 20 - 2000 eV]

EX G. R. Mohlmann and F. J. de Heer : Chem. Phys. 40, 157-162 (1979)
Production of Balmer radiation by electron impact (0 - 2000 eV) on small hydrogen containing molecules.
[E, H_2, HCl, HBr, H_2O, H_2S, NH_3, CH_4; 20 - 2000 eV]

E C. B. O. Mohr and F. H. Nicoll : Proc. Roy. Soc. London A138, 469-478 (1932)
The large angle scattering of electrons in gases. II.
[E, H_2, Ne, Ar, N_2, CO_2, CH_4, PH_3, H_2S; 30 - 150 eV]

I C. B. O. Mohr and F. H. Nicoll : Proc. Roy. Soc. London A144, 596-608 (1934)
The scattering of electrons in ionizing collisions with gas atoms.
[E, H_2, He - Ar, Hg, N_2, CH_4; th. - 300 eV for H_2]

E B. L. Moiseiwitsh : Rep. Prog. Phys. 40, 843-904 (1977)
A Recent progress in atomic collision theory. [review, T, H_2, H, Hg]

O G. Mollenstedt : Z. Naturforsch. 7a, 465-470 (1952)
Diskrete Energieverluste von 35-keV-Elektronen bei Wechselwirkung mit Atomen und Molekulen. [E, H_2, N_2, O_2, He, C_6H_6, CO_2, H_2O, etc.]

O K. M. Monahan, W. T. Huntress, Jr., A. L. Lane, J. M. Ajello, T. E. Burke, P. Le Breton and A. Williamson : Planet. Space Sci. 22, 143-149 (1974)
Cross-section for the dissociative photoionization of hydrogen by 584 A radiation : The formation of protons in the Jovian ionosphere.
[E, $h\nu$, H_2]

O A. Monfils and B. Rosen : J. Quant. Spectrosc. Radiat. Transf. 2, 321-325 (1962)
Research in progress and program of development in Liege.
[E, $h\nu$, H_2]

O A. Monfils : J. Mol. Spectrosc. 15, 265-307 (1965)
The absorption spectra of the molecules H_2, HD, and D_2. Part VI. Rotational analysis of the B', B", D, D', and D" states.
[E, hν, H_2, HD, D_2; rot. levels]

O A. Monfils : J. Mol. Spectrosc. 25, 513-543 (1968)
Absorption spectra of molecules H_2, HD, and D_2. VII. Vibrational constants of the B, B', B", C, D, D', and D" states. [T, hν, H_2, HD, D_2]

α C. G. Morgan, W. D. Powell and W. T. Williams : Brit. J. Appl. Phys. 18, 939-943 (1967)
Primary ionization coefficient of deuterium. [E, D_2]

O N. D. Morgulis and V. I. Klapchenko : Sov. Phys. Tech. Phys. 19, 911-913 (1975)
Effect of molecular hydrogen on a cesium discharge. [, H_2 + Cs]

E M. A. Morrison and N. F. Lane : Phys. Rev. A12, 2361-2368 (1975)
Pseudo-bound-state study of low-energy electron-molecule collisions : Elastic e - H_2 scattering. [T, H_2; 0.034 - 10 eV]

M. A. Morrison : PhD Thesis, Rice University 1- (1976)

E M. A. Morrison and L. A. Collins : Phys. Rev. A17, 918-938 (1978)
Exchange in low-energy electron-molecule scattering : Free-electron-gas model exchange potentials and applications to e - H_2 and e - N_2 collisions. [T, H_2, N_2; DCS]

M. A. Morrison : in Electron-Molecule and Photon-Molecule Collisions, T. N. Rescigno, V. McKoy and B. I. Schneider (Ed), Plenum 15-51 (1979)
The coupled-channels integral-equations method in the theory of low-energy electron-molecule scattering. [review]

S K. G. Muller : Z. Phys. 169, 432-455 (1962)
α Die Elektronenbewegung im Neutralgas bei hohen elektrischen Feldern.
[T, H_2]

O R. S. Mulliken : Phys. Rev. 32, 186-222 (1928a)
The assignment of quantum numbers for electrons in molecules. I.
[T, N_2, O_2, F_2, CO, NO, etc.]

O R. S. Mulliken : Phys. Rev. 32, 761-772 (1928b)
The assignment of quantum numbers for electrons in molecules. II. Correlation of molecular and atomic electron states. [T, N_2, NO, etc.]

O R. S. Mulliken : Phys. Rev. 33, 730-747 (1929)
The assignment of quantum numbers for electrons in molecules. III. Diatomic hydrides. [T, CH, NH, OH, etc.]

O R. S. Mulliken : Rev. Mod. Phys. 2, 60-115 (1930a)
The interpretation of band spectra. Parts I, II a, II b.
[review, T, general theory]

O R. S. Mulliken : Rev. Mod. Phys. 2, 506-508 (1930b)
The interpretation of band spectra. Additions and corrections.
[review, T]

O R. S. Mulliken : Rev. Mod. Phys. 3, 89-155 (1931)
The interpretation of band spectra. Part IIc. Empirical band types.
[review, T]

O R. S. Mulliken : Rev. Mod. Phys. 4, 1-86 (1932a)
The interpretation of band spectra. Part III. Electron quantum numbers and states of molecules and their atoms. [review, H_2, N_2, O_2, F_2, etc.]

O R. S. Mulliken : Phys. Rev. 41, 49-71 (1932b)
Electronic structures of polyatomic molecules and valence. II. General considerations. [T, H_2, O_2, Cl_2, CF_4, SF_6, etc.]

O R. S. Mulliken : J. Chem. Phys. 3, 375-378 (1935)
Electronic structures of polyatomic molecules and valende. VI. On the method of molecular orbitals. [T, H_2, Li_2]

O R. S. Mulliken and C. A. Rieke : Rept. Progr. Phys. 8, 231-273 (1941)
Molecular electronic spectra, dispersion and polarization. The theoretical interpretation and computation of oscillator strengths and intensities.
[T, review, H_2, F_2 - I_2, O_2, C_2H_4, HI, etc.]

O R. S. Mulliken : Phys. Rev. 120, 1674-1684 (1960)
The interaction of differently excited like atoms at large distances.
[T, two H atoms, etc.]

O R. S. Mulliken : Phys. Rev. 136, A962-A965 (1964)
Rare-gas and hydrogen molecule electronic states, noncrossing rule, and recombination of electrons with rare-gas and hydrogen ions.
[T, H_2, He_2]

EX M. J. Mumma : Thesis, University of Pittsburg, Pittsburg 1-179 (1970)
Dissociative excitation of atmospheric gases. [E, H_2,

EX M. J. Mumma and E. C. Zipf : J. Chem. Phys. 55, 1661-1669 (1971)・
Dissociative excitation of vaccum ultraviolet emission features by electron impact on molecular gases. I. H_2 and O_2. [E, H_2, O_2]

O W. F. Murphy, W. Holzer and H. J. Berstein : Appl. Spectrosc. 23, 211-218 (1969)・
Gas phase Raman intensities : A review of "pre-laser" data.
[review, E, H_2, D_2, N_2, HCl, HBr, O_2, CO, CO_2, CS_2, H_2S, NH_3, C_4F_8, etc.]

E S. Nagahara : J. Phys. Soc. Jpn. 8, 165-168 (1953)
The scattering of slow electrons by the diatomic molecules. I. General theory. [T, general theory]

E S. Nagahara : J. Phys. Soc. Jpn. 9, 52-55 (1954)
The scattering of slow electrons by the diatomic molecules. II. Elastic scattering by the hydrogen molecules. [T, H_2]

S M.S.Naidu and A.N.Prasad : J.Phys.D1, 763-768 (1968)
The ratio of diffusion coefficient to mobility for electrons in nitrogen and hydrogen. [E, H_2, N_2]

O T.Namioka : Sci.Light 2, 73-86 (1953)
On the absorption spectrum in the $1s\sigma 3p\pi\ ^1\Pi_{cd} \leftarrow (1s\sigma)^2\ ^1\Sigma g^+$ system of the hydrogen molecule. [E, $h\nu$, H_2; 700 - 900 A]

O T.Namioka : J.Chem.Phys. 40, 3154-3165 (1964a)
Absorption spectra of H_2 in the vacuum-ultraviolet region. I. The Lyman and Werner bands. [E, $h\nu$, H_2; 840 - 930 A]

O T.Namioka : J.Chem.Phys. 41, 2141-2152 (1964b)
Absorption spectra of H_2 in the vacuum ultraviolet region. II. The B'-X, B"-X, D-X, and D'-X bands. [E, $h\nu$, H_2]

O T.Namioka : J.Chem.Phys. 43, 1636-1644 (1965)
Absorption spectra of H_2 in the vacuum ultraviolet region. III. Potential-energy curves for the $B^1\Sigma_u^+$, $C^1\Pi_u$, $B'^1\Sigma_u^+$ and $D^1\Pi_u$ states. [E, $h\nu$, H_2]

α M.Narayana Swamy and J.A.Harrison : J.Phys.D2, 1437-1446 (1969)
Effect of attachment and multiple ionization on $\ln(\alpha/p)$ against p/E curves. [E, H_2, N_2, O_2, CO, CO_2, Cl_2, SF_6, CCl_2F_2, etc.]

α E.Nasser and H.Parekh : 10th ICPIG, Oxford 1, 50 (1971)
Theoretical determination of Townsend's first ionization coefficient. [T, H_2

A G.V.Nazaroff : J.Chem.Phys. 59, 4009-4023 (1973)
Indirect process in the dissociative attachment of low energy electrons to molecules. [T, H_2]

S D.R.Nelson and F.J.Davis : J.Chem.Phys. 51, 2322-2335 (1969)
Determination of diffusion coefficients of thermal electrons with a time-of-flight swarm experiment.
[E, H_2, He, Ne, Ar, N_2, CO, CO_2, CH_4, C_2H_4; E/N < 3 Td]

α H.Neu : Z.Phys. 152, 294-305 (1958)
Eine Erweiterung der Townsendschen Naherungsformel fur die Ionisierung im homogenen elektrischen Feld. [T, H_2, N_2, He - Xe]

I H.F.Newhall : Phys.Rev. 62, 11-18 (1942)
Proton production by electron collisions in molecular hydrogen.
[E, H_2; 30 - 180 eV]

O R.W.Nicholls : J.Phys.B1, 1192-1211 (1968)
Franck-Condon factors for ionizing transitions of O_2, CO, NO and H_2 and for the $NO^+(A^1\Sigma - X^1\Sigma)$ band system. [T, $h\nu$, H_2, O_2, CO, NO]

EX F.H.Nicoll and C.B.O.Mohr : Proc.Roy.Soc.London A142, 320-332 (1933)
The inelastic scattering of slow electrons in gases. III.
[E, H_2, He, Ar; 16 - 62 eV for H_2]

A E. Nicolopoulou, M. Bacal and H. J. Douset : J. Physique 38, 1399-1404 (1977)
Equilibrium density of H^- in a low pressure hydrogen plasma.
[T and E, H_2]

QT C. E. Normand : Phys. Rev. 35, 1217-1225 (1930)·
The absorption coefficient for slow electrons in gases.
[E, H_2, He - Ar, N_2, CO; 0.5 - 400 eV]

EX K. J. Nygaard : 6th ICPIG, Paris 2, 191-195 (1963)
O On the emission of Hα radiation from selfsustained Townsend discharges in hydrogen. [E, H_2]

EX K. J. Nygaard : Appl. Sci. Res. B12, 91-100 (1965a)
O Measurements of Balmer line radiation from self-sustained Townsend discharge in hydrogen. [E, H_2]

EX K. J. Nygaard : J. Appl. Phys. 36, 743-746 (1965b)
O Ultraviolet light emission from Townsend discharge in hydrogen.
[E, H_2]

EX V. I. Ochkur and A. M. Petrun'kin : Opt. Spectrosc. 14, 245-248 (1963)
I The classical calculation of the probabilities of excitation and ionization of atoms by electron impact.
[T, H_2 only for molecule; th. - 185 eV]

EX T. Ogawa and M. Higo : Chem. Phys. Lett. 65, 610-612 (1979)
Analysis of the translational energy distribution of H^x produced in the e - H_2 collision. [E, H_2]

E Yu. D. Oksyuk : Sov. Phys. JETP 22, 873-881 (1966)·
R Excitation of the rotational levels of diatomic molecules by electron impact in the adiabatic approximation. [T, H_2, N_2, O_2; 0 - 25 eV]

EX J. Olmsted III, A. S. Newton and K. Street, Jr. : J. Chem. Phys. 42, 2321-2327 (1965)
Determination of the excitation functions for formation of metastable states of some rare gases and diatiomic molecules by electron impact.
[E, H_2, Ne, Ar, Kr, N_2, CO; th. - 18.4 eV for H_2]

A T. F. O'Malley : Phys. Rev. 150, 14-29 (1966), Errata 156, 230-230 (1967)
Theory of dissociative attachment. [T, general theory]

V T. F. O'Malley and H. S. Taylor : Phys. Rev. 176, 207-221 (1968)·
A Angular dependence of scattering products in electron-molecule resonant excitation and in dissociative attachment. [T, H_2, O_2, CO, N_2]

O T. F. O'Malley : J. Chem. Phys. 51, 322-334 (1969)
Some diabatic (quasistationary) states of small diatomic systems - projected atomic orbitals. [T, H_2, He_2, etc.]

E K. Onda : J. Phys. Soc. Jpn. 36, 826-838 (1974)·
Theory of low-energy electron scattering by polyatomic molecules.
[T, H_2 only; 1 - 15 eV]

E Y. Oono and Y. Nishimura : Bull. Chem. Soc. Jpn. 50, 1379-1381 (1977)・
I Simple relations between scattering cross sections and molecular diameters. [compilation, many atoms and molecules; van der Waals volume]

I C. B. Opal, W. K. Peterson and E. C. Beaty : J. Chem. Phys. 55, 4100-4106 (1971a)・
Measurement of secondary-electron spectra produced by electron impact ionization of a number of simple gases.
[E, H_2, He - Xe, N_2, O_2, NO, CO, CO_2, H_2O, NH_3, CH_4, C_2H_2]

I C. B. Opal, E. C. Beaty and W. K. Peterson : JILA Report No. 108, 1-117 (1971b)
Tables of energy and angular distribution of electrons ejected from simple gases by electron impact. [E, H_2, etc.]

I C. B. Opal, E. C. Beaty and W. K. Peterson : Atomic Data 4, 209-253 (1972)・
Tables of secondary-electron-production cross sections.
[E, H_2, He - Xe, N_2, O_2, CH_4, NH_3, H_2O, CO, C_2H_2, NO, CO_2]

O T. Orlikowski and L. Wolniewicz : Chem. Phys. Lett. 24, 461-463 (1974)
Nonadiabatic corrections to the vibrational energies of the hydrogen molecule. [T, H_2, D_2]

EX D. K. Otobraev, V. N. Ochkin, S. Yu. Savinov, N. N. Sabolev and S. N. Tskhai : JETP Lett. 28, 392-396 (1978)
Transfer of appreciable angular momenta in electron excitation of molecules. [E, H_2, D_2]

EX W. R. Ott, W. E. Kauppila and W. L. Fite : Phys. Rev. A1, 1089-1098 (1970)
Polarization of Lyman-alpha radiation emitted in electron collisions with hydrogen atoms and molecules. [E, H_2, H]

I J. W. Otvos and D. P. Stevenson : J. Am. Chem. Soc. 78, 546-551 (1956)
Cross-sections of molecules for ionization by electrons.
[E, H_2, He - Xe, N_2, O_2, CO, CO_2, N_2O, CH_4 - C_5H_{12}, C_2H_4 - C_5H_{10}, etc.]

S J. L. Pack and A. V. Phelps : Phys. Rev. 121, 798-806 (1961) Z
Drift velocities of slow electrons in helium, neon, argon, hydrogen and nitrogen. [E, H_2, He, Ne, N_2]

S J. L. Pack, R. E. Voshall and A. V. Phelps : Phys. Rev. 127, 2084-2089 (1962)
Drift velocities of slow electrons in krypton, xenon, deuterium, carbon monoxide, carbon dioxide, water vapor, nitrous oxide, and ammonia.
[E, D_2, Kr, Xe, CO, CO_2, H_2O, N_2O, NH_3]

S L. A. Palkina and B. M. Smirnov : Sov. Phys. JETP 34, 1242-1245 (1971)
Electron mobility in dense gases. [T, H_2, N_2, CO_2]

I M. Parikh : Phys. Rev. A12, 1872-1880 (1975)・
Calculation of dissociative ionization cross sections of diatomic molecules. [T, H_2, N_2, O_2, CO, NO]

O R. W. Patch : J. Quant. Spectrosc. Radiat. Transf. 11, 1311-1330 (1971a)・
Theory of pressure-induced vibrational and rotational absorption of molecules at high temperatures. [T, $h\nu$, H_2; 185 - 7000 K]

O R.W.Patch : J.Quant.Spectrosc.Radiat.Transf.11,1331-1353 (1971b)・
Absorption coefficients for hydrogen. II. Calculated pressure-induced H_2-H_2 rotational absorption in the fundamental region. [T, $h\nu$, H_2

O R.W.Patch : J.Quant.Spectrosc.Radiat.Transf.14,101-110 (1974)・
Absorption coefficients for hydrogen. - III. Calculated pressure-induced H_2-H vibrational absorption in the fundamental region.
[T, $h\nu$, H_2 + H; 2000 - 7000 K]

α J.S.Pearson and J.A.Harrison : J.Phys.D2,1583-1588 (1969)
The effect of an anode hole on measurements of Townsend's α.
[E, H_2, He, CH_4]

O J.M.Peek and E.N.Lassettre : J.Chem.Phys.33,1803-1807 (1960)
Molecular orbital treatment of hydrogen with central potentials and modified boundary conditions. [T, H_2]

O J.M.Peek and E.N.Lassettre : J.Chem.Phys.38,2392-2394 (1963)
Correlation diagram for H_2. Oscillator strengths. [T, H_2]

E E.M.A.Peixoto and M.-T.Lee : An.Acad.Brasil Cienic.51,419-427 (1979)・
A rigorous test for a new conceptual model for collisions. A Glauber treatment for the elastic scattering of 1 keV electrons by hydrogen molecule. [T, H_2]

I L.R.Peterson and A.E.S.Green : J.Phys.B1,1131-1140 (1968)
EX The relation between ionization yields, cross sections and loss functions.
[T, H_2, He, N_2, O_2; th.- 10^4 eV]

I L.R.Peterson and A.E.S.Green : J.Phys.B1,1131-1140 (1969)
O The relation between ionization yields, cross sections and loss functions.
[T, H_2, He, N_2, O_2; th.- 10^4 eV]

E A.V.Phelps,O.T.Fundingsland and S.C.Brown : Phys.Rev.84,559-562 (1951)
Microwave determination of the probability of collision of slow electrons in gases. [E, H_2, N_2, He - Xe]

R A.V.Phelps : Rev.Mod.Phys.40,399-410 (1968)
V Rotational and vibrational excitation of molecules by low-energy electrons. [review, N_2, O_2, CO; 0 - 3 eV]

D A.V.Phelps : JILA Inform. Center Report No.12,9-13 (1972)
Application of molecular dissociation physics to laser and discharge chemistry. [, H_2, D_2, N_2, O_2,

EX A.V.Phelps : U.S.-Japan Seminar, Tokyo 20-23 (1978)
Rate coefficients for electron excitation of molecules.
[review,

V A.V.Phelps : in Electron-Molecule Scattering, S.C.Brown (Ed), John Wiley &
EX Sons 81-106 (1979a)
O Applications and needs. [review, H_2, N_2, O_2, CO_2, LiF, NO_2, SF_6]

E A. V. Phelps : Proc. Internat. Seminar on Swarm Exp. in Atomic Coll. Res., Tokyo,
R 23-32 (1979b)
V The determination of electron collision cross sections from swarm data.
EX [review, H_2, N_2, O_2,

O P. E. Phillipson and R. S. Mulliken : J. Chem. Phys. 28, 1248-1249 (1958)
Improved molecular orbitals. (computations on H_2) [T, H_2]

EX F. M. J. Pichanick, S. A. Lawton and R. D. Dubois : 7th ICPEAC, Amsterdam 339-341 (1971)・
Total cross-sections in the inelastic excitation of molecular hydrogen.
[E, H_2; 11.2 - 12.6 eV]

EX L. A. Polak and D. I. Slovetsky : Int. J. Radiat. Phys. Chem. 8, 257-282 (1976)○
Electron impact induced electronic excitation and molecular dissociation.
[review, H_2, N_2, CO, CH_4, NO, CO_2, etc.]

EX G. N. Polyakova, V. F. Erko, A. I. Ranyuk and O. S. Pavlichenko : Sov. Phys. JETP 44, 921-923 (1976)・
Velocity distributions of excited hydrogen atoms produced in dissociation of hydrogen molecules by electron impact. [E, H_2, D_2]

EX G. N. Polyakova, A. I. Ranyuk and V. F. Erko : Sov. Phys. JETP 46, 1117-1122 (1977)・
Kinetic-energy distribution of excited atoms produced when H_2 and D_2 molecules are dissociated by electron impact. [E, H_2, D_2]

O H. G. Poole : Proc. Roy. Soc. London A163, 424-454 (1937)
Atomic hydrogen. Ⅲ. The energy efficiency of atom production in a glow discharge. [E, H_2]

O S. P. S. Porto and G. H. Dieke : J. Opt. Soc. Am. 45, 447-450 (1955)
Infrared spectrum of hydrogen and deuterium between one and two microns. [E, $h\nu$, H_2, D_2; 2600 lines]

O S. P. S. Porto and N. Jannuzzi : J. Mol. Spectrosc. 11, 378-384 (1963)
New singlet transitions in the near infrared spectrum of molecular hydrogen. [E, $h\nu$, H_2]

A S. A. Pozdneev : Sov. Phys. JETP 50, 18-21 (1979)・
The adiabatic approximation in the problem of the collision of a particle with a bound two-particle system in the case of a separable interaction. [T, H_2; 3.7 - 5.5 eV]

S A. N. Prasad and G. P. Smeaton : Brit. J. Appl. Phys. 18, 371-373 (1967)
Drift velocities of electrons in nitrogen and hydrogen. [E, H_2, N_2]

O R. D. G. Prasad and S. P. Reddy : J. Chem. Phys. 62, 3582-3589 (1975)
Infrared absorption spectra of gaseous HD. Ⅰ. Collision-induced fundamental band of HD in the pure gas and HD-He mixtures at room temperatures. [E, $h\nu$, HD, HD + He]

O R. D. G. Prasad and S. P. Reddy : J. Chem. Phys. 65, 83-88 (1976)
Infrared absorption spectra of gaseous HD. Ⅱ. Collision induced fundamental band of HD in HD-Ne and HD-Ar mixtures at room temperature.
[E, hν, HD]

O R. D. G. Prasad and S. P. Reddy : J. Chem. Phys. 66, 707-712 (1977)
Infrared absorption spectra of gaseous HD. Ⅲ. Collision-induced fundamental band of HD in HD - Kr and HD - Xe mixtures at room temperature. [E, hν, HD]

I S. S. Prasad and K. Prasad : Proc. Phys. Soc. London 82, 655-658 (1963)
Classical calculations for impact ionization cross sections.
[T, H_2, N_2, O_2, CO, H, He, N, O, Ar, Hg, K - Cs]

O F. T. Prochaska and L. Andrews : J. Chem. Phys. 67, 1139-1143 (1977)
Vibration-rotational and pure rotational laser-Raman spectra of H_2, D_2, and HD in matrices at 12 K. [E, hν, H_2, D_2, HD]

EX G. M. Prok, C. F. Monin and H. J. Hettel : J. Quant. Spectrosc. Radiat. Transf. 9,
I 361-369 (1969).
Molecular hydrogen inelastic electron impact cross sections — A semiclassical method. [T, H_2, N_2; th. - 360 eV]

O W. A. Prowse and P. E. Lane : Proc. Phys. Soc. London B69, 33-46 (1956)
The breakdown of gases subject to crossed electric fields.
[E, H_2, N_2, O_2, N_2 + O_2, Ne]

S W. A. Prowse and J. M. Nicholls : Proc. Phys. Soc. London 84, 545-555 (1964)
O Ionization and diffusion by electrons in hydrogen in mixed oscillatory and unidirectional fields. [E, H_2; 100 MHz]

O J. W. Rabalais and T. P. Debies : J. Elect. Spectrosc. Relat. Phenom. 5, 847-880 (1974)
Theoretical photoionization cross-sections, relative experimental photoionization intensities, and angular distributions of photoelectrons.
[T, hν, H_2, N_2, CO, H_2O, H_2S, CH_4, C_2H_4]

S H. Raether : Ergebn. exakt Naturwiss. 33, 175-261 (1961)
Die Elektronenlawine und ihre Entwicklung. [review,

O L. M. Raff : Thesis, University of Illinois, Urbana 1-108 (1962)
Determination of electronic energy levels of molecules by low energy electron impact spectroscopy. [, H_2,

R N. K. Rahman, F. A. Gianturco and U. T. Lamanna : Phys. Rev. A18, 74-81 (1978)
Glauber amplitudes for rotational excitation in e - molecule scattering via quadrupole potentials. [T, H_2, N_2]

V H. Ramien : Z. Phys. 70, 353-374 (1931)
EX Energieverlust langsamer Elektronen in Wasserstoff.
[E, H_2; 3.5 - 12 eV]

QT C. Ramsauer : Ann. Phys. 64, 513-540 (1921)
Uber den Wirkungsquerschnitt der Gasmolekule gegenuber langsamen Elektronen. [E, H_2, N_2, He, Ar, $N_2 + O_2$]

QT C. Ramsauer : Jahrb. Radioakt. Elektron. 19, 345-354 (1923)
Uber den Wirkungquerschnitt der Edelgasmolekule gegenuber langsamen Elektonen. [E, H_2, N_2, He - Xe]

QT C. Ramsauer und R. Kollath : Ann. Phys. 4, 91-108 (1930a)
Uber den Wirkungsquerschnitt der Nichtedelgasmolekule gegenuber Elektronen unterhalb 1 Volt. [E, H_2, N_2, O_2, CO, CO_2, CH_4; 0.16 - 1 eV]

QT C. Ramsauer und R. Kollath : Ann. Phys. 7, 176-182 (1930b)
Uber den Wirkungsquerschnitt der Gasmolekule gegenuber Elektronen unterhalb 1 Volt ; Nachtrag. [E, ; 0.2 - 9 eV]

E C. Ramsauer und R. Kollath : Ann. Phys. 9, 756-768 (1931a)
Die Winkelverteilung bei der Streuung langsamer Elektronen an Gasmolekulen. [E, H_2, He, Ar; 1 - 25 eV]

E C. Ramsauer und R. Kollath : Phys. Z. 32, 867-870 (1931b)
Die Winkelverteilung bei der Streuung langsamer Elektronen an Gasmolekulen. [E, H_2, Ar, CO_2; DCS, 1.7 - 10 eV for H_2]

E C. Ramsauer und R. Kollath : Ann. Phys. 12, 529-561 (1932)
Uber den Winkelverteilung bei der Streuung langsamer Elektronen an Gasmolekulen. II. Fortsetzung. [E, H_2, He - Ar, CO, CO_2; DCS tables]

QT C. Ramsauer und R. Kollath : in Handbuch der Physik, Bd. 22/2, Springer
O 243-312 (1933)
Der Wirkungsquerschnitt von Gasmolekulen gegenuber langsamen Elektronen und langsamer Ionen. [E, review]

O N. F. Ramsey : Phys. Rev. 85, 60-65 (1952)
Theory of molecular hydrogen and deuterium in magnetic fields. [T, H_2, D_2]

O D. H. Rank, B. S. Rao, P. Sitaram, A. F. Slomba and T. A. Wiggins : J. Opt. Soc. Am. 52, 1004-1009 (1962)
Quadrupole and induced dipole spectrum of molecular hydrogen. [E, $h\nu$, H_2]

A D. Rapp and D. D. Briglia : Report, Lockheed Missiles and Space Company, Palo Alto, LMSC-6-74-64-40, 1-59 (1964a)
Total cross sections for negative ion formation in gases by electron impact. [E, H_2, O_2, NO, CO, N_2O, CO_2]

A D. Rapp, T. E. Sharp and D. D. Briglia : Report, Lockheed Missiles and Space Company, Palo Alto, LMSC-6-74-64-45, 1-35 (1964b)
On the theoretical interpretation of resonance dissociative attachment cross sections. [T, H_2,

I D. Rapp, P. Englander-Golden and D. D. Briglia : J. Chem. Phys. 42, 4081-4085 (1965a)
Cross sections for dissociative ionization of molecules by electron impact. [E, H_2, N_2, O_2, CO, NO, CO_2, N_2O, CH_4]

I D. Rapp and P. Englander-Golden : J. Chem. Phys. 43, 1464-1479 (1965b) ○Z
Total cross sections for ionization and attachment in gases by electron impact. I. Positive ionization.
[E, H_2, D_2, He - Xe, N_2, O_2, CO, CH_4, etc.; th. - 1000 eV]

A D. Rapp, T. E. Sharp and D. D. Briglia : Phys. Rev. Lett. 14, 533-535 (1965c) Z
Large isotope effect in the formation of H^- or D^- by electron impact on H_2, HD, and D_2. [E, H_2, HD, D_2]

O C. E. Rasmussen, E. P. Barbian and J. Kistemaker : Plasma Phys. 11, 183-195 (1969)
Ionization and current growth in an E × B discharge.
[E, H_2, N_2, He - Ar]

O F. Rasetti : Phys. Rev. 34, 367-371 (1929)
Incoherent scattered radiations in diatomic molecules.
[E, $h\nu$, H_2, N_2, O_2, NO]

O R. E. Rebbert and P. Ausloos : J. Res. Natl. Bur. Stand. 75A, 481-485 (1971)
Ionization quantum yields and absorption coefficients of selected compounds at 58.4 and 73.6 - 74.4 nm.
[E, $h\nu$, H_2, N_2, CO_2, Ar, Xe, H_2O, H_2S, CO, O_2, NO, N_2O, NH_3, CH_4, C_2H_6, C_3H_8, C_6H_6, C_2H_2, C_2H_4, C_2H_5OH, CF_4, CF_2Cl_2, CCl_4, etc.]

O S. P. Reddy and C. Z. Kuo : J. Mol. Spectrosc. 37, 327-345 (1971)
Collision-induced 1st overtone infrared absorption band of deuterium.
[E, $h\nu$, D_2]

O S. P. Reddy and K. S. Chang : J. Mol. Spectrosc. 47, 22-38 (1973)
Collision-induced fundamental band of H_2 in H_2 - He and H_2 - Ne mixtures at different temperatures. [E, H_2 + He, H_2 + Ne; 77 - 298 K]

O S. P. Reddy, G. Varghese and R. D. G. Prasad : Phys. Rev. A15, 975-984 (1977)
Overlap parameters of H_2 - H_2 molecular pairs for the absorption spectra of the collision-induced fundamental band of H_2.
[E, $h\nu$, H_2; 77 - 298 K, absorption]

O S. P. Reddy and R. D. G. Prasad : J. Chem. Phys. 66, 5259-5268 (1977)
Infrared absorption spectra of gaseous HD. IV. Analysis of the collision-induced fundamental band of the pure gas.
[E, $h\nu$, HD; 77 and 196 K]

O H. J. Reich und H. Schmoranzer : Z. Phys. 186, 305-309 (1965)
Rotationstemperaturen von H_2 bei Beschuss mit 15 keV-Elektronen.
(Rotational temperatures of H_2 under 15 keV electron impact.)
[E, $h\nu$, H_2]

S I. D. Reid and S. R. Hunter : Aust. J. Phys. 32, 255-259 (1979)
Comparison between the Boltzmann and Monte Carlo simulation methods.
[T, H_2

O J. Reid and A. R. W. McKellar : Phys. Rev. A18, 224-228 (1978)
Observation of the $S_0(3)$ pure rotational quadrupole transition of H_2 with a tunable diode laser. [E, $h\nu$, H_2; 1034.6702 cm^{-1}]

EX J. F. Rendina and R. E. Grojean : Appl. Opt. 9, 2148-2153 (1970)
A high resolution electron impact spectrometer for chemical analysis of gases and vapors. [E, H_2, N_2, $N_2 + O_2$, CO; 100 eV]

E T. N. Rescigno, C. W. McCurdy, Jr. and V. McKoy : Phys. Rev. A11, 825-829 (1975a)
Low energy e^- - H_2 elastic cross sections using discrete basis functions. [T, H_2]

EX T. N. Rescigno, C. W. McCurdy, Jr. and V. McKoy : J. Phys. B8, L433-L436 (1975b)
Ab initio cross sections for the excitation of the $b^3\Sigma_u^+$ state of H_2 by electron impact in the distorted-wave approximation.
[T, H_2; DCS, 15 eV]

EX T. N. Rescigno, C. W. McCurdy, Jr., V. McKoy and C. F. Bender : Phys. Rev. A13, 216-223 (1976), Erratum A15, 2569-2569 (1977)
Low-energy electron-impact excitation of the hydrogen molecules.
[T, H_2; distorted-wave, $b^3\Sigma_u^+$ and $a^3\Sigma_g^+$, DCS, 13 - 20 eV]

D C. B. Richardson, B. P. Gilstrap and R. H. Hughes : Bull. Am. Phys. Soc. 20, 466-466 (1975)
Production of atomic deuterium in the n = 3 states by electron bombardment of D_2. [E, D_2]

O O. W. Richardson and T. Tanaka : Proc. Roy. Soc. London A106, 640-662 (1924a)
The striking and breaking potentials for electron discharges in hydrogen. [E, H_2]

O O. W. Richardson and T. Tanaka : Proc. Roy. Soc. London A106, 663-678 (1924b)
On a P, Q and R combination in the many-lined spectrum of hydrogen. [E, $h\nu$, H_2]

O O. W. Richardson : Proc. Roy. Soc. London A111, 714-753 (1926a)
Structure in the secondary hydrogen spectrum — IV. [E, $h\nu$, H_2]

O O. W. Richardson : Nature 118, 116-116 (1926b)
The secondary hydrogen spectrum. [E, $h\nu$, H_2]

O O. W. Richardson : Proc. Roy. Soc. London A113, 368-419 (1926c)
Structure in the secondary hydrogen spectrum — Part V. [E, $h\nu$, H_2]

O O. W. Richardson : Proc. Roy. Soc. London A111, 714-753 (1926d)
Structure in the secondary hydrogen spectrum - IV. [E, $h\nu$, H_2]

O O. W. Richardson : Proc. Roy. Soc. London A114, 643-650 (1927)
Note on a connection between the visible and ultra-violet bands of hydrogen. [E, $h\nu$, H_2]

0 O.W.Richardson : Proc.Roy.Soc.London A115, 528-548 (1927)
The hydrogen band spectrum : New band systems in the violet. [E, hν, H_2]

0 O.W.Richardson and K.Das : Proc.Roy.Soc.London A122, 688-718 (1929a)
The spectrum of H_2 : The bands analogous to the orthohelium line spectrum. [E, hν, H_2]

0 O.W.Richardson and P.M.Davidson : Proc.Roy.Soc.London A123, 54-80 (1929b)
The spectrum of H_2. The bands analogus to the parhelium line spectrum. — Part Ⅰ. [E, hν, H_2]

0 O.W.Richardson and P.M.Davidson : Proc.Roy.Soc.London A123, 466-488 (1929c)
The spectrum of H_2. The bands analogus to the parhelium line spectrum. — Part Ⅱ. [E, hν, H_2]

0 O.W.Richardson and P.M.Davidson : Proc.Roy.Soc.London A124, 50-68 (1929d)
The spectrum of H_2. The bands analogus to the parhelium line spectrum. — Part Ⅲ. [E, hν, H_2]

0 O.W.Richardson and P.M.Davidson : Proc.Roy.Soc.London A124, 69-88 (1929e)
The spectrum of H_2. The bands analogus to the parhelium line spectrum. — Part Ⅳ. [E, hν, H_2]

0 O.W.Richardson and P.M.Davidson : Proc.Roy.Soc.London A125, 23-50 (1929f)
The energy functions of the H_2 molecules. [T, hν, H_2]

0 O.W.Richardson and K.Das : Proc.Roy.Soc.London A125, 309-330 (1929g)
The spectrum of H_2 : The bands analogous to the orthohelium line spectrum. — Part Ⅱ. [E, hν, H_2]

0 O.W.Richardson : Trans.Faraday Soc.25, 686-693 (1929h)
The electronic levels of H_2. [review, hν, H_2]

0 O.W.Richardson : Proc.Roy.Soc.London A126, 487-510 (1930)
A new connection between the absorption spectrum of hydrogen and the many lined spectrum. [E, hν, H_2]

0 O.W.Richardson and P.M.Davidson : Proc.Roy.Soc.London A131, 658-683 (1931)
Spectrum of H_2 and bands ending on $2p^3\Pi$ levels. [E, hν, H_2]

0 O.W.Richardson and P.M.Davidson : Proc.Roy.Soc.London A140, 25-58 (1933a)
Spectrum of H_2 and bands ending on $2p^3\Pi$ levels. Part Ⅱ. [E, hν, H_2]

0 O.W.Richardson and P.M.Davidson with an Appendix by J.Marsden and W.M.Evans : Proc.Roy.Soc.London A142, 40-62 (1933b)
Spectrum of H_2 and bands ending on $2p^3\Pi$ levels. Part Ⅲ. [E, hν, H_2]

0 O.W.Richardson : Molecular Hydrogen and Its Spectrum, Yale Univ.Press. New Haven (1934)

0 O.W.Richardson : Proc.Roy.Soc.London A152, 503-514 (1935)
On the ground state of (H_2), the molecular ion (H_2^+) and wave mechanics. [compilation, H_2]

I F.F.Rieke and W.Prepejchal : Phys.Rev.A6,1507-1519 (1972)・
Ionization cross sections of gaseous atoms and molecules for high-energy electrons and positrons.
[E, H_2, He - Xe, Hg, N_2, O_2, NO, CO, H_2O, CO_2, etc.,40 gases; $>$ 100 keV]

S W.Riemann : Z.Phys.122,216-229 (1944)
Untersuchung der Elektronenlawine mit der Nebelkammer.
[E, H_2, N_2, N_2 + O_2, O_2, Ar, CO_2]

V B.Ritchie : Phys.Rev.A6,1456-1460 (1972), Errata A7,828-828 (1973)
Theory of small-energy-transfer collisions in dominant long-ranged forces : H^+ - H_2 and e^- - H_2 vibrational excitation. [T, H_2, N_2]

E B.Ritchie : J.Chem.Phys.70,2663-2669 (1979)
Electron-molecule scattering in momentum space. [T, H_2]

E B.Ritchie : J.Chem.Phys.72,1420-1421 (1980)
Comment on "Electron molecule scattering in momentum space".
[T, H_2, N_2]

S A.G.Robertson : Aust.J.Phys.24,445-449 (1971)・
Electron drift velocities in normal and parahydrogen and deuterium.
[E, n-H_2, p-H_2, D_2]

QT J.Robinson : Ann.Phys.31,769-822 (1910)
Untersuchungen uber die Ausbreitung von lichtelektrischen Kathodenstrahlen im Vakuum und in verschiedenen Gasen. [E, H_2, N_2, O_2, CO; 3.2 - 1650 eV]

O C.C.J.Roothaan : Rev.Mod.Phys.23,69-89 (1951)
New developments in molecular orbital theory.
[review, general theory]

α G.D.Rork and L.M.Chanin : J.Appl.Phys.35,2801-2802 (1964)
First Townsend ionization coefficient measurements in deuterium.
[E, D_2; see L.M.Chanin (1963)]

E R.Roscoe : Phil.Mag.26,32-41 (1938)
The calculation of the elastic scattering of electrons by molecular hydrogen. [T, H_2]

EX R.Roscoe : Phil.Mag.31,349-362 (1941)
The excitation of the hydrogen molecule by electron impact. [T, H_2]

α D.J.Rose : Phys.Rev.104,273-277 (1956)
Townsend ionization coefficient for hydrogen and deuterium. [E, H_2, D_2]

O W.Ross,S.Florek and J.Gatzke : Opt.Comm.23,29-32 (1977)
Investigation of some elementary processes in a vacuum-UV hydrogen laser discharge. [E, H_2]

O S.Rothenberg and E.R.Davidson : J.Chem.Phys.44,730-737 (1966)
Hydrogen-molecule excited states : $^1\Pi_u$ [T, H_2

O S. Rothenberg and E. R. Davidson : J. Mol. Spectrosc. 22, 1-17 (1967)
Theoretical intensities for the $X^1\Sigma_g^+$ - np $^1\Pi_u$ transitions of H_2. A study of the Franck-Condon principle. [T, H_2]

EX D. Roy and J.-D. Carette : Can. J. Phys. 53, 175-183 (1975)
I Excitation de H_2 et D_2 par impact electronique au voisinage du seuil d'ionisation. [E, H_2, D_2; 70 eV]

S W. Roznerski : J. Phys. D11, L197-L201 (1978)
The ratio of lateral diffusion coefficient to mobility for electrons in hydrogen and nitrogen. [E, H_2, N_2]

E B. F. Rozsnyai : J. Chem. Phys. 47, 4102-4112 (1967)·
Theory of electron collisions with homonuclear diatomic molecules. [T, H_2, N_2; 1st Born, th. - 400 eV]

O J. R. Rumble, Jr., J. S. Sims and D. R. Purdy : J. Phys. B10, 2553-2559 (1977)
Upper and lower bounds for the oscillator strength of the $X^1\Sigma_g^+$ - $C^1\Pi_u$ transition of the hydrogen molecule. [T, $h\nu$, H_2]

QT M. Rusch : Phys. Z. 26, 748-751 (1925)
Uber das Verhalten der Gasatome gegenuber langsamen Elektronen. [E, H_2, Ne, Ar, Kr; 0.2 - 2 eV for H_2]

O W. E. Russell, S. P. Reddy and C. W. Cho : J. Mol. Spectrosc. 52, 72-81 (1974)
Collision-induced fundamental band of D_2 in D_2 - He and D_2 - Ne mixtures at different temperatures. [E, $h\nu$, D_2 + He, D_2 + Ne; 77 - 298 K]

EX S. R. Ryan, J. J. Spezeski, O. F. Kalman, W. E. Lamb, Jr., L. C. McIntyre, Jr. and W. H. Wing : Phys. Rev. A19, 2192-2196 (1979)·
Time of flight study of H(2S) and D(2S) produced by electron impact on H_2, D_2 and HD : Evidence for predissociation. [E, H_2, D_2, HD]

S H. T. Saelee and J. Lucas : 4th ICGD, Swansea 180-183 (1976)
Electron swarms in hydrogen at high E/N. [E, H_2]

S H. T. Saelee, J. Lucas and J. W. Limbeek : IEE J. Solid State Electron Device 1, 111-116 (1977a)
Time-of-flight measurement of electron drift velocity and longitudinal diffusion coefficient in nitrogen, carbon monoxide, carbon dioxide and hydrogen. [E, H_2, N_2, CO, CO_2]

S H. Saelee and J. Lucas : J. Phys. D10, 343-354 (1977b)·
Simulation of electron swarm motion in hydrogen and carbon monoxide for high E/N. [T, H_2, CO]

R D. H. Sampson : Report R63SD43, G. E. Space Science Laboratory, AD-407 034, 1-21 (1963)
Effect of induced dipole interaction on the cross section for rotational excitation by electrons. [T, H_2,

R D.H.Sampson and R.C.Mjolsness : Phys.Rev.140,A1466-A1476 (1965)
Theory of rotational excitation of homonuclear diatomic molecules by slow electrons : Application to N_2 and H_2. [T, H_2, N_2]

E W.N.Sams, L.Frommhold and D.J.Kouri : Phys.Rev.A6,1070-1076 (1972)
EX Differential- and total-cross-section calculations for models of e - H_2 collisions. [T, H_2; close coupling]

O J.A.R.Samson and R.B.Cairns : J.Opt.Soc.Am.55,1035-1035 (1965)
Total absorption cross sections of H_2, N_2, and O_2 in the region 550 - 220 A. [E, $h\nu$, H_2, N_2, O_2]

O J.A.R.Samson : Chem.Phys.Lett.12,625-627 (1972)
Observation of double electron excitation in H_2 by photoelectron spectroscopy. [E, $h\nu$, H_2; 247 A]

O J.A.R.Samson : Phys.Rep.28C,303-354 (1976)
Photoionization of atoms and molecules. [review, $h\nu$, H_2, He, Xe, etc.]

O L.Sanche and G.J.Schulz : Phys.Rev.A6,69-86 (1972)·
Electron transmission spectroscopy : Core-excited resonances in diatomic molecules. [E, H_2, D_2, O_2, NO, N_2, CO]

R T.Sandvik, A.Kay and M.Mentzoni : Phys.Lett.A47,461-463 (1974)·
Rotational excitation of H_2 and D_2 by thermal electrons. [T, H_2, D_2]

EX N.Sasaki and T.Nakao : Nature 136,260-260 (1935a)
Molecular orientation and the probability of dissociation of molecules by electron impact. [E, H_2; 86 eV]

I N.Sasaki und T.Nakao : Proc.Imp.Acad.Tokyo 11,138-140 (1935b)
Uber die Abhangigkeit der Ionisierungswahrscheinlichkeit, $H_2 \rightarrow H + H^+ + e +$ kin. energie, von der Molekulorientierung gegen die stossenden Elektronen. [E, H_2]

EX N.Sasaki und T.Nakao : Proc.Imp.Acad.Tokyo 11,413-415 (1935c)
Molekulare orientierung und die Anregungs- und Dissoziationswahrscheinlichkeit des Wasserstoffmolekuls durch Elektronenstoss. [E, H_2]

EX N.Sasaki and T.Nakao : Proc.Imp.Acad.Tokyo 17,75-77 (1941)
I Molecular orientation and the dissociation probability of the hydrogen molecule by electron impact. Ⅲ. [E, H_2; 105 eV]

α M.N.Sawny and J.A.Harrison : J.Phys.D2,1437-1446 (1969)
Effect of attachment and multiple ionization on $\ln(\alpha/p)$ against p/E curves.
[T, H_2, D_2, $N_2 + O_2$, O_2, CO_2, CO, Cl_2, SF_6, CCl_2F_2, $SiCl_4$, CF_3SF_5]

I O.A.Schaeffer and J.M.Hastings : J.Chem.Phys.18,1048-1050 (1950)
Isotope effect on bond rupture by electron impact on hydrogen, deuterium and tritium. [E, H_2, D_2, T_2; 30 eV]

A C. Schermann, P. Delon, R. I. Hall and M. Tronc : 10th ICPEAC, Paris 2, 836-837 (1977)・
New processes for dissociative attachment in NO, O_2 and H_2.
[E, H_2, O_2, NO]

EX J. A. Schiavone, K. C. Smyth and R. S. Freund : J. Chem. Phys. 63, 1043-1051 (1975)
Dissociative excitation of H_2 by electron impact : Translational spectroscopy of long lived high Rydberg fragment atoms. [E, H_2]

EX J. A. Schiavone, S. M. Tarr and R. S. Freund : J. Chem. Phys. 70, 4468-4473 (1979)
High-Rydberg atomic fragments from electron-impact dissociation of molecules. [E, H_2, D_2, CH_4, N_2, CO, CO_2; th. - 300 eV]

S H. Schlumbohm : Z. Phys. 182, 317-327 (1965a)・
Messung der Driftgeschwindigkeiten von Elektronen und positiven Ionen in Gasen. [E, H_2, N_2, O_2, $(CH_3)_2CO$, C_6H_6, CO_2, CH_4, $(C_2H_5)_2O$, $CH_2(OCH_3)_2$]

S H. Schlumbohm : Z. Phys. 184, 492-505 (1965b)・
Stossionisierungskoeffizient α, mittlere Elektronenenergien und die Beweglichkeit von Elektronen in Gasen.
[E, H_2, N_2, O_2, CO_2, CH_4, $(CH_3)_2CO$, C_6H_6, $(C_2H_5)_2O$, $CH_2(OCH_3)_2$]

EX H. Schmoranzer, R. C. Ulsh, R. A. Bonham and J. Ely : J. Chem. Phys. 59, 152-157 (1973a)
Observation of the Compton modified band for the scattering of keV electrons by H_2, He, Ne and Ar. [E, H_2, He - Ar; 45 keV]

EX H. Schmoranzer and J. Geiger : J. Chem. Phys. 59, 6153-6156 (1973b)
Light emission of electron impact excited hydrogen molecules and the dependence of electronic transition moment on internuclear distance.
[E, H_2]

EX H. Schmoranzer : J. Phys. B8, 1139-1148 (1975)・
Electronic transition moment in the $B^1\Sigma_u^+ - X^1\Sigma_g^+$ Lyman band system of H_2 based on keV electron impact excited vacuum UV emission intensities.
[E, H_2]

E B. Schneider, H. S. Taylor and R. Yaris : Phys. Rev. A1, 855-867 (1970)
Many-body theory of the elastic scattering of electrons from atoms and molecules. [T, many-body Green's-function techniques]

E B. I. Schneider : Phys. Rev. A11, 1957-1962 (1975)・
R-matrix theory for electron-molecule collisions using analytic basis set expansions. II. Electron - H_2 scattering in the static-exchange model.
[T, H_2]

E B. I. Schneider : Chem. Phys. Lett. 51, 578-581 (1977a)・
Pseudostates and low-energy electron-molecule collisions : Applications to H_2 and N_2. [T, H_2, N_2]

E B. I. Schneider : 10th ICPEAC, Paris 257-269 (1977b)
The R-matrix method : Application to electron-molecule collisions.
[T, H_2]

V B. I. Schneider, M. Le. Dourneuf and P. G. Burke : J. Phys. B12, L365-L369 (1979)・
A Theory of vibrational excitation and dissociative attachment : An R-matrix approach. [T, general theory for diatomic molecules]

O F. D. Schowengerdt and D. E. Golden : Phys. Rev. A11, 160-165 (1975)・
Structures in the electron transmission spectrum of H_2 near the H_2^+ threshold. [E, H_2; see L. Sanche (1972) and A. Weingartshofer (1970)]

I B. L. Schram, F. J. de Heer, M. J. van der Wiel and J. Kistemaker : Physica 31, 94-112 (1965a)・Z
Ionization cross sections for electrons (0.6 - 20 keV) in noble and diatomic gases. [E, H_2, D_2, He - Xe, N_2, O_2]

EX B. L. Schram and L. Vriens : Physica 31, 1431-1436 (1965b)
I Cross section formulae for ionization and excitation of atoms by high energy electrons. [T, H_2, He, H]

I B. L. Schram, H. R. Moustafa, J. Schutten and F. J. de Heer : Physica 32, 734-740 (1966a)
Ionization cross sections for electrons (100 - 600 eV) in noble and diatomic gases. [E, H_2, N_2, O_2, He - Xe]

I B. L. Schram, A. J. Boerboom, M. J. van der Wiel, F. J. de Heer and J. Kistemaker : in Advances in Mass Spectrometry, 3, 273-286 (1966b)・
Ionization cross-section measurements for 0.6- to 20-keV electrons in atomic and molecular gases. [E, H_2, D_2, N_2, He - Xe, O_2, CH_4 - n-C_6H_{14}]

I B. L. Schram : PhD Thesis, Amsterdam 1-103 (1966c)
Ionization of noble and molecular gases by high energy electrons. [E, H_2, He - Xe, N_2, O_2; 0.1 - 20 keV]

E E. Schultes, R. Schumacher und R. N. Schindler : Z. Naturforsch. 29a, 239-244 (1974)
Bestimmung von Streuquerschnitten fur thermische Elektronen aus der Linienform von ECR-Signalen.
[E, H_2, He, Ar, O_2, N_2, CO, CO_2, N_2O, H_2O, CH_3NH_2, CH_3CN]

EX G. J. Schulz : Phys. Rev. 112, 150-154 (1958)・
Measurement of atomic and molecular excitation by a trapped electron method. [E, H_2, He, Hg; for H_2, 6 - 15 eV]

A G. J. Schulz : Phys. Rev. 113, 816-819 (1959)・
Formation of H^- ions by electron impact on H_2. [E, H_2; 6 - 20 eV]

V G. J. Schulz : Phys. Rev. 135, A988-A994 (1964)・
Vibrational excitation of H_2, CO, and N_2 by electron impact. [E, H_2, CO, N_2]

A G. J. Schulz and R. K. Asundi : Phys. Rev. Lett. 15, 946-949 (1965)・
Formation of H^- by electron impact on H_2 at low energy. [E, H_2]

A G. J. Schulz and R. K. Asundi : Phys. Rev. 158, 25-29 (1967)・Z
Isotope effect in the dissociative attachment in H_2 at low energy. [E, H_2]

V G. J. Schulz : Rev. Mod. Phys. 45, 423-486 (1973)
Resonances in electron impact on diatomic molecules.
[review, H_2, N_2, O_2, CO, NO]

V G. J. Schulz : in Principles of Laser Plasmas, G. Bekefi (Ed), John Wiley and Sons, Chapter 2, 33-88 (1976)
A review of vibrational excitations of molecules by electron impact at low energies. [review, H_2, N_2, O_2, CO, CO_2, N_2O, H_2O, NO]

V G. J. Schulz : in Electron-Molecule Scattering, S. C. Brown (Ed), John Wiley and Sons, Chapter 1, 1-56 (1979)
A review of vibrational excitations of molecules by electron impact at low energies. [review, H_2, N_2, O_2, CO, CO_2, N_2O, H_2O, NO]

O D. SenGupta, S. K. Guharay, D. N. Ghoshroy and S. N. SenGupta : Pramana 11, 661-671 (1978)
Electron neutral collision frequency from breakdown measurements in crossed electric and magnetic fields. [, H_2,

O M. A. Shallal and J. A. Harrison : J. Phys. D4, 1550-1559 (1971)
Pre-breakdown currents in hydrogen in uniform and non-uniform fields.
[E, H_2]

O Shardanand and Y. Mikawa : J. Quant. Spectrosc. Radiat. Transf. 7, 605-609 (1967)·
Photon scattering cross sections at Lyman-α (1215.7 A) for He and Ne.
[E, $h\nu$, H_2, He, Ne, Ar, N_2]

I V. N. Sharma, D. N. Tripathi and D. K. Rai : J. Quant. Specrosc. Radiat. Transf. 11,
O 283-289 (1971)
Electronic ionization and recombination coefficients for atmospheric molecules. I. Electron impact ionization cross sections.
[T, H_2, N_2, O_2, NO, CO, CO_2]

I V. N. Sharma, D. N. Tripathi and D. K. Rai : Indian J. Pure Appl. Phys. 10, 418-420 (1972)·
Inelastic electron impact cross sections of H_2 and N_2.
[T, H_2, N_2; th. - 10^5 eV]

O T. E. Sharp : Atomic Data 2, 119-169 (1971), Erratum 3, 299-299 (1971)
Potential-energy curves for molecular hydrogen and its ions.
[compilation, H_2]

O G. W. Shaw and R. S. Berry : J. Chem. Phys. 56, 5808-5817 (1972)
Photoionization and autoionization of H_2. [T, $h\nu$, H_2; 600 - 800 A]

O T. M. Shaw : J. Chem. Phys. 30, 1366-1367 (1959)
D Dissociation of hydrogen in a microwave discharge. [E, H_2]

S M. Shimozuma, Y. Sakai, H. Tagashira and S. Sakamoto : J. Phys. D10, 1671-1682 (1977)
Prebreakdown current growth and the ionization coefficients in hydrogen.
[E, H_2]

I R. Shingal, B. B. Srivastava and S. P. Khare : J. Chem. Phys. 61, 4656-4659 (1974)
Ionizing collisions of electrons with molecular hydrogen.
[T, H_2; th. - 10^4 eV]

O J. A. Shirley and R. J. Hall : J. Chem. Phys. 67, 2419-2421 (1977)
Vibrational excitation in H_2 and D_2 electric discharges.
[E, H_2, D_2; vib. temp. of v = 1 level]

O H. Shull : J. Chem. Phys. 20, 18-21 (1952)
Transition probabilities. Ⅱ. Calculation of semi-theoretical f-numbers for hydrogen using the dipole velocity operator. [T, H_2]

O J. M. Sichel and M. A. Whitehead : Theor. Chim. Acta 11, 239-253 (1968)
Semi-empirical all valence electrons SCF-MO-CNDO theory . Ⅲ. Orbital energies and ionization potentials. [T, H_2, N_2, CO, F_2, HF, SO_2, H_2O, CO_2, N_2O, O_3, NH_3, CH_4, C_2H_2, C_2H_4, C_2H_6, C_3H_8, etc.]

O M. Simizu : J. Phys. Soc. Jpn. 18, 811-819 (1963)
Two centre Coulomb potential approximation.
[T, $h\nu$, H_2; q_m of electrons for H_2O and NH_3]

S A. A. Simpson, A. I. McIntosh and S. C. Haydon : 10th ICPIG, Oxford 1, 53 (1971b)
An appriaisal of the equivalent pressure concept. [

O A. L. Sinfailam : Comput. Phys. Commun. 1, 445-452 (1970)
Electron scattering by closed-shell diatomic molecules. [program]

V B. M. Smirnov and O. B. Firsov : Sov. Phys. JETP 46, 238-242 (1977)
Cross section of excitation of molecular vibrational levels by electron impact. [T, H_2, N_2, CO, NO_2]

O V. A. Smirnov and Yu. T. Mazurenko : Opt. Spectrosc. 41, 566-567 (1976)
Dipole moment and rotational spectrum of the HD molecule. [T, HD]

I Yu. F. Smirnov and V. G. Neudachin : Sov. Phys. JETP Lett. 3, 192-193 (1966)
Investigation of the electronic states of atoms, molecules, and solids by quasielastic knock-on of an electron by a fast electron (e, 2e).
[T, H_2]

O W. H. Smith and R. Chevalier : Astrophys. J. 177, 835-839 (1972)
Radiative-lifetime studies of the emission continua of the hydrogen and deuterium molecules. [E, H_2, D_2; 1400 - 3500 A region]

I H. D. Smyth : Proc. Roy. Soc. London A105, 116-128 (1924)
Further studies in ionization : Hydrogen and oxygen. [E, H_2, O_2]

I H. D. Smyth : Rev. Mod. Phys. 3, 247-391 (1931)
Products and processes of ionization by low speed electrons.
[review, H_2, N_2, O_2, C_4H_{10}, etc., many atoms and molecules]

S A. R. Snelson and J. Lucas : 2nd ICGD, London 297-298 (1972)
Longitudinal diffusion coefficient for electron swarm at low E/p_0.
[E, H_2,

S R. A. Snelson and J. Lucas : Proc. IEE 122, 333-336 (1975)
Measurements of the longitudinal diffusion coefficient and the drift velocity for electron swarms in hydrogen and nitrogen using a time-of-flight technique. [E, H_2, N_2]

I K. Sommermeyer und H. Dresel : Z. Phys. 141, 307-318 (1955)
Die spezifische primare ionization druch Elektronen mittlerer Energie in Wasserstoff, Stickstoff, Sauerstoff und Argon.
[E, H_2, N_2, O_2, Ar; 1 - 50 keV]

O V. N. Soshnikov : Sov. Phys. Usp. 4, 425-440 (1961)
Absolute intensities of electronic transitions in diatomic molecules.
[review, H_2, N_2, O_2, HF - HI, F_2 - I_2, Li_2, Na_2, CO, NO, CH, NH, OH, etc.]

A D. Spence and G. J. Schulz : J. Chem. Phys. 54, 5424-5425 (1971)·
Effect of rotational excitation on dissociative electron attachment in H_2.
[E, H_2; 3.75 eV, 300 - 1300 K]

V D. Spence : J. Phys. B7, L87-L90 (1974)
A Core-excited resonances in hydrogen. [E, H_2; 11 - 13 eV]

E F. E. Spencer, Jr. and A. V. Phelps : Proc. of 15th Sympo. on Eng. Aspects of Magnetohydrodynamics, Philadelphia 103-111 (1976)
Momentum transfer cross-sections and conductivity integrals for gases of MHD interest. [review, H_2, CO, NO, CO_2, Cs, etc.; q_m, 0 - 100 eV]

O R. J. Spindler, Jr. : J. Quant. Spectrosc. Radiat. Transf. 9, 597-626 (1969a)
Franck-Condon factors for band systems of molecular hydrogen — I.
The $(B^1\Sigma_u^+ - X^1\Sigma_g^+)$, $(I^1\Pi_g - B^1\Sigma_u^+)$ and $(d^3\Pi_u - a^3\Sigma_g^+)$ systems.
[T, H_2]

O R. J. Spindler, Jr. : J. Quant. Spectrosc. Radiat. Transf. 9, 627-642 (1969b)
Franck-Condon factors for band systems of molecular hydrogen — II.
The $(C^1\Pi_u - X^1\Sigma_g^+)$, $(D^1\Pi_u - X^1\Sigma_g^+)$ and $(h^3\Sigma_g^+ - c^3\Pi_u)$ systems.
[T, H_2]

O R. J. Spindler, Jr. : J. Quant. Spectrosc. Radiat. Transf. 9, 1041-1065 (1969c)
Franck-Condon factors for band systems of molecular hydrogen — III.
The $(B'^1\Sigma_g^+ - X^1\Sigma_g^+)$, $(E^1\Sigma_g^+ - B^1\Sigma_u^+)$, $(G^1\Sigma_g^+ - B^1\Sigma_u^+)$ and $(k^3\Pi_u - a^3\Sigma_g^+)$ systems. [T, H_2]

R L. Spitzer, Jr. and E. G. Zweibel : Astrophys. J. 191, L127-L130 (1974)
On the theory of H_2 rotational excitation. [T, H_2]

O R. Spohr und E. von Puttkamer : Z. Naturforsch. 22a, 705-710 (1967)
Energiemessung von Photoelektronen und Franck-Condon-Faktoren der Schwingungsubergange einiger Molekulionen.
[E, H_2, D_2, N_2, NO, O_2, CO_2, N_2O, H_2O, C_2H_2]

E M.K.Srivastava, A.N.Tripathi and M.Lal : Phys.Rev.A18, 2377-2378 (1978)
Exchange effects in the independent-atom model of electron-molecule scattering. [T, H_2 only; 30, 75, 200 eV]

R S.K.Srivastava, R.I.Hall, S.Trajmar and A.Chutjian : Phys.Rev.A12, 1399-1401 (1975a) Z
Pure rotational excitation of H_2 at electron impact energies of 3 to 100 eV. [E, H_2]

E S.K.Srivastava, A.Chutjian and S.Trajmar : J.Chem.Phys.63, 2659-2665 (1975b) ○Z
Absolute elastic differential electron scattering cross sections in the intermediate energy region. 1. H_2. [E, H_2; 3 - 75 eV, 20 - 135 °]

EX S.K.Srivastava and S.Jensen : J.Phys.B10, 3341-3346 (1977)・Z
Experimental differential and integral electron impact cross sections for the $B^1\Sigma_u^+$ state of H_2 in the intermediate-energy region.
[E, H_2]

EX W.Sroka : Phys.Lett.28A, 784-785 (1969)・
Emission in the extreme ultraviolet from autoionizing levels of H_2 and D_2. [E, H_2, D_2; emission spectrum]

O E.J.Stansbury, M.F.Crawford and H.L.Welsh : Can.J.Phys.31, 954-961 (1953)
Determination of rate of change of polarizability from Raman and Rayleigh intensities. [E, $h\nu$, H_2, D_2, N_2, O_2, HCl, HBr, CO_2, CH_4]

A R.E.Stanton : J.Chem.Phys.32, 1348-1350 (1960)
Electron capture by neutral molecules. [T, H_2]

O W.L.Starr and M.Loewenstein : J.Geophys.Res.77, 4790-4796 (1972)
Total absorption cross sections of several gases of aeronomic interest at 584 A. [E, $h\nu$, H_2, N_2, O_2, Ar, CO, CO_2, NO, N_2O, NH_3, CH_4, H_2S]

EX J.C.Steelhammer and S.Lipsky : J.Chem.Phys.53, 1445-1454 (1970)
Angular dependence of differential cross sections for electron excitation of singlet→triplet transitions.
[T, H_2, H, He; Born + Ochkur, $b^3\Sigma_u^+$ for H_2 at 60 and 100 eV]

O T.L.Stephens and A.Dalgarno : J.Quant.Spectrosc.Radiat.Transf.12, 569-586 (1972)
Spontaneous radiative dissociation in molecular hydrogen.
[T, H_2, HD, D_2]

O D.P.Stevenson : J.Chem.Phys.15, 409-411 (1947)
On the mass spectra of hydrogen and deuterium. [T, H_2, D_2]

EX D.P.Stevenson : J.Am.Chem.Soc.82, 5961-5966 (1960)
I The Franck-Condon principle and the ionization and dissociation of hydrogen by electron impact. [review, H_2]

E H.C.Stier : Z.Phys.76,439-470 (1932)
Zur Deutung des Ramsauereffektes bei symmetrischen, zweiatomigen Molekulen.
[T, H_2, N_2, Ar - Xe, Zn, Cd]

O R.Stockbauer : J.Chem.Phys.70,2108-2114 (1979)
Threshold photoelectron spectra of atmospheric molecules. I. Description of method and application to H_2, D_2 and N_2. [E, $h\nu$, H_2, D_2, N_2]

I J.A.D.Stockdale, V.E.Anderson, A.E.Carter and L.Deleanu : J.Chem.Phys.63, 3886-3897 (1975)
Dissociative ionization of molecules by electron impact. I. Apparatus and kinetic energy distributions of D^+ ions from D_2. [E, D_2]

O B.P.Stoicheff : Can.J.Phys.35,730-741 (1957)
High resolution Raman spectroscopy of gases. IX. Spectra of H_2, HD, and D_2. [E, $h\nu$, H_2, HD, D_2]

EX E.J.Stone and E.C.Zipf : J.Chem.Phys.56,4646-4650 (1972)
Excitation of the Werner bands of H_2 by electron impact.
[E, H_2; th. - 350 eV]

O S.Strathdee and R.Browning : J.Phys.B9,L505-L507 (1976)
Dissociative photoionization of H_2 at 26.9 eV. [E, $h\nu$, H_2; NeII line]

O S.Strathdee and R.Browning : J.Phys.B12,1789-1804 (1979)
Dissociative photoionization of H_2 : Proton kinetic energy spectra.
[E, $h\nu$, H_2]

α C.W.Stuart and E.Gerjuoy : Phys.Rev.119,892-899 (1960)
Soluble three-dimentional model for Townsend's α. [T, H_2]

S C.W.Stuart : 5th ICIPG, Munich 1,771-778 (1962)
Electron distributions in H_2 gas at high E/p. [, H_2]

O W.C.Stwalley : Chem.Phys.Lett.6,241-244 (1970)
The dissociation energy of the hydrogen molecule using long-range forces. [T, H_2]

O W.C.Stwalley : J.Chem.Phys.58,536-540 (1973)
Potential energy curve of the $B^1\Sigma_u^+$ state of H_2. [T, H_2]

E R.Subramanyan : Sov.Phys.JETP 28,190-192 (1969)・
Scattering of electrons by diatomic molecules in the approximation of two small-radius wells. [T, H_2; 0.5 - 13 eV]

I L.V.Sumin and M.V.Gur'ev : Sov.Phys.JETP 35,1057-1061 (1972)・
Ionization of atoms and molecules by electron impact. Energy loss and momentum transfer. [E, H_2, N_2, CO_2, H_2O, atoms; 30 - 300 eV]

E A.Szabo and N.S.Ostlund : J.Chem.Phys.60,946-950 (1974)・
Calculation of high energy elastic electron-molecule scattering cross sections with CNDO wavefunctions.
[T, H_2, CO, N_2, NH_3, H_2O, CH_4; high electron energies]

O H. Tai and M. R. Flannery : Phys. Rev. A16, 1124-1135 (1977)・
Photoionization of vibrationally excited molecular hydrogen.
[T, $h\nu$, H_2; v_i= 0 - 14]

α H. Tagashira and J. Lucas : Brit. J. Appl. Phys. 2, 867-880 (1969)
The measurement of ionization coefficients in hydrogen and nitrogen.
[E, H_2, N_2]

R K. Takayanagi and S. Geltman : Phys. Lett. 13, 135-137 (1964a)・
Excitaion of molecular rotation by slow electrons. [T, H_2]

R K. Takayanagi : JILA Report No. 11, 1-46 (1964b)
V Excitation of molecular rotation and vibration by low energy electron impact. [T, H_2]

E K. Takayanagi and S. Geltman : Phys. Rev. 138, A1003-A1010 (1965a)
R Excitation of molecular rotation by slow electrons.
[T, H_2, N_2, O_2, NO, H_2O, C_6H_6]

V K. Takayanagi : J. Phys. Soc. Jpn. 20, 562-565 (1965b)
Vibrational excitation of hydrogen molecules by slow electrons.
[T, H_2]

V K. Takayanagi : J. Phys. Soc. Jpn. 20, 2297-2297 (1965c)・
Excitation of molecular vibration by slow electrons. [T, H_2, HCl, CO]

E K. Takayanagi : Prog. Theor. Phys. Suppl. 40, 216-248 (1967)
R Scattering of slow electrons by molecules.
V [review, H_2, N_2, O_2, NO, H_2O, C_2H_6]

O K. Takayanagi : Inst. Space Aeronaut. Science, RGAMP-Bibl. 5, 1-86 (1969)
Atomic collisions : Bibliography No. 8, XII. Electron collisions with atoms and molecules (expermental).

R K. Takayanagi and Y. Itikawa : in Advances in Atomic and Molecular Physics, Vol. 6, Academic Press 105-153 (1970a)・
The rotational excitation of molecules by slow electrons.
[review, H_2, N_2, O_2, CO, NO, HCl, CN, CO_2, N_2O, NH_3]

R K. Takayanagi : J. Phys. Soc. Jpn. 28, 1527-1535 (1970b)・
Rotational excitation of the HD molecules by low-energy electron collision. [T, HD]

R K. Takayanagi : in Recent Developments in Mass Spectroscopy, K. Ogata and
V T. Hayakawa (Ed), University of Tokyo Press 872-874 (1970c)
Recent theoretical studies of low-energy electron-molecule scattering.
[T, H_2, N_2, O_2, CO, etc.]

O K. Takayanagi : Inst. Space Aeronaut. Science, RGAMP-Bibl.-6, 1-98 (1971)
Atomic collisions : Bibliograpyh. Electron collisions with atoms and molecules (theoretical). Part I. (1924-1963).

O K. Takayanagi : Inst. Space Aeronaut. Science, RGAMP-Bibl. 7, 1-117 (1973)
Atomic collisions : Bibliography. Electron collisions with atoms and molecules (expermental). Part II. (1961-1967).

O K. Takayanagi : Inst. Space Aeronaut. Science, RGAMP-Bibl. -8, 1-91 (1974)
Atomic collisions : Bibliography. Electron collisions with atoms and molecules (theoretical). Part II. (1964-1967).

E K. Takayanagi : in Atomic Physics 4, G. zu Putlitz, et al. (Ed), Plenum 435-447
R (1975a)
Low energy electron-molecule scattering. [review, T, H_2, N_2, O_2]

O K. Takayanagi : Inst. Space Aeronaut. Science, RGAMP-Bibl. -9, 1-81 (1975b)
Atomic collisions : Bibliography. Electron collisions with atoms and molecules (theoretical). Part III. (1968-1970).

K. Takayanagi : 9th ICPEAC, Seattle 219-230 (1976)
The theory of low energy electron-molecule scattering. [T,

K. Takayanagi and H. Suzuki (Ed) : Cross Sections for Atomic Processes, Vol. 1, Processes Involving Hydrogen Isotopes, Their Ions, Electrons and Photons, Inst. Plasma Phys., Nagoya University (1978)
[compilation, Mainly H, D, and T. some H_2 data are included]

O S. Takezawa, F. R. Innes and Y. Tanaka : J. Chem. Phys. 45, 2000-2010 (1966)
Selective enhancement in hydrogenlike molecules with the rare gases. I. H_2 with Ar and Kr. [E, H_2]

O S. Takezawa : J. Chem. Phys. 52, 2575-2590 (1970a)
Absorption spectrum of H_2 in the vacuum-UV region. I. Rydberg states and ionization energies. [E, $h\nu$, H_2]

O S. Takezawa : J. Chem. Phys. 52, 5793-5799 (1970b)
Absorption spectrum of H_2 in the vacuum-UV region. II. Rydberg series converging in the first six vibrational levels of the H_2^+ ground state. [E, $h\nu$, H_2]

O S. Takezawa and Y. Tanaka : J. Chem. Phys. 56, 6125-6130 (1972)
Absorption spectrum of HD in the vacuum-UV region. Rydberg states and ionization energy. [E, $h\nu$, HD; 600 - 950 A]

O S. Takezawa and Y. Tanaka : J. Mol. Spectrosc. 54, 379-401 (1975)
The absorption spectrum of D_2 in the vacuum-UV region, Rydberg bands, $np\sigma\ ^1\Sigma_u^+ \leftarrow X^1\Sigma_g^+$ and $np\pi\ ^1\Pi_u \leftarrow X^1\Sigma_g^+$ with n = 4 - 6, and the ionization energy. [E, $h\nu$, D_2]

I J. T. Tate and P. T. Smith : Phys. Rev. 39, 270-277 (1932)
The efficiencies of ionization and ionization potentials of various gases under electron impact. [E, H_2, N_2, CO, O_2, NO, C_2H_2; th. - 750 eV]

O C. Tavard et R. A. Bonham : J. Chim. Phys. 66, 1624-1630 (1969)
Diffraction des rayons X et des electrons par les molecules. VII. Determination de la distribution des vitesses dans le systeme diffusant par l'etude des electrons ejectes.
(Diffraction of X-rays and electrons by molecules. VII. Determination of the velocity distribution in the scattering system from the study of ejected electrons.) [T, H atom]

O H. S. Taylor and F. E. Harris : J. Chem. Phys. 39, 1012-1016 (1963)
Potential curve for the $^2\Sigma_u^+$ state of H_2^-. [T, H_2]

O H. S. Taylor : in Advances in Chemical Physics, Vol. 18, Interscience 91-147
E (1970)
V Models, interpretations, and calculations concerning resonant electron
A scattering processes in atoms and molecules. [review, H_2, N_2, CO, He]

V A. Temkin and E. C. Sullivan : Phys. Rev. Lett. 33, 1057-1060 (1974)・
Rotational-vibrational coupling in the theory of electron-molecule scattering. [T, H_2; DCS]

O R. W. Terhune and C. W. Peters : J. Mol. Spectrosc. 3, 138-147 (1959)
Electric field induced vibration rotation spectrum of H_2 and D_2.
[E, $h\nu$, H_2, D_2; 70 kV/cm]

E P. J. O. Teubner, C. R. Lloyd and E. Weigold : J. Phys. B6, L134-L137 (1973)
The differential cross section for elastic scattering of electrons from atomic hydrogen. [E, H_2, H; DCS of H_2 at 50 eV]

E P. J. O. Teubner, C. R. Lloyd and E. Weigold : Phys. Rev. A9, 2552-2558 (1974)・
Differential cross section for elastic scattering of electron from atomic hydrogen : Low energies. [E, H_2, H; DCS, 9.4 - 20 eV for H_2]

O R. Thorburn and J. D. Craggs : Proc. Phys. Soc. London, B69, 682-685 (1956)
Electron impact studies of the dissociation energies of N_2 and H_2.
[E, H_2, N_2]

E R. Tice and D. Kivelson : J. Chem. Phys. 46, 4743-4747 (1967)
Cyclotron resonance in gases. I. Atoms and nonpolar molecules.
[E, H_2, D_2, He, Ar, N_2, CH_4, CD_4, CF_4]

R Z. H. Top and D. J. Kouri : Chem. Phys. 37, 265-270 (1979)
Computational tests of the factorization of cross sections in the sudden approximation. [T, H_2]

S J. S. Townsend and P. J. Kirkby : Phil. Mag. 1, 630-642 (1901)
Conductivity produced in hydrdogen and carbonic acid gas by the motion of negatively charged ions.
[E, H_2; negatively charged ions are electrons]

S J. S. Townsend : Phil. Mag. 3, 557-576 (1902)
The conductivity in gases under ultra-violet light. [E, H_2,

S J.S.Townsend : Phil.Mag. 6, 598-618 (1903)
Genesis of ions by motion of positive ions in a gas.
[E, H_2, N_2 + O_2; genesis of ions → ion means electron]

S J.S.Townsend and H.E.Hurst : Phil.Mag. 8, 738-752 (1904)
Genesis of ions by the motion of (positive) ions (and a theory of the sparking potential). [E, H_2, N_2 + O_2]

S J.S.Townsend and V.A.Bailey : Phil.Mag. 42, 873-891 (1921)
The motion of electrons in gases. [E, H_2, N_2, O_2]

S J.S.Townsend and V.A.Bailey : Phil.Mag. 44, 1033-1052 (1922)
The motion of electrons in argon and in hydrogen. [E, H_2, Ar]

S J.S.Townsend : Electrons in Gases, Hutchinson (1947)

EX S.Trajmar, D.C.Cartwright, J.K.Rice and R.T.Brinkmann : J.Chem.Phys. 49, 5464-5472 (1968)○
Angular dependence of low-energy electron-impact excitation cross section of the lowest triplet states of H_2. [E, H_2]

E S.Trajmar, D.G.Truhlar and J.K.Rice : J.Chem.Phys. 52, 4502-4515 (1970a)○, Erratum 55, 2004-2005 (1971)
Electron scattering by H_2 with and without vibrational excitation. Ⅱ. Experimental and theoretical study of elastic scattering.
[E and T, H_2; Ⅰ see D.G.Truhlar (1970); 4.42 - 81.6 eV, 10 - 80°]

V S.Trajmar, D.G.Truhlar, J.K.Rice and A.Kuppermann : J.Chem.Phys. 52, 4516-4533 (1970b)○
Electron scattering by H_2 with and without vibrational excitation. Ⅲ. Experimental and theoretical study of inelastic scattering.
[E, H_2; 7 - 81.6 eV, 10 - 80°, v' = 1, 2, 3]

V S.Trajmar, J.K.Rice and A.Kuppermann : in Advances in Chemical Physics,
EX Vol.18, Interscience 15-90 (1970)
Electron-impact spectrometry.
[review, H_2, He, N_2, CO, C_2H_2, C_2H_4, ref.149]

A M.Tronc, F.Fiquet-Fayard, C.Schermann and R.I.Hall : J.Phys. B10, 305-321 (1977)
Differential cross sections and angular distributions of H^- from dissociative electron attachment to H_2 between 3.75 eV and 13 eV.
[E, H_2]

A M.Tronc, R.I.Hall, C.Schermann and H.S.Taylor : J.Phys. B12, L279-L282 (1979) Z
Interference in dissociative attachment cross sections of H_2 around 14 eV.
[E, H_2]

V D.G.Truhlar, J.K.Rice, A.Kuppermann and S.Trajmar : 6th ICPEAC, Cambridge 148-152 (1969)·
Electron scattering by $X^1\Sigma_g^+$ H_2 at 10 eV with excitation of nuclear motion. [T, H_2]

E D. G. Truhlar and J. K. Rice : J. Chem. Phys. 52, 4480-4501 (1970),
V Erratum 55, 2005-2005 (1971)
Electron scattering by H_2 with and without vibrational excitation. I. Quantum mechanical theory. [T, H_2; 1 - 912 eV]

E D. G. Truhlar, J. K. Rice, S. Trajmar and D. C. Cartwright : Chem. Phys. Lett. 9, 299-305 (1971)
The importance of polarization for electron scattering in the intermediate energy region. [T, H_2, He; for H_2 at 45 eV]

O D. G. Truhler : Int. J. Quant. Chem. 4, 975-988 (1972)
Vibrational matrix elements of the quadrupole moment function of H_2, N_2 and CO. [T, H_2, N_2, CO]

V D. G. Truhlar : Phys. Rev. A7, 2217-2219 (1973)·
Electron scattering with and without vibrational excitation. Ⅷ. Comment on a theory of small-energy-transfer collisions dominated by long-range forces. [T, H_2; 10 - 412 eV]

E D. G. Truhlar and J. K. Rice : Phys. Lett. 47A, 372-374 (1974)·
Elastic scattering of electrons by hydrogen molecules at intermediate energies. [T, H_2; DCS, 30 - 200 eV]

R D. G. Truhlar, R. E. Poling and M. A. Brandt : J. Chem. Phys. 64, 826-829 (1976a)
Infinit-order sudden approximation for rotational excitation of hydrogen molecules by electrons in the energy range 10 - 40 eV. [T, H_2]

E D. G. Truhlar and M. A. Brandt : J. Chem. Phys. 65, 3092-3101 (1976b)
R Close-coupling calculations of differential cross sections for elastic scattering and rotational excitation of hydrogen molecules by electrons at 10 and 40 eV. [T, H_2]

O D. G. Truhlar, K. Onda, R. A. Eades and D. A. Dixon : Int. J. Quant. Chem. : Quant. Chem. Sympo. 13, 601-632 (1979a)
Effective potential approach to electron-molecule scattering theory. [T, H_2, N_2, CO_2, H, He, Ar, Mg, Li_2, CO]

O D. G. Truhlar, D. A. Dixon, R. A. Eades, F. A. Van Catledge and K. Onda : 1st Asilomar Conf. on Electron-Molecule and Photon-Molecule Collisions, Plenum Press 151-165 (1979b)
Polarization potentials for electron scattering. [T,

EX S. Tsurubuchi, G. R. Mohlmann and F. J. de Heer : Chem. Phys. Lett. 48, 477-480 (1977)
Excitation cross sections for the H_{3s} state for electron impact on hydrogen containing molecules. [E, H_2, HCl, H_2O, NH_3, CH_4]

E J. C. Tully and R. S. Berry : J. Chem. Phys. 51, 2056-2075 (1969)
Elastic scattering of low-energy electrons by the hydrogen molecule. [T, H_2; 0.03 - 7 eV]

O D.W.Turner : Proc.Roy.Soc.London A307, 15-26 (1968)
High resolution molecular photoelectron spectroscopy. I. Fine structure in the spectra of hydrogen and oxygen. [E, $h\nu$, H_2, O_2]

O J.Turner, K.Kirby-Docken and A.Dalgarno : Astrophys.J.Suppl.35, 281-292 (1977)
The quadrupole vibration-rotation transition probabilities of molecular hydrogen. [T, $h\nu$, H_2; up to v = 14 and up to J = 20]

E R.C.Ulsh, H.R.Wellenstein and R.A.Bonham : J.Chem.Phys.60, 103-111 (1974)
EX Bethe surface, elastic and inelastic differential cross sections, Compton profile, and binding effects for H_2 obtained by electron scattering with 25 keV incident electrons. [E, H_2]

I R.J.Van Brunt and L.J.Kieffer : Phys.Rev.A2, 1293-1304 (1970)
Angular distribution of protons and deuterons produced by dissociative ionization of H_2 and D_2 near threshold. [E, H_2, D_2]

I R.J.Van Brunt : Phys.Rev.A16, 1309-1311 (1977)·
Angular dependence of proton kinetic-energy distributions from dissociative ionization of H_2. [E, H_2]

O J.Van der Linde and F.W.Dalby : Can.J.Phys.50, 287-297 (1972)
Zero field level crossing in excited states of molecular hydrogen.
[E, $h\nu$, H_2]

O J.Van Kranendonk and Z.J.Kiss : Can.J.Phys.37, 1187-1198 (1959)
Theory of the pressure-induced rotational spectrum of hydrogen.
[T, $h\nu$, H_2; see Z.J.Kiss (1959)]

EX S.N.Van Voorhis : Phys.Rev.46, 480-483 (1934)
Small-angle inelastic scattering of electrons in helium, hydrogen and mercury.
[E, H_2, He, Hg; 12.6 eV level, relative DCS, 100 - 300 eV, 0 - 15°]

E B.van Wingerden, E.Weigold, F.J.de Heer and K.J.Nygaard : J.Phys.B10, 1345-1362 (1977) Z
Elastic scattering of electrons by molecular and atomic hydrogen.
[E, H_2, H; DCS, 100 - 2000 eV, 5 - 50°]

α L.J.Varnerin, Jr. and S.C.Brown : Phys.Rev.79, 946-957 (1950)
O Microwave determination of average electron energies and the first Townsend coefficient in hydrogen. [E, H_2]

E L.J.Varnerin, Jr. : Phys.Rev.84, 563-566 (1951)
O Electron recombination and collision cross-section measurements in hydrogen. [E, H_2; P_c = 42 1/cm·Torr, at 0.0543 eV]

R E.F.Varracchio : J.Phys.B12, 3427-3440 (1979)·
Effective potential theory of e^- - H_2 rotational excitation.
[E, H_2]

O F. I. Vilesov : Sov. Phys. Usp. 6, 888-929 (1964)・
Photoionization of gases and vapors by vacuum ultraviolet radiation.
[review, $h\nu$, H_2, He - Ar, many atoms and molecules]

O D. Villarejo : J. Chem. Phys. 48, 4014-4026 (1968a)
Measurement of threshold electrons in the photoionization of H_2 and D_2.
[E, $h\nu$, H_2, D_2]

O D. Villarejo : J. Chem. Phys. 49, 2523-2532 (1968b)
Vibration-rotation interaction effects in calculated Franck-Condon factors. I. The ionization of H_2 and D_2. [T, H_2, D_2]

O D. Villarejo, R. Stockbauer and M. G. Inghram : J. Chem. Phys. 50, 1754-1762 (1969)
Vibration-rotation effects in calculated Franck-Condon factors. II. hydrogen Lyman and Fulcher bands. [T, H_2]

S L. E. Virr, J. Lucas and N. Kontoleon : 1st ICGD, London 1, 530-533 (1970)
Measurements of D/μ for electron swarms in gases at high E/p.
[E, H_2,

S L. E. Virr, J. Lucas and N. Kontoleon : J. Phys. D5, 542-554 (1972)
The measurement of the ratio of diffusion coefficient to mobility for electrons at low E/p. [E, H_2 only ; E/N = 15 - 90 Td]

O A. von Engel : Appl. Sci. Res. B5, 34-42 (1956)
Internal radiation and nature of discharges. [

O M. Vogler and B. Meierjohann : Phys. Rev. Lett. 38, 57-58 (1977)
Predissociation of the $c^3\Pi_u$ state of H_2. [E, $h\nu$, H_2]

EX L. Vriens : Physica 31, 385-395 (1965)・
I A semi-empirical formula for calculation of absolute cross sections for ionization and excitation of atoms by electrons.
[T, H_2, N_2, O_2, H, He - Xe]

EX D. A. Vroom and F. J. de Heer : J. Chem. Phys. 50, 580-590 (1969)
Production of excited atoms by impact of fast electrons on molecular hydrogen and deuterium. [E, H_2, D_2]

A J. M. Wadehra and J. N. Bardsley : Phys. Rev. Lett. 41, 1795-1798 (1978)・
Vibrational and rotational-state dependence of dissociative attachment in e - H_2 collisions. [T, H_2]

A J. M. Wadehra : Appl. Phys. Lett. 35, 917-919 (1979)・
Rates of dissociative attachment of electrons to excited H_2 and D_2.
[T, H_2, D_2; 1 - 14 eV]

O T. G. Waech and R. B. Bernstein : J. Chem. Phys. 46, 4905-4911 (1967)
Calculated spectrum of quasibound states for $H_2(^1\Sigma_g^+)$ and resonance in H + H scattering. [T, H_2]

S E. B. Wagner, F. J. Davis and G. S. Hurst : J. Chem. Phys. 47, 3138-3147 (1967)
Time-of-flight investigations of electron transport in some atomic and molecular gases.
[E, H_2, He, Ar, N_2, CO, CO_2, CH_4, C_2H_4; E/N = 0.09 - 7.5 Td]

S H. B. Wahlin : Phys. Rev. 27, 588-595 (1926)
The motion of electrons in hydrogen and helium. [E, H_2, He]

O N. Wainfan, W. C. Walker and G. L. Weissler : Phys. Rev. 99, 542-549 (1955)
Photoionization efficiencies and cross sections in O_2, N_2, CO_2, A, H_2O, H_2, and CH_4. [E, $h\nu$, H_2, etc.]

O C. B. Wakefield and E. R. Davidson : J. Chem. Phys. 43, 834-839 (1965)
Some triplet states of the hydrogen molecule. [T, H_2; Born approxi.]

EX D. J. Walker, Jr. and R. M. St. John : J. Chem. Phys. 61, 2394-2407 (1974)
Design of a high density atomic hydrogen source and determination of Balmer cross sections. [E, H_2; emission, 20 - 440 eV]

O S. C. Wang : Phys. Rev. 31, 579-586 (1928)
The problem of the normal hydrogen molecule in the new quantum mechanics.
[T, H_2]

S R. W. Warren and J. H. Parker : Phys. Rev. 128, 2661-2671 (1962)
Ratio of the diffusion coefficient to the mobility coefficient for electrons in He, Ar, N_2, H_2, D_2, CO and CO_2 at low temperatures and low E/p. [E, H_2, D_2, He, Ar, N_2, CO, CO_2]

O A. Watanabe and H. L. Welsh : Can. J. Phys. 43, 818-828 (1965)
Pressure induced infrared absorption of gaseous hydrogen and deuterium at low temperatures. I. The integrated absorption coefficients.
[E, $h\nu$, H_2, D_2, H_2 + He; 18 - 77 K, 4000 - 5200 cm^{-1}, $(H_2)_2$]

O A. Watanabe and H. L. Welsh : Can. J. Phys. 45, 2859-2871 (1967)
Pressure-induced infrared absorption of gaseous hydrogen and deuterium at low temperatures. II. Analysis of the band profiles for hydrogen.
[T, $h\nu$, H_2; 18 - 77 K]

O A. Watanabe : Can. J. Phys. 49, 1320-1326 (1971)
Pressure-induced infrared absorption of gaseous hydrogen and deuterium at low temperatures. III. Further analysis of the fundamental and first overtone bands of hydrogen. [T, $h\nu$, H_2; 18 - 24 K]

O K. Watanabe, M. Zelikoff and E. C. Y. Inn : AFCRC Tech. Rep. 53-23, AD-19700, 1-79 (1953)
Absorption coefficients of several atmospheric gases.
[E, $h\nu$, H_2, N_2, etc.]

EX J. Watson, Jr. and R. J. Anderson : J. Chem. Phys. 66, 4025-4030 (1977)
Excitation of the E, $F^1\Sigma_g^+$ of H_2 by electron impact.
[E, H_2; emission c.s., 200 eV]

O R. W. Waynant, J. D. Shipman, Jr., R. C. Elton and A. W. Ali : Appl. Phys. Lett. 17, 383-384 (1970)
Vacuum ultraviolet laser emission from molecular hydrogen.
[E, $h\nu$, H_2; 1600 A region]

O R. W. Waynant : Phys. Rev. Lett. 28, 533-535 (1972)
Observations of gain by stimulated emission in the Werner band of molecular hydrogen. [E, $h\nu$, H_2]

O C. A. Weatherford, R. J. W. Henry and M. C. Bruels : Proc. Indian Natl. Sci. Acad. A39, 432-437 (1973)
An effective polarization potential for low-energy electron - H_2 collisions. [T, H_2]

R C. A. Weatherford and R. J. W. Henry : Can. J. Phys. 55, 442-451 (1977)
V Frame-transformation approximation for low-energy e^- - $^1\Sigma^+$ systems using the non-iterative integral equation method. [T, H_2]

I L. D. Weaver and R. H. Hughes : J. Chem. Phys. 52, 2299-2301 (1970a)
Production of n = 3 and n = 4 states of atomic hydrogen by electron impact on H_2. [E, H_2; 20 - 400 eV]

EX L. D. Weaver : Thesis, University of Arkansas 1-56 (1970b)
Excitation processes in helium and hydrogen. [E, H_2, He]

E G. M. Webb : Phys. Rev. 47, 384-388 (1935)・
The elastic scattering of electrons in molecular hydrogen.
[E, H_2; relative DCS, 30 - 912 eV, 5/10 - 150°]

EX P. S. P. Wei : Thesis, California Inst. Tech., Pasadena 1-282 (1967)
Determination of electronic energy levels of molecules by 90° low energy electron scattering. [E, H_2,

I E. Weigold, S. T. Hood, I. E. McCatrhy and P. J. O. Teubner : Phys. Lett. A44, 531-532 (1973)
The (e, 2e) reaction in molecules : Momentum space wave function of H_2.
[T, H_2; 200 - 1000 eV]

E E. Weigold, I. E. McCarthy, A. J. Dixon and S. Dey : Chem. Phys. Lett. 47, 209-212 (1977)
Ground state correlations in H_2 measured by the (e, 2e) technique.
[E, H_2]

E A. Weingartshofer, H. Ehrhardt, V. Hermann and F. Linder : Phys. Rev. A2, 294-304
EX (1970)○Z
Measurements of absolute cross sections for (e, H_2) collision processes. Formation and decay of H_2^- resonances.
[E, H_2; DCS, 10 - 16 eV, 10 - 120°, $X^1\Sigma$, $b^3\Sigma$, $b^1\Sigma$]

O A. Weingartshofer, E. M. Clarke, J. K. Holmes and J. W. McGowan : J. Phys. B8, 1552-1569 (1975a)・Z
Resonances and their effects above and below the electron-impact ionization threshold of H_2. [E, H_2; 11 - 18.5 eV, resonance energy]

0 A. Weingartshofer and M. Eyb : J. Phys. B8, L278-L283 (1975b) Z
Resonances and their effects above and below the electron-impact ionization threshold of D_2. [E, H_2, D_2; resonance energy]

0 S. Weissman, J. T. Vanderslice and R. Battino : J. Chem. Phys. 39, 2226-2228 (1963)
On the recalculation of the potential curves for the ground states of I_2 and H_2. [T, H_2, I_2]

0 M. D. White and K. J. Ross : J. Phys. B10, 721-723 (1977)
High-resolution electron energy-loss spectrum of discharged hydrogen in the energy-loss region 10 to 12.5 eV.
[E, H_2; 250 eV, $B^1\Sigma_u^+ \leftarrow X^1\Sigma_g^+(v', 1)$ progression for $v' = 0$ to 3]

0 R. F. Whitmer : Phys. Rev. 104, 572-575 (1956)
Microwave studies of the electron loss process in gaseous discharges.
[E, H_2; attachment, recombination and diffusion]

0 B. G. Wicke : J. Chem. Phys. 68, 337-339 (1978)
G, K double-minimum excited state of molecular hydrogen and its isotopes.
[T, $h\nu$, H_2, HD, D_2]

0 E. Wigner und E. E. Witmer : Z. Phys. 51, 859-886 (1928)
Uber die Struktur der zweiatomigen Molekelspektren nach der Quantenmechanik. [T, H_2]

α A. Wilkes, W. Hopwood and N. J. Peacock : Nature 176, 837-838 (1955)
Mechanism of uniform field breakdown in hydrogen. [E, H_2; 40 - 110 Td]

E R. L. Wilkins and H. S. Taylor : J. Chem. Phys. 47, 3532-3539 (1967)
Elastic scattering of low-energy electrons from molecular hydrogen.
[T, H_2; 0 - 14 eV]

0 P. G. Wilkinson : Can. J. Phys. 46, 1225-1235 (1968)
The electronic isotope shift in the Lyman bands of H_2, HD, and D_2.
[E, H_2, HD, D_2; 1050 - 1130 A]

E K. G. Williams : 6th ICPEAC, Cambrige 735-737 (1969)
Angular distributions of electrons elastically scattered from helium and molecular hydrogen.
[E, H_2, He; DCS, 30 - 200 eV, 20 - 130°]

E T. G. Winter and N. F. Lane : Chem. Phys. Lett. 30, 363-366 (1975)
The Fredholm method in low energy electron-molecule scattering : Static exchange. [T, H_2; 0.1 - 10 eV]

0 L. Wolniewicz : J. Chem. Phys. 45, 515-523 (1966)
Vibrational-rotational study of the electronic ground state of the hydrogen molecules. [T, H_2, HD, D_2]

0 L. Wolniewicz : J. Chem. Phys. 51, 5002-5008 (1969)
Theoretical investigation of the transition probabilities in the hydrogen molecule. [T, H_2]

O L. Wolniewicz : Chem. Phys. Lett. 31, 248-250 (1975a)
On the computation of the $B'^1\Sigma_u^+$ state of the hydrogen molecules.
[T, H_2]

O L. Wolniewicz : Can. J. Phys. 53, 1207-1214 (1975b)
On the computation of dipole transitions in the HD molecule. [T, HD]

O L. Wolniewicz : Can. J. Phys. 54, 672-679 (1976a)
On the computation of dipole transitions in the HD molecule. Part II.
[T, HD]

O L. Wolniewicz : J. Mol. Spectrosc. 63, 537-545 (1976b)
Nonadiabatic corrections to the rotational energies of the hydrogen molecule. [T, H_2, HD, D_2; $E_{0,1} - E_{0,0} = 118.496\ cm^{-1}$ for H_2]

O L. Wolniewicz and K. Dressler : J. Mol. Spectrosc. 67, 416-439 (1977)
The EF and GK $^1\Sigma_g^+$ states of hydrogen. Adiabatic calculation of vibronic states in H_2, HD, and D_2. [T, $h\nu$, H_2, HD, D_2]

O L. Wolniewicz and K. Dressler : J. Mol. Spectrosc. 77, 286-297 (1979)
The HH $^1\Sigma_g^+$ state and the predicted H $^1\Sigma_g^+ - B^1\Sigma_u^+$ transition of hydrogen. [T, $h\nu$, H_2, HD, D_2]

R S. F. Wong and G. J. Schulz : Phys. Rev. Lett. 32, 1089-1092 (1974) Z
V Rotational and vibrational excitation of H_2 by electron impact at 4.5 eV : Angular distributions. [E, H_2]

S. F. Wong : Sympo. on Electron-Molecule Collisions, Tokyo 111-120 (1979)

O W. M. Wright and E. R. Davidson : J. Chem. Phys. 43, 840-843 (1965)
$1s3d\ ^3\Pi_g$ state of the hydrogen molecule. [T, H_2]

V T.-Y. Wu : Phys. Rev. 71, 111-118 (1947)
Excitation of molecular vibrations by electrons. [T, H_2 only]

S I. T. Yakubov : High Temp. 10, 158-159 (1972)
Mobility of electrons in moderately dense gases. [T, H_2,]

O T. Yoshino and H. J. Bernstein : J. Mol. Spectrosc. 2, 213-240 (1958)
Intensity in the Raman effect. VI. The photoelectrically recorded Raman spectra of some gases. [E, $h\nu$, H_2, D_2, N_2, O_2, CO, CO_2, CH_4, C_2H_2]

S L. A. Young and N. E. Bradbury : Phys. Rev. 43, 34-37 (1933)
Photoelectric currents in gases between parallel plate electrodes.
[E, H_2, N_2]

O V. Yuan and D. W. Storm : Phys. Rev. Lett. 38, 959-962 (1977)
Precise measurements of the mass attenuation of 6 - 25-keV photons by gaseous hydrogen. [E, $h\nu$, H_2, H]

S E. Zachmann : Ann. Phys. 84, 20-60 (1927)・
Uber die Diffusion langsamer Elektronen (2 - 30 eV) in Wasserstoff und Argon. [E, H_2, Ar]

I R. N. Zare : J. Chem. Phys. 47, 204-215 (1967)
Dissociation of H_2^+ by electron impact : Calculated angular distribution. [T, $H_2 + e \rightarrow H + H^+ + 2e$]

O G. D. Zeiss, W. J. Meath, J. C. F. MacDonald and D. J. Dawson : Can. J. Phys. 55, 2080-2100 (1977a)・
Dipole oscillator strength distributions, sums, and some related properties for Li, N, O, H_2, N_2, O_2, NH_3, H_2O, NO, and N_2O.
[T, H_2, N_2, Li, N, O, O_2, NH_3, H_2O, NO, N_2O]

O G. D. Zeiss and W. J. Meath : Mol. Phys. 33, 1155-1176 (1977b)
Dispersion energy constants C_6(A, B) dipole oscillator strength sums and refractivities for Li, N, O, H_2, N_2, O_2, NH_3, H_2O, NO and N_2O.
[T, H_2, N_2, O_2, etc.]

O N. I. Zhirnov and A. S. Vasilevskii : Opt. Spectrosc. 29, 352-356 (1970)
A new method for constructing the potential curves of diatomic molecules on the basis of spectroscopic data. [T, H_2]

Addenda of References for H_2 Molecules (1)

(published in 2000, plus some old papers)

2000 (5 pages)

E D. L. Azevedo, A. J. R. da Silva and M. A. P. Lima : Phys. Rev. A61, 042702/1-6 (2000)
Effective configulations in electron-molecule scattering.
[T, H_2; SMC method, DCS, 1 - 7 eV]

E D. L. Azevedo and M. A. P. Lima : Phys. Rev. A63, 062703/1-5 (2001)
Effective configulations in electron-molecule scattering. II.
[T, H_2, N_2, CH_4]

O I. Borges, Jr. and C. E. Bielschowsky : J. Phys. B33, 1713-1724 (2000)
Doubly excited states of molecular hydrogen : theoretical absorption and photodissociation cross sections. [T, $h\nu$, H_2]

O P. G. Burke, J. Colgan, D. H. Glass and K. Higgins : J. Phys. B33, 143-167 (2000)
R-matrix-Floquet theory of molecular multiphoton processes.
[T, $h\nu$, general theory, H_2; see J. Colgan (1998) and (2001)]

EX R. Celiberto, R. K. Janev, A. Laricchiuta, M. Capitelli, J. M. Wadehra and D. E. Atems : Atomic Data Nucl. Data Tables 77, 161-213 (2001a)
Cross section data for electron-impact inelastic processes of vibrationally excited molecules of hydrogen and its isotopes.
[compilation, T, H_2, D_2, T_2]

EX R. Celiberto, R. K. Janev and A. Laricchiuta : Phys. Scr. 64, 26-33 (2001b)
Total and dissociative electron-impact cross sections for $X^1\Sigma_g^+ \rightarrow B^1\Sigma_u^+$ and $X^1\Sigma_g^+ \rightarrow C^1\Pi_u$ transitions of vibrationally excited tritium and deuterium-tritium molecules. [T, T_2, DT]

O J. Colgan, D. H. Glass, K. Higgins and P. G. Burke : J. Phys. B34, 2089-2106 (2001)
R-matrix Floquet theory of molecular multiphoton processes : II.
Multiphoton ionization of H_2. [T, $h\nu$, H_2; see P. G. Burke (2000)]

I V. Dose, P. Pecher and R. Preuss : J. Phys. Chem. Ref. Data 29, 1157-1164 (2000)
Formulas for cross sections and rate coefficients for partial electron impact ionization of CH_4 and H_2. [T, H_2, CH_4]

A H. Drexel, G. Senn, T. Fiegele, P. Scheier, A. Stamatovic, N. J. Mason and T. D. Mark : J. Phys. B34, 1415-1423 (2001)
Dissociative electron attachment to hydrogen. [E, H_2]

EX D. Dziczek, J. M. Ajello, G. K. James and D. L. Hansen : Phys. Rev. A61, 064702/1-4 (2000)
Cascade contribution to the H_2 Lyman band system from electron impact.
[E, H_2; separate direct excitation and cascade processes using a pulsed electron gun technique]

EX A. E. Edwards and Q. Zheng : J. Phys. B33, 881-889 (2000)
Excitation of the $2p\pi_u$ state of H_2^+ as a function of alignment of the molecular axis. [E and T, H_2^+; 400 eV]

EX A. E. Edwards and Q. Zheng : J. Phys. B34, 1539-1548 (2001)
Excitation of the $Q_1\,^1\Sigma_g^+$ doubly excited state of H_2 by electron impact. [E, H_2; 400 eV]

O J. Fernandez and F. Martin : J. Phys. B34, 4141-4153 (2001)
Autoionizing $^1\Sigma_u^+$ and $^1\Pi_u$ states of H_2 above the third and fourth ionization thresholds. [T, H_2]

O D. R. Flower : J. Phys. B33, L193-L195 (2000a)
Vibrational relaxation of H_2 in collisions with rotationally excited H_2 molecules. [T, H_2; influence of rot. ex.]

O D. R. Flower : J. Phys. B33, 5243-5249 (2000b)
Quantal coupled channels calculations of the rates of self-relaxation of ortho- and para-H_2. [T, o-H_2, p-H_2]

O K. Furuya, T. Shimoida, K. Matsuo and Y. Hatano : Chem. Phys. 295, 229-234 (2003)
Contribution of the 4p sublevel to the Balmer-β emission intensity from H(n=4) produced in electron - H_2, CHF_3, CH_4 and C_3H_8 collisions as studied by photon-photon coincidence experiments.
[E, H_2, CHF_3, CH_4, C_3H_8; 19 - 100 eV]

A J. Horacek, K. Houfek, M. Cizek, I. Murakami and T. Kato : NIFS-DATA-73, 1-62 (2003)
Rate coefficients for low-energy electron dissociative attachment to molecular hydrogen. [T, H_2(j, r)]

O K. Ito, J. I. Adachi, R. Hall, S. Motoki, E. Shigemasa, K. Soejima and A. Yagishita : J. Phys. B33, 527-533 (2000)
Photoelectron angular distributions from dissociative photoionization channels of fixed-in-space molecular hydrogen. [T, $h\nu$, H_2]

O C. Jonin, X. Liu, J. M. Ajello, G. K. James and H. Abgrall : Astrophys. J. Suppl. 129, 247-266 (2000)○
High resolution electron-impact emission spectrum of H_2. I. Cross sections and emission yields 900 - 1200 A.
[E, H_2; 100 eV, II see X. Liu (2000)]

I S. P. Khare, S. Tomar and M. K. Sharma : J. Phys. B33, L59-L61 (2000)
Electron impact molecular ionization. [T, general theory]

O T. Kiyoshima and S. Sato : Chem. Phys. Lett. 342, 461-466 (2001)
Correlation of lifetimes observed in two vibrational levels of the H_2 EF $^1\Sigma_g^+$ state. [E, H_2]

O A. Lacoste, L. L. Alves, C. M. Ferreira and G. Gousset : J. Appl. Phys. 88, 3170-3181 (2000)
Simulation of pulsed high-frequency breakdown in hydrogen. [T, H_2]

E M.-T. Lee, R. Fujiwara, K. T. Mazon and M. M. Fujimoto : J. Mol. Struct. (Theochem)
V 541, 51-57 (2001)
The role played by electronic correlation of target on the vibrational excitation cross sections of H_2 by electron impact. [T, H_2; 1.5 - 40 eV]

E M.-T. Lee and K. T. Mazon : Phys. Rev. A65, 042720/1-6 (2002) ○
V Electron scattering by vibrationally excited H_2 in the low-energy range. [T, H_2(v); 1 - 10 eV, DCS]

E J. L. S. Lino and M. A. P. Lima : Braz. J. Phys. 30, 432-437 (2000)
Studies of electron-molecule collisions using the Schwinger variational principle with plane waves as a trial basis set.
[T, H_2, CH_4, C_2H_4, SiH_4, H_2O]

EX X. Liu, D. E. Shemansky, J. M. Ajello, D. L. Hansen, C. Jonin and G. K. James : Astrophys. J. Suppl. 129, 267-280 (2000) ○
High-resolution electron-impact emission spectrum of H_2. Ⅱ. 760 - 900 A.
[E, H_2; 300 K, high-resolution, I see C. Jonin (2000)]

EX A. M. Machado, M. M. Fujimoto, A. M. A. Taveira, L. M. Brescansin and M.-T. Lee : Phys. Rev. A63, 032707/1-6 (2001a)
Application of the method of continued fractions to multichannel studies on electronic excitation of H_2 by electron impact.
[T, H_2; 15 - 40 eV, DCS]

E A. M. Machado and M.-T. Lee : J. Mol. Struct. (Theochem) 539, 1-9 (2001b)
Second-order distorted-wave study for elastic electron scattering by hydrogen molecule. [T, H_2; 1 - 40 eV]

EX A. M. Machado, A. M. A. Taveira, L. M. Brescansin and M.-T. Lee : J. Mol. Struct. (Theochem) 574, 133-140 (2001c)
Application of the method of continued fractions to multichannel studies on electron-impact excitation of the $B^1\Sigma_u^+$, $C^1\Pi_u$ and $E(F)^1\Sigma_g^+$ states in H_2. [T, H_2]

V K. T. Mazon, R. Fujiwara and M.-T. Lee : Phys. Rev. A64, 042705/1-7 (2001)
Exact exchange effects on vibrational excitation of H_2 by electron impact. [T, H_2; 1.5 - 100 eV, DCS]

O A. V. Mitin : Phys. Rev. A62, 010501/1-4 (2000)・
Exact solution of the Hartre-Fock equation for the H_2 molecule in the linear-combination-of-atomic-orbitals approximation. [T, H_2]

O T. Mosbach, H.-M. Katsch and H. F. Dobele : Phys. Rev. Lett. 85, 3420-3423 (2000)
Diagnostics in plasma of electronic-ground-state hydrogen molecules in high vibrational states by laser-induced fluorescence with vacuum ultraviolet. [E, $h\nu$, H_2]

O E. Narevicius and N. Moiseyev : Phys. Rev. Lett. 84, 1681-1684 (2000)
Trapping of an electron due to molecular vibrations. [T, H_2]

I S. Pal, S. Prakash and S. Kumar : J. Elect. Spectrosc. Relat. Phenom. 109, 227-232 (2000)
Determination of partial single differential electron ionization cross sections of H_2. [T, H_2; th. - 10 keV]

E M. Polasek, M. Jurek, M. Ingr, P. Carsky and J. Horacek : Phys. Rev. A61, 032701/1-7 (2000)
Discrete momentum representation of the Lippmann-Schwinger equation and its application to electron-molecule scattering. [T, H_2, CH_4]

V S. A. Pozdneev : J. Exp. Theor. Phys. 90, 30-44 (2000a)·
D Collisions of electrons with molecules in excited vibrational-rotational state. [T, H_2, HD, D_2, HF - HBr, N_2, Li_2, Na_2]

E S. A. Pozdneev : J. Russ. Laser Res. 21, 182-204 (2000b)
Electron scattering on excited diatomic molecules in selected rovibrational states. [T, H_2, N_2,

A S. A. Pozdneev : Bull. Lebedev Phys. Inst. No. 2, 31-39 (2000c)
Dissociative electron attachment to excited diatomic molecules, calculation results. [T, H_2, Li_2, Na_2, N_2, HF, etc.]

E E. M. S. Ribeiro, L. M. Machado, M. -T. Lee and K. M. Brescansin : Comput. Phys. Commun. 136, 117-125 (2001)
Application of the method of continued fractions to electron scattering by polyatomic molecules. [T, H_2, CH_4, H_2O, NH_3; DCS]

S R. E. Robson, R. D. White and M. A. Morrison : J. Phys. B36, 4127-4143 (2003)
Some fundamental questions concerning the kinetic theory of electrons in molecular gases and the e - H_2 vibrational cross section controversy.
[T, H_2]

O A. Saenz : Phys. Rev. A61, 051402/1-4 (2000a)
Enhanced ionization of molecular hydrogen in very strong fields.
[T, H_2]

O A. Saenz : J. Phys. B33, 4365-4372 (2000b)
On the influence of vibrational motion on strong-field ionization rate in molecules. [T, H_2, O_2]

O P. Schmelcher, T. Detmer and L. S. Cederbaum : Phys. Rev. A61, 043411/1-14 (2000)
Excited states of the hydrogen molecule in magnetic fields : The singlet Σ states of the parallel configuration.
[T, H_2; potential energy curves]

I R. F. Stebbings and B. G. Lindsay : J. Chem. Phys. 114, 4741-4743 (2001)
Comment on the accuracy of absolute electron-impact ionization cross sections for molecules.
[comment, H_2, N_2, CO, CO_2, CH_4, SF_6, O_2, NO; th. - 1000 eV]

I C. R. Stia, O. A. Fojon, P. W. Weck, J. Hanssen, B. Joulakian and R. D. Rivarola : Phys. Rev. A66, 052709/1-8 (2002)
Molecular three-continuum approximation for ionization of H_2 by electron impact. [T, H_2; TDCS, 4087 eV, 250 eV, etc.]

O A. Talebpour, K. Vijayalakshmi, A. D. Bandrauk, T. T. Nguyen-Dang and S. L. Chin : Phys. Rev. A62, 042708/1-3 (2000)
Dissociative ionization of D_2 in intense laser-fields : D^+-ion production perpendicular to the polarization of a 400-nm laser field. [E, $h\nu$, D_2]

D C. S. Trevisan and J. Tennyson : J. Phys. B34, 2935-2949 (2001)
Differential cross sections for near-threshold electron impact dissociation of molecular hydrogen. [T, H_2; through excitaion to $b^3\Sigma_u^+$]

D C. S. Trevisan and J. Tennyson : Plasma Phys. Control. Fusion 44, 1263-1276 (2002)
Calculated rates for the electron impact dissociation of molecular hydrogen, deuterium and tritium. [T, H_2, D_2, T_2]

O K. Vijayalakshmi, A. Telebpour, T. T. Nguyen-Dang, J. Yang, A. D. Bandrauk and S. L. Chin : Phys. Rev. A62, 053408/1-8 (2000)
Dissociative ionization of D_2 in a linearly polarized two-color ($\omega + 2\omega$) laser field : Role to high-lying electronic states. [E, $h\nu$, D_2]

I P. Weck, B. Joulakian, J. Hanssen, O. A. Fojon and R. D. Rivarola : Phys. Rev. A62, 014701/1-3 (2000)
Multiple differential cross sections for single ionization of H_2, D_2, and T_2 molecules by fast electron impact : Influence of vibrational states. [T, H_2, D_2, T_2]

I P. Weck, O. A. Fojon, J. Hanssen, B. Joulakian and R. D. Rivarola : Phys. Rev. A63, 042709/1-6 (2001)
Two-effective center approximation for the single ionization of molecular hydrogen by fast electron impact. [T, H_2]

I P. Weck, O. A. Fojon, B. Joulakian, C. R. Stia, J. Hanssen and R. D. Rivarola : Phys. Rev. A66, 012711/1-8 (2002)
Two-center continuum approximation with correct boundary conditions for single-electron emission in e^- + H_2 collisions. [T, H_2]

A Y. Xu, G. A. Gallup and I. I. Fabrikant : Phys. Rev. A61, 052705/1-7 (2000)
Dissociative electron attachment to vibrationally and rotationally excited H_2 and HF molecules. [T, H_2, HF; 0 - 6 eV]

A Y. Xu, A. K. Kazansky and I. I. Fabrikant : Phys. Rev. A63, 014703/1-4 (2001a) ○
D Low-energy e - H_2 scattering : Separation of dissociative attachment and dissociation channels. [T, H_2; q_a and q_d depend on the v and J values]

A Y. Xu and I. I. Fabrikant : Appl. Phys. Lett. 78, 2598-2600 (2001b)
Dissociative electron attachment rates for H_2 and its isotopes. [T, H_2, HD, HT, D_2, DT, T_2; 0 - 5 eV]

Addenda, Part 1 (1990 - 1999)

O H. Abgrall, E. Roueff, F. Launay, J.-Y. Roncin and J.-L. Subtil : J. Mol. Spectrosc. 157, 512-523 (1993)
The Lyman and Werner band systems of molecular hydrogen. [T, $h\nu$, H_2]

O S. A. Astashkevich and B. P. Lavrov : Opt. Spectrosc. 75, 703-707 (1993)
Observing perturbations in the relative spontaneous emission probabilities from the rovibronic levels of the triplet 3s, 3d complex of H_2 and D_2 terms. [E, $h\nu$, H_2, D_2]

O S. A. Astashkevich and B. P. Lavrov : Opt. Spectrosc. 85, 348 (1998a) see p. 2

O S. A. Astashkevich and B. P. Lavrov : Opt. Spectrosc. 85, 504-509 (1998b)
Probabilities of spontaneous $J^1\Delta_g^- \rightarrow B^1\Sigma_u^+$ transitions in the H_2 molecule forbidden in the adiabatic approximation. [T, $h\nu$, H_2]

O A. Balakrishnan, V. Smith and B. P. Stoicheff : Phys. Rev. Lett. 68, 2149-2152 (1992)
Dissociation energy of the hydrogen molecule.
[E, $h\nu$, H_2; $D_0(H_2)$ = 36118.11 cm^{-1}]

O A. Balakrishnan, M. Vallet and B. P. Stoicheff : J. Mol. Spectrosc. 162, 168-171 (1993)
Dissociation energy of the HD molecule.
[E, $h\nu$, HD; $D_0(HD)$ = 36405.8 cm^{-1}]

O F. J. Basterrechea, P. B. Davies, D. M. Smith and R. J. Stickland : Mol. Phys. 81, 1435-1443 (1994)
Diode laser spectroscopy of the 7i - 6h and 7h - 6g transitions in H_2.
[E, $h\nu$, H_2; a. c. discharge]

O M. Cizek, J. Horacek and W. Domcke : J. Phys. B31, 2571-2583 (1998)
V Nuclear dynamics of the H_2^- collision complex beyond the local
A approximation : associative detachment and dissociative attachment to rotationally and vibrationally excited molecules. [T, H_2]

O J. Colgan, D. H. Glass, K. Higgins and P. G. Burke : Comput. Phys. Commun. 114, 27-41 (1998)
The calculation of molecular multiphoton processes using the R-matrix-Floquet method. [T, $h\nu$, H_2; Vol. 114 of this Journal is the special issue on Continuum States of Atoms and Molecules. Total 400 pages]

O L. A. Collins, B. I. Schneider and C. J. Noble : Phys. Rev. A45, 4610-4620 (1992)
Electron scattering from H_2^+ : Resonances in the Π symmetries.
[T, H_2^+; see L. A. Collini (1986)]

O L. A. Collins, B. I. Schneider, D. L. Lynch and C. J. Noble : Phys. Rev. A52, 1310-1318 (1995)
Electron scattering from H_2^+ : Resonances in the Σ and Π symmetries.
[T, H_2^+]

0 T. Cwiok, B. Jeziorski, W. Kolos, R. Moszynski and K. Szalewicz : J. Chem. Phys. 97, 7555-7559 (1992)
On the convergence of the symmetrized Rayleigh-Schrodinger perturbation theory for molecular interaction energies. [T, H_2]

0 P. Forck, M. Grieser, D. Habs, A. Lampert, R. Repnow, D. Schwalm, A. Wolf and D. Zajfman : Phys. Rev. Lett. 70, 426-429 (1993)
Dissociative recombination of cold HD^+ at the test storage ring.
[E, HD^+; 0.3 - 40 eV]

0 J. M. Gilligan and E. E. Eyler : Phys. Rev. A46, 3676-3690 (1992)
Precise determination of ionization potentials and EF-state energy levels of H_2, HD, and D_2. [E, $h\nu$, H_2, HD, D_2]

0 S. L. Guberman and A. Dalgano : Phys. Rev. A45, 2784-2789 (1992)
Dipole moments and transition probabilities of the $i^3\Pi_g$ - $b^3\Sigma_u^+$, $c^3\Pi_u$ - $a^3\Sigma_g^+$, and $i^3\Pi_g$ - $c^3\Pi_u$ systems of molecular hydrogen.
[T, H_2]

Y. Hatano : in Dynamics of Excited Molecules, K. Kuchitsu (Ed), Elsevier 151-216 (1994)

0 A. J. R. Heck, W. M. Huo, R. N. Zare and D. W. Chandler : J. Mol. Spectrosc. 173, 452-462 (1995)
D_2 E, $F^1\Sigma_g^+$ (v' = 0 and 1) - $X^1\Sigma_g^+$ (v" = 0 - 5) transition energies for J' = J" = 0 - 26 : Comparison of experiment and theory. [E, $h\nu$, D_2]

0 L. Jozefowski, Ch. Ottinger and T. Rox : Chem. Phys. Lett. 190, 323-330 (1992)
High-resolution saturation spectroscopy of the H_2 n = 3 triplet states.
[E, $h\nu$, H_2]

0 L. Jozefowski, Ch. Ottinger and T. Rox : J. Mol. Spectrosc. 163, 381-397 (1994a)
Laser spectroscopy of the H_2(n = 3 triplet gerade) complex : Vibrational and rotational coupling between the electronic states. [E, $h\nu$, H_2]

0 L. Jozefowski, Ch. Ottinger and T. Rox : J. Mol. Spectrosc. 163, 398-413 (1994b)
Laser spectroscopy of the H_2(n = 3 triplet gerade) complex : Fine structure of the levels in para-H_2. [E, $h\nu$, para-H_2]

0 K. P. Kirby : in Molecular Astrophysics, Cambridge Univ. Press 159- (1990)

0 W. Kolos and J. Rychlewski : J. Mol. Spectrosc. 143, 212-230 (1990a)
Unusual double-minimum potential energy curves : The h and $g^3\Sigma_g^+$ states of the hydrogen molecule. [T, H_2, HD, D_2]

0 W. Kolos and J. Rychlewski : J. Mol. Spectrosc. 143, 237 (1990b) see p. 14

0 W. Kolos and J. Rychlewski : J. Chem. Phys. 98, 3960-3967 (1993)
Improved theoretical dissociation energy and ionization potential for the ground state of the hydrogen molecule.
[T, H_2, HD, D_2; $D_0(H_2)$ = 36118.049 cm^{-1}, $V_1(H_2)$ = 124417.471 cm^{-1}]

0 W. Kolos : J. Chem. Phys. 101, 1330-1332 (1994)
Extrapolated Born-Oppenheimer energy for the ground state of the hydrogen molecule. [T, H_2]

0 S. I. Krasheninnikov, A. Yu. Pigarov and D. J. Sigmar : Phys. Lett. A214, 285-291 (1996)
Plasma recombination and divertor detachment. [T, $H_2(v)$]

0 S. Lee, M. Iwai and H. Nakamura : in Molecules in Laser Fields, A. D. Bandrauk (Ed), Dekker 217-286 (1994)

0 N. Ohno, N. Ezumi, S. Takamura, S. I. Krasheninnikov and A. Yu. Pigarov : Phys. Rev. Lett. 81, 818-821 (1998)
Experimental evidence of molecular activated recombination in detached recombining plasmas. [E, H_2]

0 Ch. Ottinger, T. Rox and A. Sharma : J. Mol. Spectrosc. 163, 414-427 (1994)
Laser spectroscopy of the H_2 (n = 3 triplet gerade) complex : Fine and hyper fine structure of the levels in ortho-H_2.
[E and T, $h\nu$, ortho-H_2; see L. Jozefowski (1994a, b)]

0 D. E. Post : J. Nucl. Mater. 220-222, 143-157 (1995)
A review of recent developments in atomic processes for divertors and edge plasmas. [review, H_2, etc.]

0 S. T. Pratt, P. M. Dehmer and J. L. Dehmer : J. Chem. Phys. 92, 262-274 (1990)
Rotational autoionization of np Rydberg series of D_2. [E, $h\nu$, D_2]

0 S. T. Pratt : Rep. Prog. Phys. 58, 821 (1995) see p. 22

0 B. K. Sarpal and J. Tennyson : Mon. Not. Roy. Astron. Soc. 263, 909-912 (1993)
Calculated vibrational excitation rates for electron-H_2^+ collisions.
[T, H_2^+; v = 0→1, 0→2, 1→2 excitations]

0 G. Staszewska and L. Wolniewicz : J. Mol. Spectrosc. 198, 414-420 (1999)
Transition moments among $^3\Sigma$ and $^3\Pi$ states of the H_2 molecule.
[T, H_2]

0 C. Stromholm, I. F. Schneider, G. Sundstrom, L. Carata, H. Danared, S. Datz, O. Dulieu, A. Kallberg, M. af Ugglas, X. Urbain, V. Zengin, A. Suzor-Weiner and M. Larsson : Phys. Rev. A52, R4320-R4323 (1995)
Absolute cross sections for dissociative recombination of HD^+ : Comparison of experiment and theory.
[E, HD^+; 0.01 - 20 eV; see P. Forck (1993)]

I H. Tawara and V. P. Shevelko : Int. J. Mass Spectrom. Ion Process. 192, 75-85 (1999)
Multiple ionization of negative and positive ions, neutral atoms, and molecules under electron impact : data and databases. [T,

0 K. Tsukiyama, S. Shimizu and T. Kasuya : J. Mol. Spectrosc. 155, 352-359 (1992)
Identification of the EF $^1\Sigma_g^+$ (v' = 31 and 32) states of H_2 by XUV-VIS double-resonance spectroscopy. [E, hν, H_2]

0 V. A. Zenevich and G. D. Billing : J. Chem. Phys. 111, 2401-2406 (1999a)
Vibrational-rotational energy transfer in H_2 - H_2 collisions. I. Semicalssical decoupling approximation. [T, H_2 + H_2]

0 V. A. Zenevich, G. D. Billing and G. Jolicard : Chem. Phys. Lett. 312, 530-535 (1999b)
Vibrational-rotational energy transfer in H_2 - H_2 collisions. II. The relative roles of the initial rotational excitation of both diatomics. [T, H_2 + H_2]

Addenda. Part 2 (1980 - 1989)

0 V. I. Alaverdov and E. R. Podolyak : Opt. Spectrosc. 53, 665-666 (1982)
Photoabsorptionn cross section for molecular hydrogen in the 70 - 200-eV region. [E, hν, H_2]

0 P. Albertsen, P. Jϕrgensen and D. L. Yeager : Chem. Phys. Lett. 76, 354-358 (1980)
Indirect nuclear spin-spin coupling constant within the coupled multi-configuration Hartree-Fock approximations. [T, H_2, FH]

0 S. Arai, et al. : Z. Phys. D4, 65 (1986) see p. 31

0 S. Arai, T. Kamosaki, M. Ukai, K. Shinsaka, Y. Hatano, Y. Ito, H. Koizumi, A. Yagishita, K. Ito and K. Tanaka : J. Chem. Phys. 88, 3016-3021 (1988)
Lyman-α, Lyman-α coincidence detecting in the photodissociation of doubly excited molecular hydrogen into two (2p) atoms. [E, hν, H_2]

0 M. Aubert-Frecon, C. Lesech and Ph. Pluvinage : J. Mol. Spectrosc. 105, 276-283 (1984)
Correlated wavefunction containing no variational parameters for some bound and autoionizing triplet states of H_2. [T, H_2]

0 R. J. Bienick : J. Phys. B13, 4405-4416 (1980)
A source of errors in cross sections of curve-crossing processes.
[T, H_2; H + H^- → H_2 + e]

0 D. W. Chandler and L. R. Thorne : J. Chem. Phys. 85, 1733-1737 (1986)
Measured radiative lifetimes for H_2 and HD in the E, F $^1\Sigma_g^+$ electronic state. [E, H_2, HD]

0 L. A. Collins, B. I. Schneider, C. J. Noble, C. W. McCurdy and S. Yabushita : Phys. Rev. Lett. 57, 980-983 (1986)
Interfering resonances : Avoided crossings of autoionizing states in molecules. [T, H_2^+]

0 E. E. Eyler, J. Gilligan, E. McCormack, A. Nussenzweig and E. Pollack : Phys. Rev. A 36, 3486-3489 (1987)
Precise two-photon spectroscopy of $E \leftarrow X^*$ intervals in H_2.
[E, $h\nu$, H_2; (0, 1) = 95003.628 cm^{-1}]

EX R. S. Freund, et al. : J. Chem. Phys. 80, 1754 (1984) see p. 41

0 R. S. Freund, J. A. Shiavone and H. M. Crosswhite : J. Phys. Chem. Ref. Data 14, 235-383 (1985)
The electric spectrum and energy levels of the deuterium molecule.
[compilation, D_2]

0 J. Geertsen : Chem. Phys. Lett. 116, 89-92 (1985)
Calculation of the indirect nuclear spin-spin coupling constant in HD using a global operator representation of the Fermi contact operator.
[T, HD]

0 W. L. Glab and J. P. Hessler : Phys. Rev. A35, 2102-2110 (1987)
Multiphoton excitation of high singlet np Rydberg states of molecular hydrogen : Spectroscopy and dynamics. [E, $h\nu$, H_2]

0 M. Glass-Maujean, P. Quadrelli and K. Dressler : Atomic Data Nucl. Data Tables 30, 273-300 (1984a)
Band transition moments between excited singlet states of the H_2 molecule, nonadiabatic eigenvectors, and probabilities for spontaneous emission. [T, H_2]

0 M. Glass-Maujean, et al. : Chem. Phys. Lett. 112, 25 (1984b) see p. 43

0 M. Glass-Maujean, P. Quadrelli and K. Dressler : J. Chem. Phys. 80, 4355-4362 (1984c)
Ab initio computation of radiative lifetimes of the H_2 molecule in the nonadiabatically coupled J = 1 states derived from {EF + GK + HH} $^1\Sigma_g^+ + I^1\Pi_g$. [T, H_2]

0 M. Glass-Maujean : Atomic Data Nucl. Data Tables 30, 301 (1984d) see p. 43

0 M. Glass-Maujean, J. Breton, B. Thieblemont and K. Ito : J. Physiq. 45, 1107-1111 (1984e)
Lifetimes of radiative excited levels of H_2. [E, H_2]

0 M. Glass-Maujean, et al. : Phys. Rev. A33, 342 and 346 (1986a, b) see p. 43

0 C. H. Greene and Ch. Jungen : in Advances in Atomic and Molecular Physics, Vol. 21, Academic 51-121 (1988)
Molecular applications of quantum defect theory.
[review, T, H_2, Na_2, N_2, NO]

O S. L. Guberman : J. Chem. Phys. 78, 1404-1413 (1983)
The doubly excited autoionizing states of H_2. [T, H_2]

V J. R. Hiskes : J. Appl. Phys. 51, 4592-4594 (1980)
Cross sections for the vibrational excitation of the $H_2(X^1\Sigma_g^+)$ state via electron collisional excitation of the higher singlet states.
[T, H_2; v" = 0 - 14, 20 - 120 eV]

O J. R. Hiskes, A. M. Karo, M. Bacal, A. M. Bruneteau and W. Graham : J. Appl. Phys. 53,
A 3469-3475 (1982)
Hydrogen vibrational population distributions and negative ion concentrations in a medium density hydrogen discharge. [T, H_2]

O J. R. Hiskes and A. M. Karo : J. Appl. Phys. 56, 1927-1938 (1984)
A Generation of negative ions in tandem high-density hydrogen discharges.
[T, H_2]

O J. R. Hiskes, et al. : J. Vac. Sci. Tech. A3, 1229 (1985) see p. 45

O K. Ito, P. Lablanquie, P. M. Guyon and I. Nenner : Chem. Phys. Lett. 151, 121-127 (1988)
Dissociative photoionisation of H_2 at 27 - 40 eV. [E, $h\nu$, H_2]

O W. Kolos, et al. : J. Chem. Phys. 77, 1323 and 1335 (1982a, b) see p. 48

O W. Kolos, et al. : J. Mol. Spectrosc. 91, 128 (1982c) see p. 48

O W. Kolos, H. J. Monkhorst and K. Szalewicz : Atomic Data Nucl. Data Tables 28, 239-263 (1983)
Generalized oscillator strengths for X - B transitions in the hydrogen molecules. [T, H_2, HD, D_2]

O W. Kolos, K. Szalewicz and H. J. Monkhorst : J. Chem. Phys. 84, 3278-3283 (1986)
New Born-Oppenheimer potential energy curve and vibrational energies for the electronic ground state of the hydrogen molecule. [T, H_2, D_2, T_2, HD, HT, DT; R = 0.2 - 12 bohr, adiabatic and nonadiabatic D_0]

O W. Kolos, et al. : J. Mol. Spectrosc. 125, 159 (1987) see p. 48

O H. Kossmann, O. Schwarzkopf, B. Kammerling and V. Schmidt : Phys. Rev. Lett. 63, 2040-2043 (1989a)
Unexpected behavior of double photoionization in H_2.
[E, $h\nu$, H_2; 50 - 110 eV]

O H. Kossmann, et al. : J. Phys. B22, L411 (1989b) see p. 49

O T. L. Kwok, A. Dalgarno and A. Rosen : Phys. Rev. A32, 646-649 (1985)
Transition probabilities of the $B'^1\Sigma_u^+ \rightarrow X^1\Sigma_g^+$ system of molecular hydrogen. [T, H_2]

E M. A. Morrison and L. A. Collins : Phys. Rev. A23, 127-138 (1981)
Exchange in low-energy electron-molecule scattering : Orthgonalization and free-electron-gas approximations for collisions with polar and nonpolar molecules. [T, H_2, N_2, CO, HCl, LiH, LiF; 0.01 - 1.0 Ry]

0 M. A. Morrison, et al. : Phys. Rev. A29, 2518 (1984a) see p. 53

0 J. Oddershede : in Advances in Chemical Physics, Vol. 69, K. P. Lawley (Ed), John Wiley & Sons 201-239 (1987)
Propagator methods. [T, H_2, N_2, CO, O_2, HCl, Cl_2, H_2O, CO_2, etc.]

0 M. A. O'Halloran, P. M. Dehmer, S. T. Pratt, J. L. Dehmer and F. S. Tomkins : J. Chem. Phys. 90, 930-948 (1989)
Double-resonance studies of rotational autoionization of H_2.
[E, $h\nu$, H_2]

0 G. Raseev, et al. : Phys. Rev. A27, 268 (1983) see p. 57

0 G. Raseev : J. Phys. B18, 423-439 (1985)
Variational calculation of the logarithmic derivative of the wavefunction : the electronic autoionisation region in photoionisation of H_2.
[T, $h\nu$, H_2]

0 J. Rychlewski : J. Mol. Spectrosc. 104, 253-261 (1984)
$j^3\Delta_g$ state of the hydrogen molecule. [T, H_2, HD, D_2]

0 J. Rychlewski : Chem. Phys. Lett. 151, 552-556 (1988)
The $e^3\Sigma_u^+$ state of the H_2 molecule. [T, H_2, D_2]

0 J. Rychlewski : J. Mol. Spectrosc. 136, 333-339 (1989)
The Born-Oppenheimer potential energy curve for the $h^3\Sigma_g$ state of the hydrogen molecule. [T, H_2, HD, D_2]

0 M. J. Seaton : Rep. Prog. Phys. 46, 167-257 (1983)
Quantum defect theory. [T, H_2, He - Xe, etc.]

0 J. Tennyson and C. J. Noble : J. Phys. B18, 155-165 (1985)
Low-energy electron - H_2^+ collisions : Variation of resonance parameters with internuclear separation. [T, H_2^+]

Addenda. Part 3 (1901 - 1979)

0 R. Anderson : Atomic Data 3, 227-240 (1971)
A compilation of measured lifetimes of gaseous diatomic molecules.
[compilation.

0 A. J. Bearden : J. Appl. Phys. 37, 1681-1692 (1966)
X-ray photoeffect cross sections in low- and medium-Z absorbers for the energy range 825 eV to 40 keV. [E, $h\nu$, H_2, He, N_2, O_2, Ar, Cu, etc.]

O P. E. Cade and A. C. Wahl : Atomic Data Nucl. Data Tables 13, 339-389 (1974)
Hartree-Fock-Roothaan wavefunctions for diatomic molecules : Ⅱ.
First-row homonuclear systems A_2, A_2+- and A_2*.
[T, H_2, Li_2, N_2, O_2, F_2, etc.]

R E. S. Chang : Phys. Rev. A16, 1841-1849 (1977)
V Theory of angular distributions of electrons resonantly scattered by molecules. Ⅰ. Vibrational and rotational excitation of diatomic molecules. [general theory]

R B. H. Choi and R. T. Poe : Phys. Rev. A16, 1821-1830 (1977a)
V Vibrational and rotational transitions in low-energy electron-diatomic collisions. Ⅰ. Close-coupling theory in the moving body-fixed frame.
[T, general theory]

R B. H. Choi and R. T. Poe : Phys. Rev. A16, 1831-1840 (1977b)
V Vibrational and rotational transitions in low-energy electron-diatomic collisions. Ⅱ. Hybrid theory and close-coupling theory. An l_z-conserving close-coupling approximation. [T, general theory]

O C. M. Dutta, F. M. Chapman and E. F. Hayes : J. Chem. Phys. 67, 1904-1908 (1977)
Theoretical studies of photoionization cross sections and angular distributions for the hydrogen molecule. [T, $h\nu$, H_2; 20 - 40 eV]

E A. W. Fliflet and V. McKoy : Phys. Rev. A18, 1048-1054 (1978a)
Variationally corrected discrete-basis-set calculation for electron-molecule scattering the static-exchange approximation. [T, H_2]

E A. W. Fliflet and V. McKoy : Phys. Rev. A18, 2107-2114 (1978b)
Discrete-basis-set method for electron-molecule continuum wave functions.
[T, H_2]

O R. Jost, M. Lombardi, R. S. Freund and T. A. Miller : Mol. Phys. 37, 1605-1620 (1979)
The 3d-triplet complex of molecular hydrogen : the measured Zeeman effect and the calculated eigenvectors and g-factors. [E and T, $h\nu$, H_2]

R U. Kaldor : Phys. Rev. A19, 105-110 (1979)
V L^2-basis-set theory of electron-molecule scattering with vibrational and rotational coupling. [T, general theory]

O H. P. Kelly : Chem. Phys. Lett. 20, 547-550 (1973)
The photoionization cross section for H_2 from threshold to 30 eV.
[T, $h\nu$, H_2]

O Th. Lyman : Astrophys. J. 23, 181-210 (1906)
Spectrum of hydrogen in the region of extremely short wave-length.
[E, $h\nu$, H_2]

O S. V. ONeil and W. P. Reinhardt : J. Chem. Phys. 69, 2126-2142 (1978)
Photoionization of molecular hydrogen. [T, $h\nu$, H_2]

O W. H. E. Rueckner, A. D. Barlas and H. F. Wellenstein : Phys. Rev. A18, 895-909 (1978)
Electron Compton defect observed in He, H_2, D_2, N_2, and Ne profiles.
[E, H_2, D_2, N_2, He, Ne; 20 - 40 keV]

E M. K. Srivastava, A. N. Tripathi and M. Lal : Phys. Rev. A18, 2377-2378 (1978)
Exchange effects in the independent-atom model of electron-molecule scattering. [T, H_2; DCS at 30, 75, 200 eV]

O H. S. Taylor and A. U. Hazi : Phys. Rev. A14, 2071-2074 (1976)
Comment on the stabilization method : Variational calculation of the resonance width. [T, general theory]

O S. Werner : Proc. Roy. Soc. London A113, 107-117 (1926)
Hydrogen bands in the ultra-violet Lyman region. [E, $h\nu$, H_2]

Addenda of References for H_2 Molecules (2)

(No author index for these addenda (2) references)

2000

O M. Gustafsson, L. Frommhold, D. Bailly, J.-P. Bouanich and C. Brodbeck : J. Chem. Phys. 119, 12264-12270 (2003)
Collision-induced absorption in the rototranslational band of dense hydrogen gas. [E, $h\nu$, $H_2 + H_2$; 297.5 and 77.5 K, 1900 - 2260 cm^{-1}]

Addenda (1901 - 1999)

O H. Abgrall, F. Launay, E. Roueff and J.-Y. Roncin : J. Chem. Phys. 87, 2036-2044 (1987)
Effect of rotational coupling on emission probabilities of Lyman and Werner band systems of the vacuum ultraviolet spectrum of H_2. [T, H_2]

O H. Abgrall and E. Roueff : Astron. Astrophys. Suppl. Ser. 79, 313-328 (1989)
Wavelengths, oscillator strengths and transition probabilities of the H_2 molecule for Lyman and Werner systems. [T, H_2]

O H. Abgrall, E. Roueff, F. Launay, J.-Y. Roncin and J.-L. Subtil : Astron. Astrophys. Suppl. Ser. 101, 273-321 (1993a)
Table of the Lyman band system of molecular hydrogen.
[compilation, E and T, $h\nu$, H_2]

O H. Abgrall, E. Roueff, F. Launay, J.-Y. Roncin and J.-L. Subtil : Astron. Astrophys. Suppl. Ser. 101, 323-362 (1993b)
Table of the Werner band system of molecular hydrogen.
[compilation, E and T, $h\nu$, H_2]

O H. Abgrall, E. Roueff, F. Launay, J.-Y. Roncin and J.-L. Subtil : J. Mol. Spectrosc. 157, 512- (1993c)

O H. Abgrall, E. Roueff, F. Launay and J.-Y. Roncin : Can. J. Phys. 72, 856-865 (1994)
The $B'^1\Sigma_u^+ \rightarrow X^1\Sigma_g^+$ and $D^1\Pi_u \rightarrow X^1\Sigma_g^+$ band systems of molecular hydrogen. [T, $h\nu$, H_2]

O H. Abgrall, et al. : J. Phys. B32, 3813 (1999) see p. 1

V M. Allan : J. Elect. Spectrosc. Relat. Phenom. 48, 219-351 (1989)
Study of triplet states and short-lived negative ions by means of electron impact spectroscopy. [review, H_2, N_2, CO, CO_2, C_6H_6, etc.]

0 S. A. Astashkevich, B. P. Lavrov, L. L. Pozdeev and V. I. Ustimov : Opt. Spectrosc. 70, 164-166 (1991)
Regular and irregular perturbations of the rovibronic terms and radiative transition probabilities of homonuclear diatomic molecules : Semiempirical approach. [T, $h\nu$, H_2, D_2]

0 S. A. Astashkevich and B. P. Lavrov : Opt. Spectrosc. 75, 703 (1993) see p. 175

0 S. A. Astashkevich and B. P. Lavrov : Opt. Spectrosc. 76, 30-37 (1994a)
Probabilities of radiative transitions from electronic vibration-rotation levels of the nl-complex of highly excited electronic states in a diatomic molecule. [T, $h\nu$, general theory]

0 S. A. Astashkevich and B. P. Lavrov : Opt. Spectrosc. 76, 38-47 (1994b)
Semiempirical analysis of perturbations in the triplet 3s, 3d complex of the hydrogen molecule terms. Relative probabilities of the $i^3\Pi_g^-$, $j^3\Delta_g^- \rightarrow c^3\Pi_u^+$ transitions in H_2, HD, and D_2. [T, $h\nu$, H_2, HD, D_2]

0 S. A. Astashkevich and B. P. Lavrov : Opt. Spectrosc. 80, 667-679 (1996a)
Semiempirical analysis of perturbations in the triplet 3s, 3d-complex of terms of a hydrogen molecule : comparison of results obtained by optical and photofragmentation spectroscopy. [T, $h\nu$, H_2]

0 S. A. Astashkevich, N. V. Kokina and B. P. Lavrov : Opt. Spectrosc. 81, (41-) (1996b)

0 S. A. Astashkevich, M. Kaning, E. Kaning, N. V. Kokina, B. P. Lavrov, A. Ohl and J. Ropcke : J. Quant. Spectrosc. Radiat. Transf. 56, 725-751 (1996c)
Radiative characteristics of $3p\Sigma$, Π; $3d\Pi^-$, Δ^- states of H_2 and determination of gas temperature of low pressure hydrogen containing plasmas. [E, $h\nu$, H_2]

0 S. A. Astashkevich and B. P. Lavrov : Opt. Spectrosc. 85, 348 (1998a) see p. 2

0 S. A. Astashkevich and B. P. Lavrov : Opt. Spectrosc. 85, 504 (1998b) see p. 175

0 K. L. Bak and J. Linderberg : J. Chem. Phys. 92, 3668-3679 (1990)
Nonadiabatic ab initio calculations of eigenfunctions and energies for the 3s, 3d-triplet complex of molecular hydrogen. [T, H_2]

0 F. G. Baksht and V. G. Ivanov : Tech. Phys. Lett. 24, 977 (1998a) see p. 3

0 F. G. Baksht and V. G. Ivanov : Tech. Phys. 43, 1145-1153 (1998c)
Vibrational pumping of H_2 molecules in a hydrogen stream flowing through a cesium-hydrogen discharge. [T, H_2 + Cs]

0 K. T. Balasubramanian, C. -H. Lien, J. R. Gaines, K. Narahari Rao, E. K. Damon and R. J. Nordstrom : J. Mol. Spectrosc. 92, 77-84 (1982)
Infrared spectrum of hydrogen in the condensed phase with high-sensitivity spectrometers : Experiments with a 0.04-cm^{-1} Fourier transform spectrometer in the range 1.5 - 12 μm. [E, $h\nu$, solid H_2]

O N. Bjerre and H. Helm : Chem. Phys. Lett. 134, 361-365 (1987)
High-resolution laser spectroscopy of H_2 in a fast beam.
[E, $h\nu$, H_2 $c^3\Pi_u^-$]

E L. G. Christophorou and J. K. Olthoff : in Advances in Atomic, Molecular and
V Optical Physics, Vol. 44, Academic 155-293 (1999)
EX Electron interaction with excited atoms and molecules.
A [review, H_2, F_2, CO_2, SF_6, C_6F_6, etc., many atoms and molecules]

O I. Dabrowski : Can. J. Phys. 62, 1639-1664 (1984)
The Lyman and Werner bands of H_2. [E, $h\nu$, H_2; 1000 - 1650 A]

O D. P. de Bruijn, J. Newteboom, T. R. Govers and J. Los : Phys. Rev. A34, 3847-3854 (1986a)
Dissociative decay of n = 3 levels in H_2. I. Populated in charge exchange of H_2^+ with Cs. [E, $h\nu$, H_2]

O D. P. de Bruijn and H. Helm : Phys. Rev. A34, 3855-3864 (1986b)
Dissociative decay of n = 3 levels in H_2. II. Excited by laserfrom the metastable $c^3\Pi_u^-$ state of H_2. [E, $h\nu$, H_2; see H. Helm (1984)]

O V. De Cosmo, H. P. Gush and M. Halpern : Can. J. Phys. 62, 1713-1718 (1984)
The $S_0(1)$ quadrupole line of H_2. [E, $h\nu$, H_2]

V W. Domcke and C. Mundel : in Electronic and Atomic Collisions, 14th ICPEAC, Palo Alto, D. C. Lorents, et al. (Ed), Elsevier 195-203 (1986)
Collision dynamics with nonlocal potential. [T, review, H_2, N_2, F_2]

O K. Dressler and L. Wolniewicz : Can. J. Phys. 62, 1706-1712 (1984)
The $I^1\Pi_g$ state of hydrogen : adiabatic corrections, energy levels, L uncoupling, and electronic transition moments. [T, H_2, HD, D_2]

O P. Essenwanger and H. P. Gush : Can. J. Phys. 62, 1680-1685 (1984)
Rotational spectrum of HD at low pressures. [E, $h\nu$, HD]

O E. E. Eyler and F. M. Pipkin : Phys. Rev. Lett. 47, 1270-1272 (1981)
Direct lifetime measurement of laser-excited n = 3 levels in para-H_2.
[E, $h\nu$, para-H_2]

O E. E. Eyler and F. M. Pipkin : J. Chem. Phys. 77, 5315-5318 (1982)
Observation of the 4s $^3\Sigma_g^+$ state of H_2. [E, $h\nu$, H_2]

O E. E. Eyler, et al. : Phys. Rev. A48, R18 (1993) see p. 9

O L. Frommhold : Collision-Induced Absorption in Gases, Cambridge Univ. Press (1993)

O J. M. Gilligan and E. E. Eyler : Phys. Rev. A43, 6406-6409 (1991)
High-resolution three-photon spectroscopy and multiphoton interference in molecular hydrogen. [E, $h\nu$, H_2]

0 H. Helm, D. P. de Bruijn and J. Los : Phys. Rev. Lett. 53, 1642-1645 (1984)
Fast neutral-beam photofragment spectroscopy of H_2 $c^3\Pi_u^-$.
[E, hν, H_2]

0 P. C. Hinnen, W. Hogervorst, S. Stolte and W. Ubachs : Appl. Phys. B59, 307-310 (1993)
High-resolution laser spectroscopy on H_2 at 97 - 98 nm. [E, hν, H_2]

0 P. C. Hinnen, W. Hogervorst, S. Stolte and W. Ubachs : Can. J. Phys. 72, 1032-1042 (1994)
Sub-Doppler laser spectroscopy of H_2 and D_2 in the range 91 - 98 nm.
[E, hν, H_2, D_2]

0 J. L. Hunt, J. D. Poll and L. Wolniewicz : Can. J. Phys. 62, 1719-1723 (1984)
Ab initio calculation of properties of the neutral diatomic hydrogen molecules H_2, HD, D_2, HT, DT, and T_2. [T, H_2, HD, D_2, HT, DT, T_2]

0 R. Jost, M. Lombardi, R. S. Freund and T. A. Miller : Mol. Phys. 37, 1605-1620 (1979)
The 3d-triplet complex of molecular hydrogen : the measured Zeeman effect and the calculated eigenvectors and g-factors. [E, hν, H_2]

0 W. Kolos, et al. : Rev. Mod. Phys. 32, 205 (1960a) see p. 121

0 W. Kolos and L. Wolniewicz : Acta Phys. Polon. 20, 129- (1961)

0 W. Kolos and J. Rychlewski : Rev. Mod. Phys. 35, 473-483 (1963a)
Nonadiabatic theory for diatomic molecules and its application to the hydrogen molecule. [T, H_2]

0 W. Kolos and L. Bolnevich : Litov. Fiz. Sbornik 3, 241-245 (1963b)
Nonadiabatic treatment of hydrogen molecule. [T, H_2]

0 W. Kolos : J. Mol. Spectrosc. 8, 121- (1963)

0 W. Kolos, et al. : J. Chem. Phys. 41, 3663 (1964a) see p. 121

0 W. Kolos, et al. : J. Mol. Spectrosc. 66, 428 (1977) see p. 123

0 W. Kolos and J. Rychlewski : J. Mol. Spectrosc. 86, 420 (1981a) see p. 48

0 W. Kolos and J. Rychlewski : J. Mol. Spectrosc. 91, 128 (1982c) see p. 48

0 W. Kolos and J. Rychlewski : J. Mol. Spectrosc. 143, 237 (1990b) see p. 14

0 W. Kolos and J. Rychlewski : J. Mol. Spectrosc. 169, 341 (1995) see p. 14

0 W. Koot, et al. : Phys. Rev. A39, 590 (1989a) see p. 48

0 W. Koot, W. J. van der Zande, P. H. Post and J. Los : J. Chem. Phys. 90, 4826-4834 (1989b)
Branching ratios and lifetimes for the dissociative decay of triplet H_2^*.
[E, H_2]

0 B. P. Lavrov, V. N. Ostrovskii and V. I. Ustimov : Opt. Spectrosc. 47, 30-34 (1979a)
Determination of the gas temperatures of a low-pressure plasma from the intensities of the H_2 and D_2 molecular bands : rotational transitions under electron-impact excitation. [T and E, $h\nu$, H_2, D_2]

0 B. P. Lavrov, V. N. Ostrovskii and V. I. Ustimov : Sov. Phys. JETP 49, 772-776 (1979b)
Rotational transitions in the excitation of electronic states of molecules by electron impact. [T, $h\nu$, H_2, D_2, Cl_2, CO, I_2, N_2]

0 B. P. Lavrov : Opt. Spectrosc. 48, 375-380 (1980)
Determination of the gas temperature of a low-pressure plasma from the intensities of the H_2 and D_2 molecular bands. Relationship between the intensity, distribution in a band and the gas temperature.
[T and E, $h\nu$, H_2, D_2]

0 B. P. Lavrov, M. V. Tyutchev and V. I. Ustimov : Opt. Spectrosc. 54, 2-3 (1983)
Semiempirical approach to the determination of the probabilities of electronic-vibrational-rotational radiative transitions of diatomic molecules. [T, general theory]

0 B. P. Lavrov, et al. : Opt. Spectrosc. 86, 845 (1999) see p. 15

0 W. Lichten and T. Wik : J. Chem. Phys. 69, 5428-5437 (1978)
Metastable hydrogen molecules. Ⅳ. Vibrational analysis and spin-rotation interaction. [E, H_2]

0 X. Liu, S. M. Ahmed, R. A. Multari, G. K. James and J. M. Ajello : Astrophys. J. 454, 548-548 (1995a)
High-resolution electron-impact study of the far-ultraviolet emission spectrum of molecular hydrogen. [E, H_2; 100 eV, 1140 - 1690 A]

0 X. Liu, et al. : Astrophys. J. Suppl. 101, 375 (1995b) see p. 17

0 A. R. W. McKellar and N. H. Rich : Can. J. Phys. 62, 1665-1672 (1984a)
Interference effects in the spectrum of HD : Ⅱ. The fundamental band for HD - rare gas mixtures.
[E, $h\nu$, HD + (He, Ne, Ar); 77 and 145 K, see N. H. Rich (1983)]

0 A. R. W. McKellar, J. W. C. Johns, W. Majewski and N. H. Rich : Can. J. Phys. 62, 1673-1679 (1984b)
Interference effects in the spectrum of HD : Ⅲ. The pure rotational band at 77 K for HD and HD - Ne mixtures. [E, $h\nu$, HD, HD + Ne; 77 K]

0 P. Quadrelli and K. Dressler : J. Mol. Spectrosc. 86, 316-326 (1981)
Molecular constants for the $I^1\Pi_g$ and $J^1\Delta_g$ states of the 3d complex in H_2, HD, and D_2. [T, $h\nu$, H_2, HD, D_2]

0 E. Reinhold, W. Hogervorst and W. Ubachs : J. Mol. Spectrosc. 180, 156-163 (1996)
High resolution laser spectroscopy of H_2 at 86 - 90 nm. [E, $h\nu$, H_2]

0 E. Reinhold, et al. : Phys. Rev. A60, 1258 (1999) see p. 23

0 N.H.Rich and A.R.W.McKellar : Can.J.Phys.61,1648-1654 (1983)
Interference effects in the spectrum of HD : I. The fundamental band of pure HD. [E, hν, HD; 77 K, see A.R.W.McKellar (1984ab)

0 J.-Y.Roncin, F.Launay and M.Larzilliere : Can.J.Phys.62,1686-1705 (1984)
High resolution emission spectrum of H_2 between 78 and 118 nm.
[E, hν, H_2]

0 J.-Y.Roncin and F.Launay : J.Phys.Chem.Ref.Data Monograph 4 (1994)

0 S.C.Ross and Ch.Jungen : Phys.Rev.A50,4618-4628 (1994)
Multichannel quantum-defect theory of n = 2 and 3 gerade states in H_2 : Rovibronic energy levels. [T, H_2]

0 P.L.Rubin : Sov.Phys.JETP 38,684-687 (1974)
Probabilities of population of rotational levels by electron excitation of diatomic molecules. [T, general theory]

0 T.P.Snow : Chem.Phys.Lett.245,639-642 (1995)
Comments on two-photon absorption by H_2 molecules as a source of diffuse interstellar bands. [comments, hν, H_2; see P.P.Sorokin (1995)]

0 P.P.Sorokin and J.H.Glownia : Chem.Phys.Lett.234,1-6 (1995)
Nonlinear spectroscopy in astronomy : assignment of diffuse intersteller absorption bands to L(α)-induced, two-photon absorption by H_2 molecules.
[T, assignments, hν, H_2; see T.P.Snow (1995)]

0 L.Wolniewicz : J.Chem.Phys.45,515 (1966) see p.167

0 L.Wolniewicz : J.Chem.Phys.51,5002 (1969) see p.167

0 L.Wolniewicz, et al. : J.Mol.Spectrosc.96,195 (1982) see p.65

0 L.Wolniewicz, et al. : J.Chem.Phys.82,3292 (1985) see p.65

0 L.Wolniewicz, et al. : J.Chem.Phys.88,3861 (1988) see p.65

0 L.Wolniewicz, et al. : Mol.Phys.74,103 (1991) see p.28

0 L.Wolniewicz : J.Mol.Spectrosc.169,329 (1995a) see p.28

0 L.Wolniewicz : Chem.Phys.Lett.233,647 (1995d) see p.28

0 L.Wolniewicz : J.Mol.Spectrosc.180,398-401 (1996)
Transition moments between $^1\Delta_g$, $^1\Pi_g$, and $^1\Pi_u$ states of the H_2 molecule. [T, H_2]

0 S.Yu and K.Dressler : J.Chem.Phys.101,7692-7706 (1994)
Calculation of rovibronic structures in the lowest nine excited $^1\Sigma_g^+ + {}^1\Pi_g + {}^1\Delta_g$ states of H_2, D_2, and T_2. [T, H_2, D_2, T_2]

Quick Addenda for H_2 References

O J. H. Black, A. Porter and A. Dalgarno : Astrophys. J. 249, 138-144 (1981)
The emission spectrum of H_2 from associative detachment and ultraviolet pumping. [T, H_2]

E A. Dalgarno, M. Yan and W. Liu : Astrophys. J. Suppl. 125, 237-256 (1999)
V Electron energy deposition in a gas mixture of atomic and molecular
EX hydrogen and helium. [T, H_2, H, He, H_2 + He, H + He]

A I. I. Fabrikant, J. M. Wadehra and Y. Xu : Phys. Scr. T96, 45-51 (2002)
D Resonance processes in e - H2 collisions : Dissociative attachment and dissociation from vibrationally and rotatinally excited states. [T, H_2(v, j), HD, HT, D_2, DT, T_2]

R K. A. Jerjian and R. J. W. Henry : Phys. Rev. A31, 585-589 (1985)
V Energy-modified frame-transformation theory : Application to near-threshold rovibrational excitation of hydrogen molecules by electrons. [T, H_2; 0.6 - 10 eV]

O O. W. Richardson and P. M. Davidson : Proc. Roy. Soc. London A142, 63-76 (1933c)
Spectrum of H_2. The $3d^1\Delta$ and $4d^1$ levels. [E, $h\nu$, H_2]

O O. W. Richardson and T. B. Rymer : Proc. Roy. Soc. London A147, 24-47 (1934a)
Spectrum of H_2 (the ordinary hydrogen molecule). Part I. - The 3, 4d $^3\Sigma, \Pi, \Delta \rightarrow 2p^3\Pi$ and $3s^3\Sigma \rightarrow 2p^3\Pi$ systems. [E, $h\nu$, H_2]

O O. W. Richardson and T. B. Rymer : Proc. Roy. Soc. London A147, 251-292 (1934b)
Spectrum of H_2. Part II. - The band systems due to transitions from four new triplet states to $2p^3\Pi$. [E, $h\nu$, H_2]

R E. F. Varracchio and U. T. Lamanna : Chem. Phys. Lett. 101, 38-43 (1983)
Off-shell adiabatic nuclei theory of e - H_2 rotational excitation. [T, H_2; 0.05 - 0.5 eV]

Author Index for H_2 molecules References

(1990 - 1999)

Author Index for H_2 Molecules References

(1980 - 1989)

Author Index for H_2 Molecules References

(1901 - 1979)

Some Comments on Electron Collision Cross Sections for H_2

Electron collision cross section set of elastic, rotational excitation, vibrational excitation, electronic excitation, dissociation and ionization collision for hydrogen molecule are reported by many authors. An example is given by A. V. Phelps (1985a) and S. J. Buckman and A. V. Phelps (1985b). Another one is given by Y. Itikawa (1986). But vibrational excitation cross section has the problem as pointed out by R. W. Crompton (1993). See the following related papers : S. J. Buckman (1990), J. P. England (1988), M. A. Morrison (1987) (1991), T. N. Rescigno (1993), and Z. Lj. Petrovic (1987).

Recently, we have pointed out at International Symposium on Electron-Molecule Collisions and Swarms, Tokyo that we cannot measure the exact values of electron collision cross sections for all molecules at present (M. Hayashi (1999). See at the end of this report). For H_2, initial target molecules of beam and swarm experiments are mixture of $H_2(g)$, $H_2(r)$ and small amount of $H_2(v)$ molecules depend on the temperature. Electron collision cross section sets for $H_2(g)$, $H_2(r)$ and $H_2(v)$ are different each other. Hydrogen is the homonuclear diatomic molecule. Then differences of cross section sets for $H_2(g)$, $H_2(r)$ and $H_2(v)$ are not so large, compaired with triatomic or poly-atomic molecules. But the initial collision cross section sets for three H_2 molecules are different. Probably, not sure now, the value of $q_m(r)$ is larger than $q_m(g)$ as discussed by P. K. Bhattacharyya (1985). The attachment cross section $q_a(r)$ is larger than $q_a(g)$, and $q_a(v)$ is much larger than $q_a(g)$, from the results of Y. Xu (2000) (2001a) (2001b), I. I. Fabrikant (2002) and J. Horacek (2003). If we want the exact values of cross section sets for H_2, we have to determine these three cross section sets of $H_2(g)$, $H_2(r)$ and $H_2(v)$ separately and independently. We have to consider the formation of $(H_2)_2$ dimer at low temperature condition.

Theoreticians calculate the electron collision cross section set for M(g), not for M(r) and M(v) for most molecules. Theoretical values for M(r) and M(v) are urgently required for many molecules. Recently, some interesting theoretical (plus some experimental) papers on rotationally and vibrationally excited H_2 molecules are published as follows : M. Capitelli (1999), R. Celibert (1990a) - (1997) (2000a) (2000b) (2002), M. Cizek (1998), D. R. Flower (2000), G. A. Gallup (1998), R. I. Hall (1991), M.-T. Lee (2002), S. A. Pozdneev (2000a) (2000b) (2000c), and G. N. Sargsyan (1999).

We would like to have the information about the concentration of $(H_2)_2$ at liquid N_2 temperature in the swarm experiments of H_2.

I think that there are many uncompiled papers in this hydrogen molecules bibliograpies, probably one hundred or more of photon collision papers. I would like to stop the collection of H_2 papers at the biginning of 2004.

May We Measure the Exact Values of Electron Collision Cross Sections for Molecules by Beam and Swarm Experiments ?

M. Hayashi and Y. Nakamura*

Gaseous Electronics Institute
4-15-14-503 Sakae, Nakaku, Nagoya 460-0008 Japan
**Faculty of Science and Technology, Keio University*
3-14-1 Hiyoshi, Yokohama 223-8522 Japan

We cannot measure the exact values of DCS for molecules intrinsically. Of course, we can measure the approximate values of DCS for molecules, but can measure the exact values of DCS for atoms. The reason is very simple.

Target molecule M in both beam and swarm experiments consists of the mixture of different states :

$$M = M(g) + M(r_J) + M(v_1) + M_N$$

where $M(g)$, $M(r_J)$, $M(v_1)$ and M_N represent the completely ground state molecules, the rotationally excited molecules, the vibrationally excited molecules and the van der Waals clusters consisting of N molecules ($N \geqq 2$), respectively. Usually beam and swarm experiments are carried out at about 300 K. The concentration of $M(g)$ is small compared to $M(r_J)$ (except H_2 molecules) at 300 K. Then the molecule M is always mixture of $M(r_J)$ and $M(v_1)$, and the concentration of $M(r_J)$ and $M(v_1)$ changes with temperature. And electron collision cross section sets from elastic to inelastic collision processes for $M(r)$ and $M(v)$ are different each other. The target molecules M in the beam and swarm experiments are always mixtures of different molecules $M(r_J)$ and $M(v_1)$. In the case of H_2, the target gas consists of $M(g)$ and $M(r_J)$, especially $M(g)$ and $M(r_1)$ at 78 K.

Most clear change of cross sections of $M(r_J)$ and $M(v_1)$ will occur for triatomic molecules. CO_2, N_2O and so on. Triatomic molecules can change from linear to bend, or vice versa easily. The authors [1] have presented the different elastic momentum transfer cross sections q_{mr} and q_{mv} for $CO_2(r)$ and $CO_2(v)$, where they assumed that all other inelastic cross sections of $CO_2(r)$ and $CO_2(v)$ are practically the same. Then they have calculated the electron drift velocity W as a function of gas temperature T. When T increas, concentrations of $CO_2(v)$ increases, then W decreases with T at the same E/N, the electric field over the gas number density, around 50 Td.

We have a comment to the interesting and important paper of W. Johnstone, et al. [2]. They have measured the temperature dependence of elastic DCS for CO_2 at 4.0 eV. Unfortunitly, q_{mv} for $CO_2(v)$ at 4 eV is almost equal to q_{mr} for $CO_2(r)$ [1]. Then we propose the same experiments at about 3.4 eV for CO_2, because the temperature dependence of DCS seems to be very large there.

Winstead and McKoy [3] calculated the elastic DCS for $N_2O(g)$ at low electron energies and compare the experimental DCS data for $N_2O(r) + N_2O(v)$ mixture at 300 K. We can see large discrepancy between them at lower than about 10 eV. We urge Winstead and Mckoy to calculate the DCS

for N_2O(v) and also N_2O(r) for comparison. We can see the same discrepancy of DCS for CO_2 [4] [5] at low electron energies..

H_2 molecules have the famous long standing controversy in the vibrational excitation cross section [6]. A possible way to solve the problem may be as follows. At first, theoreticians calculate the q_{mg}, q_{mr}, q_{mv}, q_{rg}, q_{rr}, q_{rv}, q_{vg}, q_{vr}, and q_{vv} for H_2(g), H_2(r_1) and H_2(v_1), as a function of electron energies. Using these data, we calculate the electron swarm parameters. From beam experiments, we cannot determine the values of q_{mg}, q_{mr}, q_{rg}, q_{rr} for H_2(g) and H_2(r_1) at the same time. It is clear that the threshold energies of q_r and q_v for H_2(g) and H_2(r_1) are different. Bhattacharyya, et al. [7] have shown that elastic integral cross sections q_{tr} are larger than q_{ts} for 20 to 200 eV for H_2(g) and H_2(r_1). We want the elastic DCS values for H_2(g) and H_2(r_1) at low electron energies lower than 10 eV. Swarm experiments also carried out in the mixtures of H_2(g) and H_2(r_1), except for para-H_2(g) at 78 K (concentration of H_2(g) is 99.3 %). We compare the experimental and calculated swarm parameters at given conditions.

Usually, theoreticians calculate the DCS for M(g), not for M(r_j) and M(v_i), for most molecules. Theoretical studies involving the rotationally and vibrationally excited species are urgently required for many molecules. There is a interesting paper given by A. Jain [8].

If we have the cross section sets for excited inert gas clusters, we can calculate the electron swarm parameters of inert gases at high pressure and low temperature conditions. The concentration of the clusters for atoms and molecules are important at low temperature and high pressure conditions.

Most interesting temperature dependence occur for attachment cross sections q_a [9]-[13]. The values of non-dissociative q_{an} and dissociative q_{ad} are quite different for M(r) and M(v), and M(r) and M(v) have the definit and individual cross sections, independ on the temperature. Apparent temperature dependence of attachment cross section is caused through different concentration of the excited components M(r) and M(v) at different temperatures.

[1] M. Hayashi and Y. Nakamura, 51th GEC, Maui, JTP7.07, 265 (1998) CO_2
[2] W. M. Johnston, N. J. Mason and W. R. Newell, J. Phys. B26, L147 (1993) CO_2
[3] C. Winstead and V. McKoy, Phys. Rev. A57, 3589 (1998) N_2O
[4] H. Tanaka, T. Ishikawa, T. Masai, T. Sagara, L. Boesten, M. Takekawa, Y. Itikawa and M. Kimura, Phys. Rev. A57, 1798 (1998) CO_2
[5] J. C. Gibson, M. A. Green, K. W. Trantham, S. J. Buckman, P. J. O. Teubner and M. J. Brunger, J. Phys. B32, 213 (1999) CO_2
[6] R. W. Crompton and M. A. Morrison, Aust. J. Phys. 46, 203 (1993) H_2
[7] P. K. Bhattacharyya, D. K. Syamal and B. C. Saha, Phys. Rev. A32, 854 (1985)
[8] A. Jain, Z. Phys. D21, 153 (1991) CH_4, SiH_4 H_2
[9] W. M. Hickam and D. Berg, J. Chem. Phys. 29, 517 (1958) SF_6, et al.
[10] M. Allan and S. F. Wong, Phys. Rev. Lett. 41, 1791 (1978) H_2
[11] D. M. Pearl, P. D. Burrow, I. I. Fabrikant and G. A. Gallup, J. Chem. Phys. 102, 2737 (1995) CH_3Cl
[12] W. Wang, L. G. Christophorou and J. Vergrugge, J. Chem. Phys. 109, 8304 (1998) CCl_2F_2
[13] L. G. Christophorou, 20th ICPIG, Pisa 3-13 (1991) review

2004. 1. 28.

Numbers of References

on Electron and Photon Collisions with Atoms and Molecules published in the 20th Century

Atoms (17)

A + e,	A + hν
He 2	2170 *
Ne 10	1140 *
Ar 18	1960 ○
Kr 36	1000
Xe 54	1180 ○
Li 3	450
Na 11	800
K 19	370
Rb 37	220
Cs 55	370
O 8	390
F 9	90
Cl 17	130
Cu 29	180
Cd 48	210
Ba 56	340
Hg 80	600

not final, but finished mostly

include electron swarm papers

include review papers

Molecules (51)

	M + e,		M + hν,	
2	H_2, D_2	2200 ○	5	CH_4	800
	N_2	2240 ○			
	O_2	1700		CF_4	390
	CO	1190		CCl_4	210
	NO	880		CCl_2F_2	250
				CH_3Cl	90
	F_2	190 ○			
	Cl_2	360 ○		SiH_4	230
	Br_2	140 ○		SiF_4	140
	I_2	240 ○		GeH_4	50
	HF	260	6	C_2H_4	370
	HCl	320		CH_3OH	350
	HBr	200			
	HI	130	7	SF_6	920 ○
3	CO_2	1240 ○			
	H_2O	1200 ○	8	C_2H_6	260
				C_2F_6	150
	O_3	480		Si_2H_6	70
	N_2O	450			
	NO_2	350	9	C_3H_6	120
	H_2S	270		C_2H_5OH	60
	SO_2	290			
	CS_2	260			
	OCS	280	11	C_3H_8	190
				C_3F_8	100
4	C_2H_2	390			
			12	C_4F_8	100
	NH_3	700		C_6H_6	240
	NF_3	110		C_6F_6	100
	BF_3	110			
	BCl_3	90	60	C_{60}	300
	PH_3	120			
	H_2CO	180		M_r + M_v	850

* He(Ne) + e only. Not include He(Ne) + hν papers.

○ The bibliography was published already.

Recent Issues of NIFS-DATA Series

NIFS-DATA-57 T. Ono, T. Kawamura, T. Kenmotsu, Y. Yamamura,
Simulation Study on Retention and Reflection from Tungsten Carbide under High Fluence of Helium Ions: Aug. 2000

NIFS-DATA-58 J.G. Wang, M. Kato and T. Kato,
Spectra of Neutral Carbon for Plasma Diagnostics: Oct. 2000

NIFS-DATA-59 Yu. V. Ralchenko, R. K. Janev, T. Kato, D.V. Fursa, I. Bray and F.J. de Heer
Cross Section Database for Collision Processes of Helium Atom with Charged Particles.
I. Electron Impact Processes: Oct. 2000

NIFS-DATA-60 U.I. Safronova, C. Namba, W.R. Johnson, M.S. Safronova,
Relativistic Many-Body Calculations of Energies for n = 3 States in Aluminiumlike Ions: Jan. 2001

NIFS-DATA-61 U.I. Safronova, C. Namba, I. Murakami, W.R. Johnson and M.S. Safronova.
E1,E2, M1, and M2 Transitions in the Neon Isoelectronic Sequence: Jan. 2001

NIFS-DATA-62 R. K. Janev, Yu.V. Ralchenko, T. Kenmotsu,
Unified Analytic Formula for Physical Sputtering Yield at Normal Ion Incidence: Apr. 2001

NIFS-DATA-63 Y. Itikawa,
Bibliography on Electron Collisions with Molecules: Rotational and Vibrational Excitations, 1980-2000 Apr. 2001

NIFS-DATA-64 R.K. Janev, J.G. Wang and T.Kato,
Cross Sections and Rate Coefficients for Charge Exchange Reactions of Protons with Hydrocarbon Molecules: May 2001

NIFS-DATA-65 T. Kenmotsu, Y. Yamamura, T. Ono and T. Kawamura,
A New Formula of the Energy Spectrum of Sputtered Atoms from a Target Material Bombarded with Light Ions at Normal Incidence: May 2001

NIFS-DATA-66 I. Murakami, U. I. Safronova and T. Kato,
Dielectronic Recombination Rate Coefficients to Excited States of Be-like Oxygen: May 2001

NIFS-DATA-67 N. Matsunami, E. Hatanaka, J. Kondoh, H. Hosaka, K. Tsumori, H. Sakaue and H. Tawara,
Secondary Charged Particle Emission from Proton Conductive Oxides by Ion Impact: July 2001

NIFS-DATA-68 R.K. Janev, J.G. Wang, I. Murakami and T. Kato,
Cross Sections and Rate Coefficients for Electron-Impact Ionization of Hydrocarbon Molecules: Oct. 2001

NIFS-DATA-69 S. Zou, T. Kato, I. Murakami,
Charge Exchange Recombination Spectroscopy of Li III Ions for Fusion Plasma Diagnostics: Oct. 2001

NIFS-DATA-70 I. Murakami, T. Kato, A. Igarashi, M. Imai, Y. Itikawa, D. Kato, M. Kimura, T. Kusakabe, K. Moribayashi, T. Morishita, K. Motohashi, L. Pichl
AMDIS and CHART update (I): Oct. 2002

NIFS-DATA-71 S. Zou, L. Pichl, M. Kimura and T. Kato
Total, Partial and Differential Ionization Cross Sections in Proton-hydrogen Collisions at Low Energy: Jan. 2003

NIFS-DATA-72 M. Hayashi
Bibliography of Electron and Photon Cross Sections with Atoms and Molecules Published in the 20th Century – Argon –: Jan. 2003

NIFS-DATA-73 J. Horacek, K. Houfek, M. Cizek, I. Murakami and T. Kato
Rate Coefficients for Low-Energy Electron Dissociative Attachment to Molecular Hydrogen: Feb. 2003

NIFS-DATA-74 M. Hayashi
Bibliography of Electron and Photon Cross Sections with Atoms and Molecules Published in the 20th Century – Carbon Dioxide –: Apr. 2003

NIFS-DATA-75 X. Ma, H.P. Liu, Z.H. Yang, Y.D. Wang, X.M. Chen, Z.Y. Liu, I. Murakami and C. Namba
Cross-section Data Measured at Low Impact Energies for Ar^{q+} Ions on Argon and Neon Targets. Apr. 2003

NIFS-DATA-76 M. Hayashi
Bibliography of Electron and Photon Cross Sections with Atoms and Molecules Published in the 20th Century – Sulphur Hexafluoride –; May 2003

NIFS-DATA-77 M. Hayashi
Bibliography of Electron and Photon Cross Sections with Atoms and Molecules Published in the 20th Century – Nitrogen Molecule – ; June 2003

NIFS-DATA-78 A. Iwamae, T. Fujimoto, H. Zhang, D. P. Kilcrease, G. Csanak and K.A. Berrington
Population Alignment Collisional Radiative Model for Helium-like Carbon:Polarization of Emission Lines and Anisotropy of the Electron Velocity Distribution Function in Plasmas: Aug. 2003

NIFS-DATA-79 M. Hayashi
Bibliography of Electron and Photon Cross Sections with Atoms and Molecules Published in the 20th Century – Xenon – ; Sep. 2003

NIFS-DATA-80 M. Hayashi
Bibliography of Electron and Photon Cross Sections with Atoms and Molecules Published in the 20th Century – Halogen Molecules – ; Dec. 2003

NIFS-DATA-81 M. Hayashi
Bibliography of Electron and Photon Cross Sections with Atoms and Molecules Published in the 20th Century – Water vapour – : Dec. 2003

NIFS-DATA-82 Bibliography of Electron and Photon Cross Sections with Atoms and Molecules Published in the 20th Century – Hydrogen molecules – : Feb. 2004