

NATIONAL INSTITUTE FOR FUSION SCIENCE

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

M. Hayashi

(Received - Feb. 16, 2004)

NIFS-DATA-83

Mar. 2004

This report was prepared as a preprint of work performed as a collaboration research of the National Institute for Fusion Science (NIFS) of Japan. The views presented here are solely those of the authors. This document is intended for information only and may be published in a journal after some rearrangement of its contents in the future.

Inquiries about copyright should be addressed to the Research Information Center, National Institute for Fusion Science, Oroshi-cho, Toki-shi, Gifu-ken 509-5292 Japan.

E-mail: bunken@nifs.ac.jp

<Notice about photocopying>

In order to photocopy any work from this publication, you or your organization must obtain permission from the following organization which has been delegated for copyright for clearance by the copyright owner of this publication.

Except in the USA

Japan Academic Association for Copyright Clearance (JAACC)

41-6 Akasaka 9-chome, Minato-ku, Tokyo 107-0052 Japan

TEL:81-3-3475-5618 FAX:81-3-3475-5619 E-mail:naka-atsu@muji.biglobe.ne.jp

In the USA

Copyright Clearance Center, Inc.

222 Rosewood Drive, Danvers, MA 01923 USA

Phone: (978) 750-8400 FAX: (978) 750-4744

Bibliography of Electron and Photon Cross Sections
with Atoms and Molecules

Published in the 20th Century

—— Hydrogen Halide 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 halide molecules (HF, HCl, HBr, HI). About 330 (HF), 420 (HCl) 220 (HBr) and 150 (HI) papers were compiled respectively. Comprehensive author indexes for each molecule are included. The bibliography covers the period 1903 through 2000 for HF-HI. Finally, author's comments for HBr electron collision cross sections are given.

Keywords : HF, HCl, HBr, HI 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 Institute, 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 halide molecules HF, HCl, HBr, and HI. The review papers on this subject are also included. Some hydrogen halide molecule cluster papers are included. Some conference reports, company or agency reports and PhD thesis are included. Hydrogen halide molecules 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) electron swarm parameters (drift velocity, diffusion coefficient)
- 10) 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. Oldest paper in this list is given by J.S.Townsed (1903) for HCl. Oldest papers for other hydrogen halide molecules are shown in each molecules. So for this bibliography, published papers from 1903 to 1999 are compiled by alphabetical order of the first author's surname of the paper. And the references published in 2000 and plus some old papers found very recently after compilation are added as "Addenda of References for each Hydrogen Halide Molecule". In total, about 330 for HF, 420 for HCl, 220 for HBr and 150 for HI papers are compiled in the four hydrogen halide molecule 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	: <u>E</u> lastic collision	QT	: grand <u>T</u> otal cross section
R	: <u>R</u> otational excitation		(sum of elastic and inelastic
V	: <u>V</u> ibrational excitation		electron cross sections).
EX	: electronic <u>E</u> Xcitation	<u>Q</u>	came from Querschnitt
D	: <u>D</u> issociation		
I	: <u>I</u> onization		
A	: <u>A</u> ttachment		
ME	: <u>M</u> Etastable molecules		
S	: electron <u>S</u> warm		
O	: <u>O</u> thers (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.

Bibliographies for HF, HCl, HBr, and HI are divided into two parts :

HF

- Part 1. 1924 - 1999 p. 1 - 22
Part 2. Addenda of References published in 2000, plus some
old papers p. 23 - 28

HCl

- Part 1. 1903 - 1999 p. 1 - 27
Part 2. Addenda of References published in 2000, plus some
old papers p. 28 - 36

HBr

- Part 1. 1913 - 1999 p. 1 - 17
Part 2. Addenda of References published in 2000, plus some
old papers p. 18 - 23

HI

- Part 1. 1916 - 1999 p. 1 - 11
Part 2. Addenda of References published in 2000, plus some
old papers p. 12 - 14

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.

HF	p. 1 - 5
HCl	p. 1 - 7
HBr	p. 1 - 4
HI	p. 1 - 4

Each author index of four hydrogen halide molecules follows each bibliography.

Some Comments on Electron Collision Cross Sections for HBr

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.

Hydrogen Fluoride HF

References for HF, DF (1900 - 1999)

(Hydrogen fluoride)

[Hydrogen halide, Halogen acid]

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 information,
	E : Exp., T : Theory.

The oldest paper in this list is given by J. Simons (1924).

- A R. Abouaf and D. Teillet-Billy : 10th ICPEAC, Paris 2, 792-793 (1977) .
Electron attachment to polar molecules : Structure in the dissociative attachment cross sections for HCl, HBr, HF. [E, HF, HCl, HBr]
- A R. Abouaf and D. Teillet-Billy : Chem. Phys. Lett. 73, 106-109 (1980a) K
Fine structure in the dissociative attachment cross sections for HBr and HF. [E, HF, HBr; 2 - 3.8 eV for HF]
- A R. Abouaf and D. Teillet-Billy : J. Phys. B13, L275-L279 (1980b)
Predissociation of Feshbach resonances in hydrogen fluoride.
[E, HF; 10 - 15 eV, Feshbach resonance at 12.8 - 14 eV]
- A R. Abouaf, D. Teillet-Billy, R. Azria and P. Girard : J. Phys. B18, 3017-3024 (1985)
Resonances in HF : H⁻ formation around 10 eV. [E, HF]
- A N. G. Adams, D. Smith, A. A. Viggiano, J. F. Paulson and M. J. Henchman : J. Chem. Phys. 84, 6728-6731 (1986) K
Dissociative attachment reactions of electrons with strong acid molecules.
[E, HF - HI, HNO₃, H₂SO₄, etc.]
- O J. R. Airey and I. W. M. Smith : J. Chem. Phys. 57, 1669-1676 (1972)
Quenching of infrared chemiluminescence : Rates of energy transfer from HF ($v \leq 5$) to CO₂ and HF, and from DF ($v \leq 3$) to CO₂ and HF.
[E, HF; H + F₂ → HF + F, etc.]
- E Y. Alhassid and B. Shao : Phys. Rev. A46, 3991-4002 (1992) .
- R Algebraic eikonal approach to electron-molecule scattering. II.
- V Rotational-vibrational excitations.
[T, HF, HCl, LiF; 0.63 - 10 eV for HF]

- A M. Allan and S. F. Wong : J. Chem. Phys. 74, 1687-1691 (1981) OK
Dissociative attachment from vibrationally and rotationally excited
HCl and HF. [E, HF, HCl; 300 - 1180 K]
- O I. V. Andrianov and G. K. Paramonov : Phys. Rev. A59, 2134-2138 (1999)
Selective excitation of the vibrational-rotational states and dissociation
of diatomic molecules by picosecond infrared laser pulses : Modeling for
HF in the ground electronic state. [T, $h\nu$, HF]
- R. Azria : in Physics of Electron and Atomic Collisions, 12th ICPEAC,
Gatlinburg 557-567 (1982) -
Electron molecule collision at low energy resonance and threshold
phenomena. [review, HF, HCl, HBr, HI]
- O R. F. W. Bader and G. A. Jones : Can. J. Chem. 41, 2251-2264 (1963)
The electron density distributions in hydride molecule. III. Hydrogen
fluoride. [T, HF]
- O R. F. W. Bader and W. H. Henneker : J. Am. Chem. Soc. 88, 280-285 (1966)
The nature of the chemical bond in lithium hydride and hydrogen fluoride.
[T, HF, LiH; Hartree-Fock charge distribution]
- O R. A. Ballinger : Mol. Phys. 2, 139-157 (1959)
The electronic structure of hydrogen fluoride. [T, HF]
- O M. S. Banna, B. E. Mills, D. W. Davis and D. A. Shirley : J. Chem. Phys. 61, 4780-4786
(1974)
X-ray photoemission molecular orbitals of hydrogen fluoride and the
fluorinated methanes. [E, $h\nu$, HF, CH₄, CH₃F, CH₂F₂, CH₃F, CF₄]
- O M. S. Banna and D. A. Shirley : J. Chem. Phys. 63, 4759-4766 (1975a)
Molecular photoelectron spectroscopy at 132.3 eV. The second-row hydrides.
[E, $h\nu$, HF, H₂O, NH₃, CH₄, Ne]
- O M. S. Banna and D. A. Shirley : Chem. Phys. Lett. 33, 441-446 (1975b)
Molecular photoelectron spectroscopy at 132.3 eV. Methane, the
fluorinated methanes and hydrogen fluoride.
[T, $h\nu$, HF, CH₄, CH₃F, CH₂F₂, CHF₃, CF₄]
- O I. Baraldi and F. Momicchioli : J. Chem. Soc. Faraday Trans. II, 73, 156-160 (1977)
Variational calculations of vibrational-rotational properties of HF in
the X¹Σ⁺ and B¹Σ⁺ electronic states. [T, HF]
- O R. F. Barrow and A. D. Caunt : Proc. Phys. Soc. London A67, 68-73 (1954)
The ultra-violet spectrum of a diatomic hydride excited in hydrogen-
potassium fluoride hollow-cathode discharges.
[E, H₂ + KF; HF as possible emitter]
- I F. E. Bartoszek, D. M. Manos and J. C. Polanyi : J. Chem. Phys. 67, 3395-3396 (1977) -
Direct observation of the effect of enhanced vibrational excitation on
fragmentation in a mass spectrometer. [E, HF]

- 0 N. G. Basov, V. T. Galochkin, V. I. Igoshin, L. V. Kulakov, E. P. Martin, A. I. Nikitin and A. N. Oravesky : Appl. Opt. 10, 1814-1820 (1971)
Spectra of stimulated emission in the hydrogen-fluorine reaction process and energy transfer from DF to CO₂. [E, HF]
- 0 A. D. Becke : Int. J. Quant. Chem. : Quant. Chem. Symp. 28, 625-632 (1994)
Thermochemical tests of a kinetic-energy dependent exchange-correlation approximation. [T, HF, Cl₂, SiH₄, etc.]
- EX K. H. Becker : Comments At. Mol. Phys. 30, 261-284 (1994) .
I Electron-impact ionization and dissociative excitation of halogen-containing molecules.
[comments. HF, SF₆, CF₂Cl₂, CF₄, HCl, HBr, CF₃H, CF₃Cl, etc.]
- 0 M. J. M. Beerlage and D. Feil : J. Elect. Spectrosc. Relat. Phenom. 12, 161-167 (1977)
A modified plane wave model for calculating UV photoionization cross-sections. [T, hν, HF, N₂, CO, H₂O, (CN)₂, etc.]
- 0 C. F. Bender and E. R. Davidson : J. Chem. Phys. 47, 360-366 (1967)
Correlation energy and molecular properties of hydrogen fluoride.
[T, HF]
- 0 C. F. Bender and E. R. Davidson : J. Chem. Phys. 49, 4989-4995 (1968)
Theoretical study of several electronic states of the hydrogen fluoride molecule. [T, HF]
- 0 W. S. Benedict, B. W. Bullock, S. Silverman and A. V. Grosse : J. Opt. Soc. Am. 43, 1106-1113 (1953)
Infrared emission of the hydrogen-fluorine (H₂ - F₂) flame.
[E, hν, HF]
- 0 J. Berkowitz, W. A. Chupka, P. M. Guyon, J. H. Holloway and R. Spohr : J. Chem. Phys. 54, 5165-5180 (1971a)
Photoionization mass spectrometric study of F₂, HF, and DF.
[E, hν, HF, DF, F₂; V₁ of HF 16.00₇ eV and DF 16.03₀ eV]
- 0 J. Berkowitz : Chem. Phys. Lett. 11, 21-26 (1971b), Errata 14, 292-292 (1972)
Experimental potential energy curves for X²Π and ²Σ⁺ states of HF⁺.
[E, hν, HF, DF]
- 0 M. Bettendorff, R. J. Buenker, S. D. Peyerimhoff and J. Romelt : Z. Phys. A304, 125-135 (1982)
Ab initio CI calculation of the effects of Rydberg-valence mixing in the electronic spectrum of the HF molecule. [T, HF]
- 0 D. M. Bishop, J. R. Hoyland and R. G. Parr : Mol. Phys. 6, 467-476 (1963)
Simple one-center calculation of breathing force constants and equilibrium internuclear distance for NH₃, H₂O, and HF. [T, HF, NH₃, H₂O]

- O D. M. Bishop and L. M. Cheung : J. Phys. Chem. Ref. Data 11, 119-133 (1982) -
Vibrational contribution to molecular dipole polarizabilities.
[review, HF, HCl, DCl, HI, CO, NO, CH₄, SF₆, C₆H₆, etc. many molecules]
- O J. F. Borna : Report K-1147, Carbon Chemicals Co. (1954)
The heat of dissociation of N₂ and the appearance potentials of some ions
formed in F₂ and HF by electron impact. [, HF, F₂, N₂; from F. I. Vilesov]
- S. W. Braiwood, M. J. Brunger, D. A. Konovalov and E. Weigold : J. Phys. B26, 1655-1668
(1993) -
Electron momentum spectroscopy of the isoelectronic species hydrogen
fluoride and neon. [E, HF, Ne; 1500 eV]
- C. E. Brion and A. P. Hitchcock : J. Phys. B13, L677-L680 (1980)
Electron scattering experiments with hydrogen fluoride. [E, HF]
- EX C. E. Brion : in Physics of Electronic and Atomic Collisions, 12th ICPEAC,
Gatlinberg, North-Holland 579-593 (1982) -
Electron scattering at high and intermediate energies. - Quantitative
measurements in molecular spectroscopy.
[E, HF, F₂, CO₂, CS₂, COS, N₂O, etc.]
- O C. E. Brion and F. Carnovale : J. Phys. B16, 499-504 (1983)
Mass spectrometric investigation of the anomalous behaviour of
hydrogen fluoride in low-pressure scattering experiments.
[E, HF; 20 eV]
- O C. E. Brion and J. P. Thomson : J. Elect. Spectrosc. Relat. Phenom. 33, 287-300
(1984a) -
Compilation of valence shell molecular photoelectron branching ratios as
a function of energy. [compilation, HF, HCl, HBr, N₂, O₂, CO, NO, H₂O,
NH₃, CH₄, CO₂, COS, CS₂, N₂O]
- O C. E. Brion and J. P. Thomson : J. Elect. Spectrosc. Relat. Phenom. 33, 301-331
(1984b) -
Compilation of dipole oscillator strengths (cross sections) for the
photoabsorption, photoionization and ionic fragmentation of molecules.
[compilation, h ν , HF, NO, H₂, CO, N₂, O₂, HCl, HBr, H₂O, NH₃, CH₄, N₂O,
CO₂, COS, CS₂, SF₆]
- O C. E. Brion : Comments At. Mol. Phys. 16, 249-270 (1985) -
Absolute oscillator strengths for photoabsorption and photoionization
processes by fast electron impact.
[comments, HF, HBr, N₂, NO, CO₂, SO₂]
- QT E. Bruche : Ann. Phys. 1, 93-134 (1929)
Wirkungsquerschnitt und Molekelbau in der Pseudoedelgasreihe. Ne - HF -
H₂O - NH₃ - CH₄.
[E, no exp. data for HF; data are mainly for H₂O and NH₃]

- O C. R. Brundle : Chem. Phys. Lett. 7, 317-322 (1970)
Ionization and dissociation energies of HF and DF and their bearing on $D_0^0(F_2)$. [E, $h\nu$, HF, DF]
- E P. G. Burke, C. J. Gillan and L. A. Morgan : AIP Conf. Proc. 204, New Haven 153-168 (1990)
Threshold peaks in electron scattering by HF and HCl. [T, HF, HCl]
- O I. Cacelli, V. Carravetta and R. Moccia : J. Phys. B18, 1375-1394 (1985)
Transition probability and photoionisation cross section calculations for CH_4 and HF by one-centre expansion and Stieltjes technique.
[T, $h\nu$, HF, CH_4]
- O I. Cacelli : Chem. Phys. Lett. 174, 37-45 (1990)
Basis set and gauge dependence of ab initio radiative lifetimes for the $A^2\Sigma^+$ state of the HF^+ molecule. [T, HF]
- O I. Cacelli : Chem. Phys. Lett. 249, 149-154 (1996)
Calculation of the photoabsorption of HF in the vacuum UV.
[T, $h\nu$, HF; 8 - 13 eV]
- O P. W. Cade and W. M. Huo : J. Chem. Phys. 45, 1063-1065 (1966)
Electric dipole moments for first- and second-row diatomic hydride molecules, AH. [T, HF, LiH, BeH, BH, CH, NH, OH]
- O P. W. Cade and W. M. Huo : J. Chem. Phys. 47, 614-648 (1967)
Electric structure of diatomic molecules. VI. A. Hartree-Fock wavefunctions and energy quantities for the ground states of the first-row hydrides, AH. [T, HF, LiH, BeH, BH, CH, NH, OH]
- D M. Capitelli and M. Dilonardo : Z. Naturforsch. 33a, 1085-1089 (1978)
Nonequilibrium dissociation of HF in electrical discharges : The role of vibrational excitation. [T, HF]
- D M. Capitelli and M. Molinari : Top. Current Chem. 90, 69-109 (1980a)
Kinetics of dissociation processes in plasmas in the low and intermediate pressure range. [review, T, HF, H_2 , N_2 , O_2 , CO, CO_2 , NH_3 , C_mH_n]
- 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, T, HF, H_2 , N_2 , O_2 , CO, CO_2 , NH_3 , CH_4 , C_2H_4 , C_2H_6 , $n-C_4H_{10}$]
- E M. Capitelli, R. Celiberto and M. Cacciatore : in Advances in Atomic, Molecular V and Optical Physics, Vol. 33, Academic 321-372 (1994)
EX Needs for cross sections in plasma chemistry.
I [review, HF, HCl, F_2 , Cl_2 , H_2 , N_2 , O_2 , CO, CO_2 , etc.]

- O F. Carnovale, R. Tseng and C. E. Brion : J. Phys. B14, 4771-4785 (1981) K
Absolute oscillator strengths for the photoabsorption and partial
photoionisation of hydrogen fluoride. [E, $h\nu$, HF]
- O F. Carnovale and C. E. Brion : Chem. Phys. 74, 253-259 (1983) K
Absolute dipole oscillator strengths for molecular and dissociative
photoionization of hydrogen fluoride. [E, $h\nu$, HF; 15 - 60 eV]
- O E. S. Chang and U. Fano : Phys. Rev. A6, 173-185 (1972)
Theory of electron-molecules collisions by frame transformations.
[general theory, $h\nu$, H₂]
- V E. S. Chang : J. Phys. B10, L395-L398 (1977) .
Angular distributions of resonantly scattered electrons in vibrational
excitation of HF. [T, HF, HCl; 2 eV]
- O J. Chevaleyre et J. Janin : J. Quant. Spectrosc. Radiat. Transf. 11, 1785-1801 (1971)
Influence de l'autoabsorption et du gradient thermique sur la
determination spectroscopique des temperatures locales d'une flamme
fluor-hydrogene. [T and E, $h\nu$, HF]
- O J. Chevaleyre et J. Janin : J. Quant. Spectrosc. Radiat. Transf. 13, 377-381 (1973)
Determination de la temperature d'une flamme de diffusion methane-fluor
au moyen du spectre de vibration-rotation de la molecule HF.
[E, $h\nu$, HF]
- O W. A. Chupka and J. Berkowitz : J. Chem. Phys. 54, 5126-5132 (1971)
Kinetic energy of ions produced by photoionization of HF and F₂.
[E, $h\nu$, HF, F₂; D₀(HF) = 5.91 or 5.87 eV]
- O E. Clementi : J. Chem. Phys. 36, 33-44 (1962)
SCF-MO wave functions for the hydrogen fluoride molecule. [T, HF]
- I J. E. Collin : Can. J. Chem. 40, 2172-2175 (1962)
The Franck-Condon principle and the ionization of molecules.
[compilation, HF - HI, F₂ - I₂, H₂, N₂, O₂, CO, NO, CO₂]
- O J. A. R. Coope, D. C. Frost, C. A. McDowell, J. W. C. Johns and R. F. Barrow : Nature
179, 1186-1186 (1957)
Ionization potentials of hydrogen fluoride and the ground-state of the HF⁺
ion. [E, HF; V_i = 15.77 eV]
- EX S. Cvejanovic and J. Jureta : 14th ICPEAC, Palo Alto 257-257 (1985)
Low energy electron-impact excitation of HF. [E, HF; 8.4 - 16.5 eV]
- V S. Cvejanovic : in AIP Conf. Proc. 295, 18th ICPEAC, Aarhus 390-401 (1993)
Threshold and resonant feature in the vibrational excitation functions of
hydrogen halides. [E, HF, HCl, HBr]
- O T. P. Das and M. Karplus : J. Chem. Phys. 36, 2275-2281 (1962)
Magnetic properties of hydrogen fluoride. I. Rotational moment. [T, HF]

- O T. P. Debies and J. W. Rabalais : J. Am. Chem. Soc. 97, 487-492 (1975)
Calculated photoionization cross-sections and angular distributions for
the isoelectronic series Ne, HF, H₂O, NH₃, and CH₄. [T, h ν , HF, Ne, etc.]
- O F. H. de Leeuw and A. Dymanus : J. Mol. Spectrosc. 48, 427-445 (1973)
Magnetic properties and molecular quadrupole moment of HF and HCl by
molecular-beam electric-resonance spectroscopy. [E, HF, HCl]
- I H. Deutsch, K. Becker and T. D. Mark : Int. J. Mass Spectrom. Ion Process. 167/168,
503-517 (1997) K
A modified additivity rule for the calculations of electron impact
ionization cross-section of molecules AB_n.
[T, HF, HCl, HBr, SF₆, CF₄, CCl₄, etc.]
- O T. F. Deutsch : Appl. Phys. Lett. 10, 234-236 (1967)
Molecular laser action in hydrogen and deuterium halides.
[E, HF - HBr, DF - DBr]
- O V. H. Dibeler, J. A. Walker and K. K. McCulloh : J. Chem. Phys. 51, 4230-4235 (1969)
Photoionization study of the dissociation energy of fluorine and the heat
of formation of hydrogen fluoride. [E, h ν , HF, F₂; D(HF) 5.74 eV]
- A J. D. Dillard : Chem. Rev. 73, 589-643 (1973) .
Negative ion mass spectrometry.
[review, HF, HCl, H₂, O₂, F₂, Cl₂, CO, NO, H₂O, N₂O, NO₂, CO₂, etc.]
- O G. Di Lonardo and A. E. Douglas : J. Chem. Phys. 56, 5185-5186 (1972)
Electronic spectra of HF and F₂. [E, h ν , HF, F₂]
- O G. Di Lonardo and A. E. Douglas : Can. J. Phys. 51, 434-445 (1973)
The electronic spectrum of HF. I. The B¹ Σ^+ - X¹ Σ^+ band system.
[E, h ν , HF; 1480 - 2670 Å]
- O A. E. Douglas and F. R. Greening : Can. J. Phys. 57, 1650-1661 (1979) .
The electronic spectra of HCl and HF. [E, h ν , HF, HCl]
- O A. B. F. Duncan and J. A. Pople : Trans. Faraday Soc. 49, 217-224 (1953)
The structure of some simple molecules with long pair electrons.
[T, HF, H₂O, NH₃]
- O A. B. F. Duncan : J. Am. Chem. Soc. 77, 2107-2110 (1955)
The electronic structure of hydrogen fluoride. [T, HF]
- O T. H. Dunning, Jr. : J. Chem. Phys. 65, 3854-3862 (1976)
The low-lying states of hydrogen fluoride : Potential energy curves for
the X¹ Σ^+ , ³ Σ^+ , ³ Π , and ¹ Π states. [T, HF]
- R H. Ehrhardt : in AIP Conf. Proc. 204, New Haven 145-152 (1990a)
- V Nuclear-excited Feshbach resonances in the electron scattering from HCl
and HF. [E, HF, HCl]

- R H. Ehrhardt : in Molecular Processes in Space, Plenum Press 41-64 (1990b)
- V Experiments on low-energy electron-molecule collisions.
[review, HF, HCl, H₂, N₂, CO, H₂O, CO₂, CH₄]
- EX H. Ehrhardt and L. Frost : Comments At. Mol. Phys. 29, 123-144 (1993) ·
Near threshold electron impact electronic excitation of molecules.
[comments, HF, HCl, N₂, Cl₂]
- H. Estrada and W. Domcke : J. Phys. B17, 279-297 (1984)
Analytic properties of the S matrix for a simple model of fixed-nuclei electron-polar-molecule scattering. [T, HF, HCl, HBr]
- V I. I. Fabrikant : J. Phys. B11, 3621-3633 (1978)
The influence of long-range interaction on the vibrational excitation of polar molecules by electron scattering. [T, HF, HCl]
- E I. I. Fabrikant : J. Phys. B12, 3599-3610 (1979)
The influence of αr^{-s} potential on electron scattering by polar molecules.
[T, HF, LiF, CsF; 0 - 2 eV]
- E I. I. Fabrikant : J. Phys. B16, 1253-1267 (1983a)
Generalized quantum defect theory for electron scattering by polar molecules. [T, HF, H₂O, LiF, BeO, HCN]
- E I. I. Fabrikant : J. Phys. B16, 1269-1282 (1983b) ·
Frame transformation effective-range theory : Application to interaction of polar molecules with electrons. [T, HF, LiF,
- V I. I. Fabrikant, S. A. Kalin and A. K. Kazansky : J. Phys. B25, 2885-2898 (1992) ·
- A Resonant R-matrix theory of inelastic processes in collisions of electrons with HF molecules. [T, HF]
- O K. Faegri, Jr. and H. P. Kelly : Phys. Rev. A23, 52-58 (1981)
Calculated cross section for photoionization from the 1π and 3σ orbitals of hydrogen fluoride. [T, $h\nu$, HF]
- O Fayyazuddin and M. Rafi : Phys. Lett. A205, 383-387 (1995) ·
An empirical potential function of diatomic molecules.
[T, HF, H₂, I₂, N₂, O₂, CO, NO, OH]
- O D. Feller, C. Boyle and E. R. Davidson : J. Chem. Phys. 86, 3424-3440 (1987)
One-electron properties of several small molecules using near Hartree-Fock limit basis sets. [T, HF, HCl, N₂, CO, H₂O, H₂S, NH₃, PH₃]
- O S. N. Foner and R. L. Hudson : J. Chem. Phys. 68, 2987-2988 (1978)
Mass spectrometry of excited state molecules : Observation of highly vibrationally excited HF by ionization potential measurement. [E, HF]

- O S. Fraga and B. J. Ransil : J. Chem. Phys. 34, 727-742 (1961a)
Studies in molecular structure. III. Population analysis for selected first-row diatomic molecules. [T. HF, F₂, N₂, CO, BF, LiF, etc.]
- O S. Fraga and B. J. Ransil : J. Chem. Phys. 35, 669-678 (1961b)
Studies in molecular structure. V. Computed spectroscopic constants for selected diatomic molecules of the first row. [T. HF, F₂, LiH, H₂, N₂]
- O S. Fraga and B. J. Ransil : J. Chem. Phys. 36, 1127-1142 (1962)
Studies in molecular structure. VII. Limited configuration interaction for selected first-row diatomics. [T. HF, F₂, N₂, CO, BF, etc.]
- A D. C. Frost and C. A. McDowell : J. Chem. Phys. 29, 503-506 (1958a)
Electron capture processes in the hydrogen halides.
[E. HF, HCl, HBr, HI, SF₆, O₂]
- I D. C. Frost and C. A. McDowell : Can. J. Chem. 36, 39-47 (1958b)
Excited states of the molecular ions of hydrogen fluoride, hydrogen iodide, water, hydrogen sulphide, and ammonia.
[E. HF, HI, H₂O, H₂S, NH₃; 15.5 - 20 eV for HF, V₁ = 15.77 eV]
- O D. C. Frost, C. A. McDowell and D. A. Vroom : J. Chem. Phys. 46, 4255-4259 (1967)
Photoelectron spectra of the halogens and the hydrogen halides.
[E. h ν , HF - HI, F₂ - I₂]
- 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 ν , HF - HI, Cl₂, H₂, N₂, O₂, CO, NO, CO₂, N₂O, H₂O, NH₃, CH₄, H₂S, CS₂, OCS, SO₂, SF₆, CCl₄]
- A G. A. Gallup, Y. Xu and I. I. Fabrikant : Phys. Rev. A57, 2596-2607 (1998)
Nonlocal theory of dissociative electron attachment to H₂ and HF molecules.
[T. HF, H₂; Int. Sympo. of Engelberg P9/1-2 (1997)]
- O R. Gaspar and I. Tamassy-Lentei : Acta Phys. Acad. Sci. Hung. 9, 105-1 (1958)
The united atom model of the HF molecule. [T. HF]
- O J. P. Gauyacq : J. Phys. B15, 2721-2739 (1982)
Associative detachment in collisions between negative halogen ions and hydrogen atoms. [T. HF, HCl; F⁻ + H, Cl⁻ + H]
- V J. P. Gauyacq : J. Phys. B16, 4049-4058 (1983) .
- A Associative detachment and vibrational excitation in the e⁻ - HF system.
[T. HF; 0.5 - 1.2 eV]
- V J. P. Gauyacq : in AIP Conf. Proc. No. 204, New Haven 181-190 (1990)
Dissociation and association near threshold peaks. [T. HF - HI]

- V P. L. Gertischke and W. Domcke : Z. Phys. D16, 189-200 (1990)
Threshold peaks in the vibrational excitation of molecules by electron impact : A time-dependent view. [T, model]
- O S. Gewurtz, H. Lew and P. Flainek : Can. J. Phys. 53, 1097-1108 (1975) ·
The electronic spectrum of HF⁺. [E, hν, HF]
- R F. A. Gianturco and D. G. Thompson : J. Phys. B10, L21-L26 (1977a)
Theoretical evidence for short-lived resonances in electron scattering by HCl and HF molecules. [T, HF, HCl]
- V F. A. Gianturco and N. K. Rahman : Chem. Phys. Lett. 48, 380-384 (1977b)
Threshold behaviour of polar molecule vibrational excitations by electron impact. [T, HF, HCl, HBr, HI]
- R F. A. Gianturco and N. K. Rahman : 10th ICPEAC, Paris 798-798 (1977c) :
Close coupling calculations for HF and HCl molecules. Rotational excitation in collisions with electrons. [T, HF, HCl]
- R F. A. Gianturco and N. K. Rahman : J. Phys. B10, L219-L223 (1977d)
e⁻ - HF scattering : Behaviour of rotational excitation at the threshold for outer-channel opening. [T, HF]
- R F. A. Gianturco and N. K. Rahman : J. Phys. B11, 727-740 (1978)
Rotational excitations of HF and HCl molecules by collision with electrons. [T, HF, HCl]
- O F. A. Gianturco and U. T. Lamanna : J. Phys. B12, 2789-2795 (1979) ·
Internuclear dependence of static polarisability in hydrogen halides. [T, HF, HCl, HBr]
- O F. A. Gianturco, A. Palma and L. Pantano : Nuovo Cimento 7D, 339-361 (1986) ·
Electron-molecule scattering processes. I. — Bound-continuum interactions in polar diatomic targets. [T, HF, HCl, LiH; mostly for HF]
- O L. A. Gribov and V. N. Smirnov : Sov. Phys. Usp. 4, 919-946 (1962)
Intensities in the infra-red absorption spectra of polyatomic molecules. [compilation, HF, etc., many molecules]
- O P. M. Guyon, R. Spohr, W. A. Chupka and J. Berkowitz : J. Chem. Phys. 65, 1650-1658 (1976)
Threshold photoelectron spectra of HF, DF, and F₂. [E, hν, HF, DF, F₂]
- O H. Hamano : Bull. Chem. Soc. Jpn. 30, 741-744 (1957)
The electronic structure of the hydrogen fluoride ions. [T, HF]
- O H. Hamano, H. Kim and H. F. Hamerka : Physica 29, 111-116 (1963)
Calculation of magnetic susceptibilities of diatomic molecules. II. Application to HF molecule. [T, HF]

- O F. E. Harris and H. H. Michels : Int. J. Quant. Chem. : Quant. Chem. Symp. 1, 329-338 (1967)
Open-shell valence configuration-interaction studies of diatomic and polyatomic molecules. [T, HF, F₂, BeH₂]
- O M. C. Harrison : J. Chem. Phys. 41, 499-502 (1964)
Gaussian wavefunctions for the 10-electron systems. II. Hydrogen fluoride. [T, HF]
- 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 ν , HF, H₂, D₂, H₂O, D₂O, O₂, N₂O, etc.]
- O M. Hayashi and Y. Nakamura : EMS-99, Tokyo 175-176 (1999)
May we measure the exact values of electron collision cross sections for molecules by beam and swarm experiments ?
[general comment, HF is the mixture of HF(r) and HF(v) molecules]
- O G. Herzberg : Molecular Spectra and Molecular Structure, I, Spectra of Diatomic Molecules, 2nd Ed, D. Van Nostrand CO. (1950)
- E S. B. Hill, M. T. Frey, F. B. Dunning and I. I. Fabrikant : Phys. Rev. A53, 3348-3357
R (1996) -K
Electron-hydrogen fluoride scattering at ultralow electron energies : Possible role of dipole-supported states. [E and T, HF; 0 - 3 meV]
- EX A. P. Hitchcock and C. E. Brion : Chem. Phys. 61, 281-291 (1981a)
The electronic spectrum of hydrogen fluoride (7 - 46 eV).
[T, HF; 2.5 keV]
- EX A. P. Hitchcock and C. E. Brion : J. Phys. B14, 4399-4413 (1981b)
K-shell excitation of HF and F₂ studied by electron energy-loss spectroscopy. [E, HF, F₂; 2.5 keV]
- O A. P. Hitchcock, G. R. J. Williams, C. E. Brion and P. W. Langhoff : Chem. Phys. 88, 65-80 (1984) -
Experimental and theoretical studies on the valence-shell dipole excitation spectrum and absolute photoabsorption cross section of hydrogen fluoride.
[E and T, h ν , HF]
- O J. R. Hoyland : J. Chem. Phys. 47, 3556-3560 (1967)
Improved single-center LCAO SCF calculations on HF and CH₄. [T, HF, CH₄]
- O K. P. Huber and G. Herzberg : Molecular Spectra and Molecular Structure, IV. Constants of Diatomic Molecules, van Nostrand-Reinhold 304-308 (1979)
- O A. C. Hurley : Proc. Roy. Soc. London A248, 119-135 (1958)
The electronic structure of the first-row hydrides BH, CH, NH, OH and HF.
I. Ground states. [T, HF, BH, etc.]

- O A. C. Hurley : Proc. Roy. Soc. London A249, 402-413 (1959)
The electronic structure of the first-row hydrides BH, CH, NH, OH and HF.
II. Excited states. [T, HF, OH, etc]
- O R. P. Hurst, M. Karplus and T. P. Das : J. Chem. Phys. 36, 2786-2792 (1962)
Magnetic properties of hydrogen fluoride. II. Susceptibility. [T, HF]
- 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]
- E Y. Itikawa : Phys. Rep. 46, 117-164 (1978)
V Electron scattering by polar molecules.
[review, HF, HCl, HBr, CO, NO, LiF, CsCl, etc.]
- O S. Iwata and S. Nagakura : Mol. Phys. 27, 425-440 (1974)
Theoretical study of the photoelectron intensities and angular distribu-
tions. [T, $h\nu$, HF, Ne, Ar, H₂O, H₂S, NH₃]
- QT A. Jain and K. L. Baluja : Phys. Rev. A45, 202-218 (1992)
Total (elastic plus inelastic) cross sections for electron scattering
from diatomic and polyatomic molecules at 10 - 5000 eV : H₂, Li₂, HF, CH₄,
N₂, CO, C₂H₂, HCN, O₂, HCl, H₂S, PH₃, SiH₄ and CO₂. [T, HF, HCl, etc.]
- O J. W. C. Johns and R. F. Barrow : Nature 179, 374-374 (1957)
Ultra-violet band systems of HF⁺ and DF⁺. [E, HF, DF]
- O J. W. C. Johns and R. F. Barrow : Proc. Roy. Soc. London A251, 504-518 (1959)
The ultra-violet spectra of HF and DF. [E, $h\nu$, HF, DF]
- O N. Jonathan, C. M. Melliar-Smith, D. Timlin and D. H. Slater : Appl. Opt. 10,
1821-1826 (1971)
Analysis of hydrogen fluoride infrared chemiluminescence from simple
atom-molecule reactions. [E, $h\nu$, HF]
- QT K. N. Joshipura and M. Vinodkumar : Phys. Lett. A224, 361-366 (1997)
Electron scattering cross sections with HF, OH, NH and CH molecules.
[T, HF, CH, OH, NH]
- O P. S. Julienne, M. Krauss and A. C. Wahl : Chem. Phys. Lett. 11, 16-20 (1971)
Hartree-Fock energy curves for X²Π and ²Σ⁺ states of HF⁺.
[T, HF; see J. Berkowitz (1971)]
- O A. M. Karo and L. C. Allen : J. Am. Chem. Soc. 80, 4496-4499 (1958)
Configuration interaction in the hydrogen fluoride molecules. [T, HF]

- 0 A. M. Karo : J. Chem. Phys. 31, 182-192 (1959a)
Electron population analysis of LiH and HF. [T, HF, LiF]
- 0 A. M. Karo and L. C. Allen : J. Chem. Phys. 31, 968-977 (1959b)
LCAO wave functions for hydrogen fluoride with Hartree-Fock atomic orbitals.
[T, HF]
- 0 M. Karplus and H. J. Kolker : J. Chem. Phys. 38, 1263-1275 (1963)
Magnetic susceptibility of diatomic molecules.
[T, HF, H₂, Li₂, N₂, F₂, CO, etc.]
- 0 D. Kastler : Compt. Rend. Acad. Sci. 236, 1271-1273 (1953a)
Theorie quantique de la molecule d'acide fluorhydrique. [T, HF]
- 0 D. Kastler : Compt. Rend. Acad. Sci. 236, 1359-1361 (1953b)
Sur le role des electrons non liants dans la formation de l'energie de
covalence. [T, HF]
- 0 D. Kastler : J. Chim. Phys. 50, 556-5 (1953c)
Theorie quantique de la molecule HF. [T, HF]
- 0 C. W. Kern and W. N. Lipscomb : Phys. Rev. Lett. 7, 19-20 (1961)
Magnetic shielding constants in heteropolar diatomic molecules.
[T, HF, LiH]
- 0 C. W. Kern and W. N. Lipscomb : J. Chem. Phys. 37, 260-266 (1962)
Magnetic shielding constants in some diatomic molecules.
[T, HF, CO, H₂, Li₂, N₂, F₂]
- 0 C. W. Kern and M. Karplus : J. Chem. Phys. 40, 1374-1389 (1964).
Erratum 43, 2926-2926 (1965)
Analysis of charge distributions : Hydrogen fluoride. [T, HF]
- 0 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 ν , HF, H₂, N₂]
- I B. K. Kittams, K. C. Hsieh and L. C. McIntyre, Jr. : J. Chem. Phys. 82, 3707-3715 (1985)
A time-of-flight study of H⁺ fragments produced by low-energy electron
bombardment of the hydrogen halides. [E, HF ~ HI; 21.2 - 51.2 eV]
- E G. Knoth, M. Radle, H. Ehrhardt and K. Jung : Europhys. Lett. 4, 805-810 (1987) .
Rovibrational threshold structures in the electron scattering from
hydrogen halides. [E, HF, HCl; DCS, 0.15 - 5.5 eV, 15 - 135°]
- V G. Knoth, M. Radle, M. Gote, H. Ehrhardt and K. Jung : J. Phys. B22, 299-326 (1989a) ○K
Near-threshold electron impact rovibrational excitation of HCl and HF.
[E, HF, HCl; DCS, 0.15 - 5.5 eV, 15 - 135°]

- V G. Knoth, M. Gote, M. Radle, F. Leber, K. Jung and H. Ehrhardt : J. Phys. B22, 2797-2816 (1989b) ○K
Electron impact rovibrational excitation close to threshold of the $v = 2$ and $v = 3$ levels of HF and HCl. [E, HF, HCl]
- U G. Knoth, M. Gote, M. Radle, K. Jung and H. Ehrhardt : Phys. Rev. Lett. 62, 1735-1737 (1989c) -○
Nuclear-excited Feshbach resonances in the electron scattering from hydrogen halides. [E, HF, HCl]
- O H. J. Kolker and M. Karplus : J. Chem. Phys. 36, 960-965 (1962)
Deuteron quadrupole coupling in diatomic hydrides. [T, HF, DF, LiD]
- O H. J. Kolker and M. Karplus : J. Chem. Phys. 39, 2011-2016 (1963)
Electric polarizability of some diatomic molecules.
[T, HF, H₂, N₂, CO, etc.]
- O H. J. Kolker and M. Karplus : J. Chem. Phys. 41, 1259-1266 (1964)
Theory of nuclear magnetic shielding in diatomic molecules.
[T, HF, F₂, H₂, N₂, LiH, etc.]
- O M. Krauss : J. Chem. Phys. 28, 1021-1026 (1958)
Electronic structure of some diatomic hydrides. [T, FH, CH, NH, OH]
- O G. A. Kuipers : J. Mol. Spectrosc. 2, 75-98 (1958)
The spectrum of monomeric hydrogen fluoride : Line shapes, intensities, and breadths. [E, HF; 390 K]
- E M. Kumar, A. N. Tripathi and V. H. Smith, Jr. : Int. J. Quant. Chem. 29, 1339-1349 EX (1986)
- I Scattering of high-energy electrons and X-rays from molecules. : The 10-
O electron series Ne, HF, H₂O, NH₃, and CH₄. [T, HF, Ne, H₂O, NH₃, CH₄]
- E H. Kutz and H.-D. Meyer : J. Phys. B23, 829-839 (1990)
Electron - HF scattering in the static exchange approximation : Treatment of the dipole potential. [T, HF; 0.02 - 1.0 a₀⁻¹]
- E N. F. Lane : Rev. Mod. Phys. 52, 29-119 (1980)
The theory of electron-molecule collisions.
[review, HF, HCl, HBr, H₂, N₂, O₂, CO, NO, CO₂, N₂O, H₂O]
- O F. P. Larkins : J. Elect. Spectrosc. Relat. Phenom. 67, 159-162 (1994) .
Influence of core hole screening on molecular Auger rates and inner-shell lifetimes. [T, HF, CH₄, NH₃, H₂O, SiH₄, PH₃, H₂S, HCl]
- O E. M. Layton, Jr. and K. Ruedenberg : J. Phys. Chem. 68, 1654-1676 (1964)
Chemical binding in diatomic hydride molecules. [T, HF, LiH, BH, NH]
- O J. Lehmann, K. Bonhoff, S. Bonhoff, B. Lohmann and K. Blum : in AIP Conf. Proc. No. 392, Denton 63-66 (1997)
Angular distribution of molecular Auger electrons. [T, HF, H₂O]

- O H. J. Lempka, T. R. Passmore and W. C. Price : Proc. Roy. Soc. London A304, 53-64 (1968)
The photoelectron spectra and ionized states of the halogen acids.
[E, $h\nu$, HF - HI]
- O V. G. Levin, V. G. Neudatchin, A. V. Pavlitchenkov and Yu. F. Smirnov : J. Chem. Phys. 63, 1541-1546 (1975)
On the display of basic properties of the molecular electronic wavefunctions in the (e, 2e) quasielastic knockout experiments.
[T, HF, Li₂, N₂, F₂, BH, CH, LiH]
- F. Linder : 10th ICPEAC, Invited Paper, Paris 51-69 (1977) ·
Electron scattering by polar molecules. [review, HF, HCl, HBr, H₂O]
- X. Ling, M. T. Frey, K. A. Smith and F. B. Dunning : Phys. Rev. A48, 1252-1256 (1993) ·K
Inelastic electron-dipole-molecule scattering at sub-milli-electron-volt energies : HF and NH₃. [E, HF, NH₃]
- O R. W. Long, J. H. Hildebrand and W. E. Morrell : J. Am. Chem. Soc. 65, 182-187 (1943)
The polymerization of gaseous hydrogen and deuterium fluorides.
[E, HF, DF]
- O A. Mank, D. Rodgers and J. W. Hepburn : Chem. Phys. Lett. 219, 169-173 (1994)
Threshold photoelectron spectroscopy of HF.
[E, $h\nu$, HF; $V_1 = 129422 \text{ cm}^{-1}$]
- O D. E. Mann, B. A. Thrush, D. R. Lide, Jr. J. J. Ball and N. Acquista : J. Chem. Phys. 34, 420-431 (1961)
Spectroscopy of fluorine flames. 1. Hydrogen-fluorine flame and the vibration-rotation emission spectrum of HF. [E, $h\nu$, HF]
- A H. S. W. Massey : Negative Ions, 3rd ed., Cambridge University Press (1976)
- V D. Mathur and J. B. Hasted : Chem. Phys. 34, 29-38 (1978)
Electron spectroscopy of hydrogen fluoride resonances.
[E, HF; 9 - 16 eV; 10.05 and (12 - 13) eV resonances]
- O A. D. McLean and M. Yoshimine : J. Chem. Phys. 47, 3256-3262 (1967) ·
Computed grand-state properties of FH and ClH. [T, HF, HCl]
- V A. Mengoni and T. Shirai : Phys. Rev. A44, 7258-7268 (1991) ·
Algebraic-eikonal approach to the electron-molecule-collision process : Vibrational excitation and quadrupole interaction. [T, HF, HCl]
- O R. Moccia : J. Chem. Phys. 40, 2164-2176 (1964)
One-center basis set SCF MO's. I. HF, CH₄, and SiH₄.
[T, HF, CH₄, SiH₄; ground-state wavefunction]
- V L. A. Morgan and P. G. Burke : J. Phys. B21, 2091-2105 (1988)
Low-energy electron scattering by HF. [T, HF]

- V L. A. Morgan : in ALP Conf. Proc. No. 205, 16th ICPEAC, New York 96-102 (1990)
R-matrix calculations of electron molecule scattering.
[T, HF, HCl, H₂, N₂]
- M. A. Morrison : in Advances in Atomic and Molecular Physics, Vol. 24, Academic Press 51-156 (1988)
Near-threshold electron-molecule scattering. [review]
- O J. W. Moskowitz, D. Neuman and M. C. Harrison : in Quantum Theory of Atoms, Molecules and the Solid State, P.-O. Lowdin (Ed), Academic 227-230 (1966)
Accurate Gaussian wavefunctions : HF again. [T, HF]
- O A. Mukherji and M. Karplus : J. Chem. Phys. 38, 44-48 (1963)
Constrained molecular wavefunctions : HF molecules. [T, HF]
- O R. S. Mulliken : Phys. Rev. 46, 549-571 (1934)
The halogen molecules and their spectra J-J-like coupling. Molecular ionization potentials. [T, HF - HI, F₂ - I₂, BrCl, IBr, ICl]
- O R. S. Mulliken : Phys. Rev. 51, 310-332 (1937)
Low electronic states of simple heteropolar diatomic molecules : III. Hydrogen and univalent metal halides. [T, HF - HI, etc.]
- O R. S. Mulliken : J. Chem. Phys. 8, 382-395 (1940)
Intensities in molecular electronic spectra. X. Calculations on mixed-halogen, hydrogen halide, alkyl halide, and hydroxyl spectra.
[T, HF - HI, F₂ - Br₂, OH, CH₃Cl - CH₃I, etc.]
- O Zs. Naray : Acta Phys. Acad. Sci. Hung. 3, 255-2 (1953)
Wellenmechanische Berechnung einiger Konstanten des HF-Molekuls. [T, HF]
- O R. K. Nesbet : Rev. Mod. Phys. 32, 272-273 (1960)
Diatomic molecule project at RIAS and Boston university.
[T, HF; IBM 704 computer]
- O R. K. Nesbet : J. Chem. Phys. 36, 1518-1533 (1962)
Approximate Hartree-Fock calculations for the hydrogen fluoride molecule.
[T, HF]
- W. v. Niessen, L. S. Cederbaum, W. Domcke and G. H. F. Dierksen : Chem. Phys. 56, 43-52 (1981)
Green's function calculations on the complete valence ionization spectra of HF, HCl, HBr and HI. [T, HF - HI]
- O A. -F. Niu, Y. Zhang, W. -H. Zhang and J. -M. Li : Phys. Rev. A57, 1912-1919 (1998)
Near-threshold structures in inner-shell photoabsorption processes of CH₄, NH₃, H₂O, and HF. [T, h ν , HF, CH₄, NH₃, H₂O]
- 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, HF, HCl, H₂, N₂, CO₂, CO]

- O L. Pauling : J. Am. Chem. Soc. 54, 988-1003 (1932)
The nature of the chemical bond. III. The transition from one extreme bond type to another. [T, HF - HI, etc.; potential energy curve]
- O D. Peters : J. Chem. Soc. 2003-2014 (1963a)
Localized molecular orbitals in the self-consistent-field wavefunctions of linear molecules. Part I. Hybridisations.
[T, HF, LiH, BH, OH, etc.]
- O D. Peters : J. Chem. Soc. 2015-2023 (1963b)
Localized molecular orbitals in the self-consistent-field wavefunctions of linear molecules. Part II. Atomic charges and dipole moments.
[T, HF, CH, NH, etc.]
- O S. Peyerimhoff : Z. Naturforsch. 18a, 1197-1204 (1963)
Berechnungen am HF-Molekul. [T, HF]
- O J. C. Polanyi and D. C. Tardy : J. Chem. Phys. 51, 5717-57 (1969)
Energy distribution in the exothermic reaction $F + H_2$ and the endothermic reaction $HF + H$. [E, $h\nu$, HF]
- O J. C. Polanyi and K. B. Woodall : J. Chem. Phys. 57, 1574-1586 (1972)
Energy distribution among reaction products. IV. $F + H_2$, D_2 .
[E, $h\nu$, HF, DF]
- O A. W. Potts and W. C. Price : Proc. Roy. Soc. London A326, 181-197 (1972)
Photoelectron spectra and valence shell orbital structures of group V and VI hydrides.
[E, $h\nu$, HF - HI, CH_4 , SiH_4 , GeH_4 , SnH_4 , H_2O , H_2S , NH_3 , PH_3 , etc.]
- A S. A. Pozdnev : Bull. Lebedev Phys. Inst. No. 5, 1-14 (1999) .
Dissociative electron attachment to excited diatomic molecules, basic approximations and methods of deriving analytical solutions.
[T, general theory]
- R N. Radle, G. Knoth, K. Jung and H. Ehrhardt : J. Phys. B22, 1455-1476 (1989) ○
V Rotational and rovibrational excitation of HCl and HF by low-energy electron impact. [E, HF, HCl; DCS.]
- O A. A. Radzic and B. M. Smirnov : Reference Data on Atoms, Molecules and Ions. Springer-Verlag (1985)
- O B. J. Ransil : Rev. Mod. Phys. 32, 239-244 (1960a)
Studies in molecular structure. I. Scope and summary of the diatomic molecule program. [T, HF, F_2 , N_2 , CO, BF, etc.]
- O B. J. Ransil : Rev. Mod. Phys. 32, 245-254 (1960b)
Studies in molecular structure. II. LCAO-MO-SCF wave functions for selected first-row diatomic molecules.
[T, HF, F_2 , N_2 , BH, NH, CO, BF, etc.]

- V T. N. Rescigno, A. E. Orel, A. U. Hazi and B. V. McKoy : Phys. Rev. A26, 690-693 (1982) -
Ab initio study of vibrational excitation of HF by low-energy electrons.
[T, HF; th. - 5 eV for $v = 0 \rightarrow 1$ and $v = 0 \rightarrow 2$]
- E M. E. Riley, C. J. MacCallum and F. Biggs : Atomic Data Nucl. Data Tables 15,
443-475 (1975); Erratum 28, 379-379' (1983)
Theoretical electron-atom elastic scattering cross sections. Selected
elements, 1 keV to 256 keV. [T, F, etc.]
- V K. Rohr and F. Linder : J. Phys. B9, 2521-2537 (1976) ○ K
Vibrational excitation of polar molecules by electron impact. I. Threshold
resonances in HF and HCl. [E, HF, HCl; th. - 6 eV]
- V K. Rohr : Sympo. Electron-Molecule Collisions, Tokyo 67-76 (1979)
Threshold resonances in vibrational excitation of molecules by electron
impact : Experimental results. [E]
- O P. Rosmus and W. Meyer : J. Chem. Phys. 66, 13-19 (1977)
PNO-CI and CEPA studies of electron correlation effects. IV. Ionization
energies of the first and second row diatomic hydrides and the spectroscopic
constants of their ions. [T, HF, etc.]
- I H. -G. Rubahn, J. P. Toennies, M. Wilde and J. Wanner : Chem. Phys. Lett. 120, 11-16
(1985)
Electron-impact ion fragmentation of a laser vibrationally excited HF
nozzle beam. [E, HF ($v = 1$)]
- R M. R. H. Rudge : J. Phys. B13, 1269-1279 (1980) ○
- V Electron scattering by the hydrogen-halides. I. e^- - HF collisions.
[T, HF; 0.46 - 2 eV, close-coupling calculation]
- O E. Safary and J. Romand : Compt. Rend. Acad. Sci. 229, 1003-10 (1949)
- O E. Safary, J. Romand and B. Vodar : J. Chem. Phys. 19, 379-380 (1951)
Ultraviolet absorption spectrum of gaseous hydrogen fluoride.
[E, $h\nu$, HF; 290 - 438 K]
- O E. Safary : Ann. Physiq. 9, 203-254 (1954)
Spectral study of hydrofluoric acid. [E, $h\nu$, HF; in French]
- O A. Salama and J. B. Hasted : J. Phys. B9, L333-L336 (1976)
Electron energy loss spectrum of hydrogen fluoride. [E, HF; 70 eV]
- O M. Sana, G. Leroy, D. Peeters and C. Wilante : J. Mol. Struct. (Theochem) 164,
249-274 (1988)
The theoretical study of the heats of formation of organic compounds
containing the substituents CH^3 , CF^3 , NH^2 , NF^2 , NO^2 , OH and F.
[T, HF, H_2O , NH_3 , CF_3 , CF_4 , CH_3OH , etc.]

- O B. Schimmelpfennig, B. M. Nestmann and S. D. Peyerimhoff : J. Elect. Spectrosc. Relat. Phenom. 74, 173-186 (1995)
Ab initio calculation of transition rates for autoionization : the Auger spectra of HF and F⁻. [T, HF, F⁻]
- V G. A. Segal and K. Wolf : J. Phys. B14, 2291-2307 (1981a)
A Electron scattering from HF. [T, HF]
- O G. A. Segal and K. Wolf : Chem. Phys. 56, 321-326 (1981b)
Theoretical calculation of the potential curves of the states of HF below 14 eV. [T, HF]
- R B. Sharma, V. Prasad, K. L. Baluja and M. Mohan : Z. Phys. D27, 65-71 (1993) .
V Laser-assisted electron impact rovibrational excitations in HF molecules. [T, HF; 100 and 300 eV]
- O R. W. Shaw, Jr. and T. D. Thomas : Phys. Rev. A11, 1491-1497 (1975)
Auger electron spectrum and ionization potentials of the HF molecule. [E, HF; energy loss spectrum for 710 eV electrons, V_i = 16.05 eV]
- O R. D. Shelton and A. H. Nielsen : J. Chem. Phys. 19, 1312-1313 (1951)
An infrared study of the polymer bands of hydrogen fluoride vapor. [E, hν, HF; 320 - 335 K]
- 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, HF, F₂, SO₂, H₂, CH₄ - C₃H₈, NH₃, H₂O, N₂, CO, CO₂, N₂O, O₃, C₂H₂, C₂H₄, etc.]
- O F. S. Simmons, H. Y. Yamada and C. B. Arnold : NASA Cr-72491, Infrared and Optics Laboratory, Willow Run Laboratories, The University of Michigan (1969)
Measurement of temperature profile in hot gases by emission-absorption spectroscopy. [E, hν, HF,
- O J. Simons and J. H. Hildebrand : J. Am. Chem. Soc. 46, 2179-2183 (1924)
The preparation, freezing point and vapor pressure of hydrogen fluoride. [E, HF]
- V G. Snitchler, D. Norcross, A. Jain and S. Alston : Phys. Rev. A42, 671-674 (1990) .
Near-threshold vibrational excitation of HF by electron impact. [T, HF]
- V D. Spence and T. Noguchi : J. Chem. Phys. 63, 505-514 (1975) K
Feshbach resonances associated with Rydberg states of the hydrogen halides. [E, HF, HCl, HBr, HI]
- V D. Spence : J. Phys. B14, L107-L114 (1981)
A On resonances in HF. [E, HF]

- O R. M. Stevens and W. N. Lipscomb : J. Chem. Phys. 41, 184-194 (1964)
Perturbed Hartree-Fock calculations. III. Polarizability and magnetic properties of the HF molecules. [T, HF; I and II for LiH]
- O D. E. Stogryn and A. P. Stogryn : Mol. Phys. 11, 371-393 (1966)
Molecular multipole moments.
[review, HF - HI, H₂, HD, D₂, N₂, O₂, F₂, Cl₂, CO, NO, CO₂, CS₂, N₂O, SO₂, OCS, NH₃, C₂H₂, C₂H₄, C₂H₆, C₆H₆, etc.; dipole, quadrupole moment]
- A D. Teillet-Billy and J. P. Gauyacq : J. Phys. B17, 3329-3340 (1984)
Angular dependence of dissociative attachment to polar molecules.
[T, HF, HCl, H₂O, H₂S, NaCl]
- O W. Thiel and A. Schweig : Chem. Phys. Lett. 12, 49-52 (1971)
Photoionization cross sections in the valence electron approximation.
I. Linear molecules. [T, h ν , HF, HCl, F₂, Cl₂]
- V D. G. Thompson : in Advances in Atomic and Molecular Physics, Vol. 19, Academic Press 309-343 (1983)
The vibrational excitation of molecules by electron impact.
[review, HF, HCl, H₂, N₂, CO, CO₂, etc.]
- I R. Thorburn : Proc. Phys. Soc. London 73, 122-126 (1959)
Ionization and dissociation by electron impact in fluorine, hydrogen fluoride, chlorine and hydrogen chloride. [E, HF, F₂, Cl₂, HCl]
- R H. T. Thummel, R. K. Nesbet and S. D. Peyerimhoff : J. Phys. B25, 4553-4579 (1992)
Near-threshold rotational excitaiton in electron-polar-molecule scattering.
[T, HF only; variational R-matrix calculation]
- V H. T. Thummel, R. K. Nesbet and S. D. Peyerimhoff : J. Phys. B26, 1233-1251 (1993)
Near-threshold rovibrational excitation of HF by electron impact.
[T, HF; R-matrix, 0.4 - 1.1 eV]
- R H. T. Thummel, T. Grimm-Bosbach, R. K. Nesbet and S. D. Peyerimhoff : in
V Computational Methods for Electron-Molecule Collisions, Plenum 265-291 (1995)
Rovibrational excitation by electron impact. [review, HF, N₂,
- O W. J. van der Meer, M. Volmer and C. A. de Lange : J. Elect. Spectrosc. Relat. Phenom. 49, 263-272 (1989) .
Absolute photoionisation cross-sections of atomic and molecular fluorine at 584 Å. [E, h ν , HF, F₂, F]
- EX H. A. Van Sprang and F. J. de Heer : Chem. Phys. 33, 73-78 (1978)
A study of the emission spectrum of HF excited by electrons. [E, HF]
- O D. A. Vroom : Thesis, University of British Columbia 1-202 (1965)
Photoelectron spectroscopy of gases.
[E, h ν , HF, HCl, F₂ - I₂, N₂, O₂, NO, CO, etc.]

- 0 M. G. Waggoner, K. W. Chow and A. L. Smith : Chem. Phys. Lett. 3, 151-154 (1969)
Direct-recording absorption spectrometer in the windowless vacuum-ultraviolet : Absorption spectra of He₂, HF and N₂.
[E, $h\nu$, HF, N₂, He₂; 600 - 1100 Å]
- 0 T. E. H. Walker, P. M. Dehmer and J. Berkowitz : J. Chem. Phys. 59, 4292-4298 (1973)
Rotational band shapes in photoelectron spectroscopy : HF and DF.
[T, $h\nu$, HF, DF]
- 0 K. Wang, V. McKoy, M. -W. Ruf, A. J. Yencha and H. Hotop : J. Elect. Spectrosc. Relat. Phenom. 63, 11-30 (1993)
Rotational analysis of the He I photoelectron spectrum of HF.
[E and T, $h\nu$, HF; 584 Å]
- 0 W. C. Wang and L. C. Lee : J. Phys. D21, 675-682 (1988) .
Photodetachment cross sections of negative halogen ions in discharge media.
[E, $h\nu$, HF, HCl, HBr, F₂, Cl₂, CH₃Br, etc.]
- 0 R. Weiss : Phys. Rev. 131, 659-665 (1963)
Stark effect and hyperfine structure of hydrogen fluoride.
[T and E, $h\nu$, HF, OCS; μ (exp.) = 1.8195 D]
- 0 H. -J. Werner and W. Meyer : Mol. Phys. 31, 855-872 (1976) .
PNO-CI and PNO-CEPA studies of electron correlation effects. V.
Static dipole polarizabilities of small molecules.
[T, HF, Ne, H₂O, NH₃, CH₄, CO]
- 0 L. H. Woods : Phys. Rev. 64, 259-264 (1943)
Rotational analysis of the emission spectrum of CuF.
[E, $h\nu$, HF, CuF; 2000 - 7000 Å for HF]
- 0 Y. Yamaguchi, M. J. Frisch, T. J. Lee, H. F. Schaefer III and J. S. Binkley : Theor. Chim. Acta 69, 337-352 (1968)
Analytic evaluation of infrared intensities and polarizabilities by two-configuration self-consistent field wave function.
[T, HF, O₃, CH₂, CF₂, NH₃, etc.]
- 0 V. A. Yavna, V. A. Popov and S. A. Yavna : Opt. Spectrosc. 75, 23-27 (1993a)
Correlation and vibronic effects in the K photoabsorption of HF and HCl.
[T, $h\nu$, HF, HCl]
- 0 V. A. Yavna, V. A. Popov, S. A. Yavna and L. A. Demekhina : Opt. Spectrosc. 75, 171-176 (1993b) .
Multielectron effects near the photoabsorption thresholds of the outer shells of diatomic hydride molecules. [T, $h\nu$, HF, HCl, HBr]
- 0 A. J. Yencha, M. -W. Ruf and H. Hotop : Z. Phys. D27, 131-142 (1993)
Penning ionization and photoionization electron spectrometry of hydrogen fluoride. [E, HF; He*, Ne* and $h\nu$]

- O A. J. Yencha, A. J. Cormack, R. J. Donovan, A. Hopkirk and G. C. King : J. Phys. B32, 2539-2550 (1999)
Threshold photoelectron spectroscopy of HF and DF in the outer valence ionization region. [E, $h\nu$, HF, DF]
- O D. Zeroka and H. F. Hameka : J. Chem. Phys. 45, 300-311 (1966)
Calculation of magnetic shielding constants of diatomic molecules.
I. General theory and application to HF molecule. [T, HF]
- A J. P. Ziesel : in Lecture Notes in Chemistry, Vol. 35. Wavefunctions and Mechanisms from Electron Scattering Processes, Springer 39-47 (1984).
Dissociative attachment in polar and highly polar molecules.
[review, HF, HCl, HBr, HI, NaCl, NaBr]

Addenda of References for HF

(published in 2000, plus some old papers)

2000 (2 pages)

- O A. Dutta and C. D. Sherrill : J. Chem. Phys. 118, 1610-1619 (2003)
Full configuration interaction potential energy curves for breaking bonds to hydrogen : An assessment of single-reference correlation methods. [T, HF, BH, CH₄]
- A I. I. Fabrikant : 21st ICPEAC, Sendai 270-283 (2000)
Studies of dissociative attachment reactions : from gas phase to condensed phase. [T, HF, CH₃Cl, CH₃Br, CH₃I, CF₃Cl]
- O R. C. Guedes, P. C. do Couto and B. J. Costa Cabral : J. Chem. Phys. 118, 1272-1281 (2003)
Binding energy, structure, and vibrational spectra of (HCl)₂₋₆ and (HF)₂₋₁₀ clusters by density functional theory. [T, (HF)_N, (HCl)_N]
- O C. -Y. Park, Ya. Kim and Yo. Kim : J. Chem. Phys. 115, 2926-2935 (2001)
The multi-coefficient correlated quantum mechanical calculations for structures, energies, and harmonic frequencies of HF and H₂O dimers. [T, (HF)₂, (H₂O)₂]
- O P. Piecuch, S. A. Kucharski, V. Spirko and K. Kowalski : J. Chem. Phys. 115, 5796-5804 (2001)
Can ordinary single-reference coupled-cluster methods describe potential energy surfaces with nearly spectroscopic accuracy ? The renormalized coupled-cluster study of the vibrational spectrum of HF. [T, HF]
- V S. A. Pozdnev : J. Exp. Theor. Phys. 90, 30-44 (2000) .
D Collisions of electrons with molecules in excited vibrational-rotational
A states. [T, HF - HBr, H₂, HD, D₂, N₂, Li₂, Na₂]
- O P. Salek, V. Carravetta, F. Gel'mukhanov and H. Agren : J. Chem. Phys. 116, 629-645 (2002)
Theory and first principles calculations of dissociative resonant photoionization : The evolution of atomic peaks and holes. [T, hν, HF, HCl]
- V A. -Ch. Sergenton, L. Jungo and M. Allan : Phys. Rev. A61, 062702/1-6 (2000)○
Excitation of vibrational levels of HF up to v = 4 by electron impact. [E, HF; 0.4 - 2.6 eV, some data for HCl and HBr]
- 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 H₂ and HF molecules. [T, HF, H₂; 0 - 5 eV]

- 0 Q. Zhang and R. E. Brown : J. Mol. Struct. (Theochem) 527, 81-89 (2000)
The electronic structure and stabilities of the symmetric gas phase anion clusters of hydrogen fluoride. [T, $(\text{HF})_2^-$ - $(\text{HF})_6^-$]

Addenda (1901 - 1999)

- 0 M. R. Atwood, H. Vu et B. Vodar : Spectrochimica Acta 23A, 553-563 (1967)
Forme et structures fines de la bande induite par la pression dans la bande fondamentale de vibration-rotation des molecules HF, HCl et HBr. [E, $h\nu$, HF - HBr]
- 0 M. R. Baker, H. M. Nelson, J. A. Leavitt and N. F. Ramsey : Phys. Rev. 121, 807-815 (1961)
Nuclear magnetic interactions in hydrogen fluoride. [E, $h\nu$, HF]
- 0 M. S. Banna and D. A. Shirley : J. Chem. Phys. 63, 4759-4766 (1975)
Molecular photoelectron spectroscopy at 132.3 eV. The second-row hydrides. [E, $h\nu$, HF, H_2O , NH_3 , CH_4 , Ne]
- 0 I. Baraldi and F. Momicchioli : J. Chem. Soc. Faraday Trans. II 73, 156-160 (1977)
Variational calculations of vibrational-rotational properties of HF in the $X^1\Sigma^+$ and $B^1\Sigma^+$ electronic states. [T, HF]
- 0 C. F. Bender and E. R. Davidson : Phys. Rev. 183, 23-30 (1969)
Studies in configuration interaction : The first-row diatomic hydrides. [T, HF, OH, NH, CH, etc.]
- 0 H. A. Benesi and C. P. Smyth : J. Chem. Phys. 15, 337-337 (1947)
Molecular association in hydrogen fluoride vapor. [E, HF; $6\text{HF} \rightarrow \leftarrow (\text{HF})_6$]
- 0 V. Bondybey, P. K. Pearson and H. F. Schaefer III : J. Chem. Phys. 57, 1123-1128 (1972)
Theoretical potential energy curves for OH, HF^+ , HF, HF^- , NeH^+ , and NeH^* . [T, HF, OH, etc.]
- 0 C. E. Brion and P. Crowley : J. Elect. Spectrosc. Relat. Phenom. 11, 399-416 (1977)
Electron spectroscopy using excited atoms and photons; VIII. Penning ionization of the hydrogen halides. [E, $(\text{HF} - \text{HI}) + \text{He}(2^3\text{S})$]
- 0 C. E. Brion, I. E. McCarthy, I. H. Suzuki and E. Weigold : Chem. Phys. Lett. 67, 115-118 (1979)
Momentum distributions for the valence orbitals of hydrogen fluoride. [E, HF; (e,2e) method, 400 eV]
- 0 O. H. Crawford and B. J. D. Koch : J. Chem. Phys. 60, 4512-4519 (1974)
Diabatic capture in dissociative attachment. [T, HF - HI]

- 0 T. F. Deutsch : Appl. Phys. Lett. 10, 234-236 (1967a) see p. 7
- 0 T. F. Deutsch : Appl. Phys. Lett. 11, 18-20 (1967b)
Laser emission from HF rotational transitions.
[E, $h\nu$, HF; 10.2 - 21.8 μ]
- 0 R. J. Fallon, J. T. Vanderslice and E. A. Mason : J. Chem. Phys. 32, 698-700 (1960a)
Potential energy curves of hydrogen fluoride. [T, HF, DF]
- 0 R. J. Fallon, J. T. Vanderslice and E. A. Mason : J. Chem. Phys. 33, 944-944 (1960b)
Erratum : Potential curves of HF and LiH. [T, HF, LiH]
- 0 E. S. Fishburne and K. Narahari Rao : J. Mol. Spectrosc. 19, 290-293 (1966)
Vibration rotation bands of HF. [E, $h\nu$, HF]
- 0 D. C. Frost, C. A. McDowell and D. A. Vroom : J. Chem. Phys. 46, 4255-4259 (1967)
Photoelectron spectra of the halogens and the hydrogen halides.
[E, $h\nu$, HF - HI, F₂ - I₂; ionization potentials]
- 0 E. Gafary, J. Romand and B. Vodar : J. Chem. Phys. 19, 379-380 (1951)
Ultraviolet absorption spectrum of gaseous hydrogen fluoride.
[E, $h\nu$, HF; 290 - 438 K, strong dependence with temperature]
- 0 G. Garia and F. Manero : Chem. Phys. Lett. 280, 419-422 (1997)
Correlation of the total cross section for electron scattering by
molecules with 10 - 22 electrons, and some molecular parameters at
intermediate energies. [T, HF, HCl, C₂H₂, etc. at 1 keV]
- 0 J. Goldhar, R. M. Osgood, Jr. and A. Javan : Appl. Phys. Lett. 18, 167-169 (1971)
Observation of intense superradiant emission in the high-gain infrared
transitions of HF and DF molecules. [E, $h\nu$, HF, DF]
- 0 G. Guelachvili : Opt. Comm. 19, 150-154 (1976)
Absolute wavenumber measurements of 1-0, 2-0, HF and 2-0, H³⁵Cl, H³⁷Cl
absorption bands. [E, $h\nu$, HF, HCl; 1-0 of HF 3961.4229 cm⁻¹]
- 0 W. F. Herget, W. E. Deeds, N. M. Gailar, R. J. Lovell and A. H. Nielsen : J. Opt. Soc. Am.
52, 1113-1119 (1962)
Infrared spectrum of hydrogen fluoride : Line positions and line shapes.
Part II. Treatment of data and results. [E, $h\nu$, HF]
- 0 J. J. Hinchey : J. Opt. Soc. Am. 64, 1162-1163 (1974)
Determination of vibration-rotation line strengths for HF and DF by
use of an HF/DF cw laser. [E, $h\nu$, HF, DF]
- A. K. Kazansky : Theor. Math. Phys. 37, 892-904 (1978)
Model of the passing of the s term through the parabolic boundary of the
continuum. [T]
- 0 D. E. Kirkpatrick and E. O. Salant : Phys. Rev. 48, 945-948 (1935)
Overtone absorption bands of gaseous HF. [E, $h\nu$, HF]

- 0 K. L. Kompa and G. C. Pimentel : J. Chem. Phys. 47, 857-858 (1967)
Hydrofluoric acid chemical laser. [E, $h\nu$, HF, DF]
- 0 M. Krauss and D. Neumann : Mol. Phys. 27, 917-921 (1974)
Multi-configuration self-consistent-field calculation of the dissociation energy and electronic structure of hydrogen fluoride. [T, HF]
- 0 H. J. Lempka, T. R. Passmore and W. C. Price : Proc. Roy. Soc. London A304, 53-64 (1968a) see p. 15
- 0 H. J. Lempka and W. C. Price : J. Chem. Phys. 48, 1875-1876 (1968b)
Ionization energies of HF and DF. [E, $h\nu$, HF, DF]
- 0 G. C. Lie and E. Clementi : J. Chem. Phys. 60, 1275-1287 (1974a)
Study of the electronic structure of molecules. XXI. Correlation energy corrections as a functional of the Hartree-Fock density and its application to the hydrides of the second row atoms.
[T, HF, CH, NH, OH, H₂, etc.]
- 0 G. C. Lie : J. Chem. Phys. 60, 2991-2996 (1974b)
Study of the theoretical dipole moment function and infrared transition matrix for the $X^1\Sigma^+$ state of the HF molecule. [T, HF]
- 0 A. A. Mason and A. H. Nielsen : J. Opt. Soc. Am. 57, 1464-1470 (1967)
Rotational spectrum of hydrogen fluoride : Frequencies and linewidths.
[E, $h\nu$, HF]
- 0 M. G. Mason, W. G. Von Holle and D. W. Robinson : J. Chem. Phys. 54, 3491-3499 (1971)
Mid- and far-infrared spectra of HF and DF in rare-gas matrices.
[E, $h\nu$, HF, DF; 4 - 30 K]
- 0 R. E. Meredith : J. Quant. Spectrosc. Radiat. Transf. 12, 485-503 (1972)
Strengths and widths in the first overtone band of hydrogen fluoride.
[E, $h\nu$, HF]
- 0 R. E. Meredith and F. G. Smith : J. Quant. Spectrosc. Radiat. Transf. 13, 89-114 (1973)
Computation of electric dipole matrix elements for hydrogen fluoride.
[T, HF]
- 0 W. Meyer and P. Rosmus : J. Chem. Phys. 63, 2356-2357 (1975)
PNO-CI and CEPA studies of electron correlation effects. III.
Spectroscopic constants and dipole moment functions for the ground states of the first-row and second-row diatomic hydrides.
[T, $h\nu$, HF, HCl, OH, NH, LiH, etc.]
- 0 J. S. Muentzer and W. Klemmer : J. Chem. Phys. 52, 6033-6037 (1970)
Hyperfine structure constants of HF and DF. [E, HF, DF]
- 0 J. S. Muentzer : J. Chem. Phys. 56, 5409-5412 (1972)
Polarizability anisotropy of hydrogen fluoride. [E, HF]

- 0 S. M. Naude and H. Verleger : Proc. Phys. Soc. London A63, 470-477 (1950)
The vibrational/rotation bands of the hydrogen halides HF, $H^{35}Cl$, $H^{37}Cl$, $H^{79}Br$, $H^{81}Br$ and $H^{127}I$. [E, $h\nu$, HF - HI]
- 0 J. F. Ogilvie and D. Koo : J. Mol. Spectrosc. 61, 332-336 (1976)
Dunham potential energy coefficients of the hydrogen halides and carbon monoxide. [T, HF - HI, CO]
- 0 J. F. Ogilvie, W. R. Rodwell and R. H. Tipping : J. Chem. Phys. 73, 5221-5229 (1980)
Dipole moment functions of the hydrogen halides. [T, HF - HI]
- 0 M. O'Keeffe : J. Am. Chem. Soc. 108, 4341-4343 (1986)
Calculated structures and fluoride affinities for fluorides.
[T, HF, BF_3 , NF_3 , PF_3 , CF_4 , SiF_4 , SF_6 , etc.]
- 0 E. Pahl, H. -D. Meyer and L. S. Cederbaum : Z. Phys. D38, 215-232 (1996a)
Competition between excitation and electronic decay of short-lived molecular states. [T, general theory]
- 0 E. Pahl, H. -D. Meyer, L. S. Cederbaum, D. Minelli and F. Tarantelli : J. Chem. Phys. 105, 9175-9181 (1996b)
Adiabatic and nonadiabatic effects of nuclear dynamics in spectra of decaying states : Auger spectrum of HF. [T, HF]
- 0 E. Pahl, L. S. Cederbaum, H. -D. Meyer and F. Tarantelli : Phys. Rev. Lett. 80, 1865-1868 (1998a)
Controlled interplay between decay and fragmentation in resonant Auger processes. [
- 0 E. Pahl, H. -D. Meyer, L. S. Cederbaum and F. Tarantelli : J. Elect. Spectrosc. Relat. Phenom. 93, 17-30 (1998b)
Theory of wave packet dynamics : resonant Auger spectrum of HF. [T, HF]
- 0 E. Pahl, L. S. Cederbaum and F. Tarantelli : Phys. Rev. A60, 1070-1078 (1999a)
Resonant decay spectra for energetically unselective excitation exemplified by the broadband resonant Auger spectrum of HF.
[T, HF; see A. P. Hitchcock (1981)]
- 0 E. Pahl, J. Brand, L. S. Cederbaum and F. Tarantelli : Phys. Rev. A60, 1079-1090 (1999b)
Impact of narrow-band excitation on resonant decay spectra. [T, HF]
- 0 G. Rimpel : Z. Naturforsch. 29a, 588-592 (1974)
Linienstarken in der 4-0- und 5-0-Rotationsschwingungsbande von Fluorwasserstoff. [E, $h\nu$, HF; $|\langle 4 | \mu(r) | 0 \rangle| = 3.48 \cdot 10^{-22}$ esu·cm]
- 0 W. G. Rothschild : J. Opt. Soc. Am. 54, 20-22 (1964)
Pure rotational absorption spectrum of hydrogen fluoride vapor between 22 and 250 μ . [E, $h\nu$, HF]

- 0 A. Salama and J. B. Hasted : J. Phys. B9, L333-L336 (1976)
Electron energy loss spectrum of hydrogen fluoride.
[E, HF; 70 eV, energy loss 11 - 16 eV]
- 0 R. N. Sileo and T. A. Cool : J. Chem. Phys. 65, 117-133 (1976)
Overtone emission spectroscopy of HF and DF : Vibrational matrix elements
and dipole moment function. [E, $h\nu$, HF, DF]
- 0 F. S. Simmons : J. Quant. Spectrosc. Radiat. Transf. 4, 95-106 (1964)
Some measurements of the infrared spectral radiances and emissivities of
hydrogen fluoride in combustion gases at 1000 °C. [E, $h\nu$, HF; 1250 K]
- 0 F. S. Simmons : AIAA J. 5, 778-787 (1967)
Infrared spectroscopic study of hydrogen-fluorine flames. [E, $h\nu$, HF]
- 0 W. D. Smith, T. -T. Chen and J. Simons : J. Chem. Phys. 61, 2670-2674 (1974)
Theoretical studies of molecular ions. Vertical ionization potentials
of hydrogen fluoride. [T, HF; equation-of-motion approach]
- 0 R. L. Spellicy, R. E. Meredith and F. G. Smith : J. Chem. Phys. 57, 5119-5123 (1972)
Strengths and collision broadened widths in the second overtone band of
hydrogen fluoride. [E, $h\nu$, HF]
- 0 J. G. Stamper and R. F. Barrow : J. Phys. Chem. 65, 250-251 (1961)
The $V(1\Sigma^+) - N(1\Sigma^+)$ transition of hydrogen bromide.
[E, $h\nu$, HF, HCl, HBr]
- 0 R. M. Talley, H. M. Kaylor and A. H. Nielsen : Phys. Rev. 77, 529-534 (1950)
The infra-red spectrum and molecular constants of HF and DF.
[E, $h\nu$, HF, DF; $\nu(1 \leftarrow 0) = 3961.42 \text{ cm}^{-1}$]
- 0 W. von Niessen, L. S. Cederbaum, W. Domcke and G. H. F. Diercksen : Chem. Phys. 56,
43-52 (1981)
Green's function calculations on the complete valence ionization spectra
of HF, HCl, HBr, and HI. [T, HF - HI]
- 0 D. U. Webb and K. Narahari Rao : J. Mol. Spectrosc. 28, 121-124 (1968)
Vibration rotation bands of heated hydrogen halides.
[E, $h\nu$, HF, HCl, DCl]
- 0 H. J. Werner and P. Rosmus : J. Chem. Phys. 73, 2319-2328 (1980)
Theoretical dipole moment functions of the HF, HCl, and HBr molecules.
[T, HF - HBr]
- 0 R. N. Yardley and G. G. Balint-Kurti : Mol. Phys. 31, 921-941 (1976)
Ab initio valence-bond calculations on HF, LiH, LiH^+ and LiF.
[T, HF, etc.]

Author Index for HF References

R. Abouaf 1	C. E. Brion 4, 6, 9, 11, 24
N. Acquista 15	R. E. Brown 24
N. G. Adams 1	E. Bruche 4
H. Agren 23	C. R. Brundle 5
J. R. Airey 1	M. J. Brunger 4
Y. Alhassid 1	R. J. Buenker 3
M. Allan 2, 23	B. W. Bullock 3
L. C. Allen 12, 13	P. G. Burke 5, 15
S. Alston 19	
I. V. Andrianov 2	M. Cacciatore 5
C. B. Arnold 19	I. Cacelli 5
M. R. Atwood 24	P. W. Cade 5
R. Azria 1, 2	M. Capitelli 5
	F. Carnovale 4, 6
R. F. W. Bader 2	V. Carravetta 5, 23
M. R. Baker 24	B. J. Casta Cabral 23
G. G. Balint-Kurti 28	A. D. Caunt 2
J. J. Ball 15	L. S. Cederbaum 16, 27, 28
R. A. Ballinger 2	R. Celiberto 5
K. L. Baluja 12, 19	E. S. Chang 6
M. S. Banna 2, 24	T. -T. Chen 28
I. Baraldi 2, 24	J. Chevaleyre 6
R. F. Barrow 2, 6, 12, 28	K. W. Chow 21
F. E. Bartoszek 2	W. A. Chupka 3, 6, 10
N. G. Basov 3	E. Clementi 6, 26
A. D. Becke 3	J. E. Collin 6
K. Becker 7	T. A. Cool 28
K. H. Becker 3	J. A. R. Coope 6
M. J. M. Beerlage 3	A. J. Cormack 22
C. F. Bender 3, 24	O. H. Crawford 24
W. S. Benedict 3	P. Crowley 24
H. A. Benesi 24	S. Cvejanovic 6
J. Berkowitz 3, 6, 10, 21	
M. Bettendorff 3	T. P. Das 6, 12
F. Biggs 18	E. R. Davidson 3, 8, 24
J. S. Binkley 21	D. W. Davis 2
D. M. Bishop 3, 4	W. E. Deeds 25
K. Blum 14	F. J. de Heer 20
V. Bondybey 24	P. M. Dehmer 21
K. Bonhoff 14	C. A. de Lange 20
S. Bonhoff 14	F. H. de Leeuw 7
J. F. Borns 4	L. A. Demekhhina 21
C. Boyle 8	H. Deutsch 7
S. W. Braiwood 4	T. F. Deutsch 7, 25
J. Brand 27	T. P. Debies 7

V. H. Dibeler 7
 G. H. F. Diercksen 16, 28
 J. D. Dillard 7
 G. Di Lonardo 7
 M. Dilonardo 5
 P. C. do Couto 23
 W. Domcke 8, 10, 16, 28
 R. J. Donovan 22
 A. E. Douglas 7
 A. B. F. Duncan 7
 F. B. Dunning 11, 15
 T. H. Dunning 7
 A. Dutta 23
 A. Dymanus 7

 H. Ehrhardt 7, 8, 13, 14, 17
 H. Estrada 8

 I. I. Fabrikant 8, 9, 23
 K. Faegri 8
 R. J. Fallon 25
 U. Fano 6
 Fayyazuddin 8
 D. Feil 3
 D. Feller 8
 E. S. Fishburne 25
 P. Flainek 10
 S. N. Foner 8
 S. Fraga 9
 M. T. Frey 11, 15
 M. J. Frisch 21
 D. C. Frost 6, 9, 25
 L. Frost 8

 E. Gafary 25
 N. M. Gailar 25
 J. W. Gallagher 9
 G. A. Gallup 9, 23
 V. T. Galochkin 3
 G. Garia 25
 R. Gaspar 9
 J. P. Gauyacq 9, 20
 F. Gel'mukhanov 23
 P. L. Gertischke 10
 S. Gewurtz 10
 F. A. Gianturco 10
 C. J. Gillan 5
 P. Girard 1
 J. Goldhar 25
 M. Gote 13, 14

F. R. Greening 7
 L. A. Gribov 10
 T. Grimm-Bosbach 20
 A. V. Grosse 3
 R. C. Guedes 23
 G. Guelachvili 25
 P. -M. Guyon 10

 H. Hamano 10
 H. F. Hameka 10, 22
 F. E. Harris 11
 M. C. Harrison 11, 16
 J. B. Hasted 15, 18, 28
 Y. Hatano 11
 M. Hayashi 11
 A. U. Hazi 18
 M. J. Henchman 1
 W. H. Henneker 2
 J. W. Hepburn 15
 W. F. Herget 25
 G. Herzberg 11
 J. H. Hildebrand 15, 19
 S. B. Hill 11
 P. R. Hilton 13
 J. J. Hinchin 25
 A. P. Hitchcock 4, 11, 27
 J. H. Holloway 3
 A. Hopkirk 22
 H. Hotop 21
 J. R. Hoyland 3, 11
 K. C. Hsieh 13
 K. P. Huber 11
 R. L. Hudson 8
 W. M. Huo 5
 A. C. Hurley 11, 12
 R. P. Hurst 12
 N. S. Hush 13

 V. I. Igoshin 3
 M. Inokuti 12
 Y. Itikawa 12
 S. Iwata 12

 A. Jain 12, 19
 J. Janin 6
 A. Javan 25
 J. W. C. Johns 6, 12
 N. Jonathan 12
 G. A. Jones 2
 K. N. Joshipura 12

P. S. Julienne 12
K. Jung 13, 14, 17
L. Jungo 23
J. Jureta 6

S. A. Kalin 8
A. M. Karo 12, 13
M. Karplus 6, 12, 13, 14, 16
D. Kastler 13
H. M. Kaylor 28
A. K. Kazansky 8, 25
H. P. Kelly 8
C. W. Kern 13
D. A. L. Kilcoyne 13
H. Kim 10
Ya. Kim 23
Yo. Kim 23
G. C. King 22
D. E. Kirkpatrick 25
B. K. Kittams 13
W. Klemmer 26
G. Knoth 13, 14, 17
B. J. D. Koch 24
H. J. Kolker 13, 14
K. L. Kompa 26
D. A. Konovalov 4
D. Koo 27
K. Kowalski 23
M. Krauss 12, 14, 26
S. A. Kucharski 23
G. A. Kuipers 14
L. V. Kulakov 3
M. Kumar 14
H. Kutz 14

U. T. Lamanna 10
N. F. Lane 14
P. W. Langhoff 9, 11
F. P. Larkins 14
E. M. Layton 14
J. A. Leavitt 24
F. Leber 14
L. C. Lee 21
T. J. Lee 21
J. Lehmann 14
H. J. Lempka 15, 26
V. G. Levin 15
H. Lew 10
J. -M. Li 16
D. R. Lide 15

G. C. Lie 26
F. Linder 15, 18
X. Ling 15
W. N. Lipscomb 13, 20
B. Lohmann 14
R. W. Long 15
R. J. Lovell 25

C. J. MacCallum 18
F. Manero 25
A. Mank 15
D. E. Mann 15
D. M. Manos 2
T. D. Mark 7
E. P. Martin 3
A. A. Mason 26
E. A. Mason 25
M. G. Mason 26
H. S. W. Massey 15
D. Mathur 15
C. M. McCarthy 13
I. E. McCarthy 24
K. K. McCulloh 7
C. A. McDowell 6, 9, 25
L. C. McIntyre 13
B. V. McKoy 18
A. D. McLean 15
C. M. Melliar-Smith 12
A. Mengoni 15
R. E. Meredith 26, 28
H. -D. Meyer 14, 27
W. Meyer 18, 21, 26
H. H. Michels 11
B. E. Mills 2
D. Minelli 27
R. Moccia 5, 15
M. Mohan 19
M. Molinari 5
F. Momicchioli 2, 24
L. A. Morgan 5, 15, 16
W. E. Morrell 15
M. A. Morrison 16
J. W. Moskowitz 16
J. S. Muentert 26
A. Mukherji 16
R. S. Mulliken 16

S. Nagakura 12
Y. Nakamura 11
K. Narahari Rao 25, 28

Zs. Naray 16
 S. M. Naude 27
 H. M. Nelson 24
 R. K. Nesbet 16, 20
 B. M. Nestmann 19
 V. G. Neudatchin 15
 D. Neuman 16, 26
 A. H. Nielsen 19, 25, 26, 28
 W. v. Niessen 16
 A. I. Nikitin 3
 A. -F. Niu 16
 T. Noguchi 19
 D. Norcross 19
 D. W. Norcross 16
 S. Nordholm 13

 J. F. Ogilvie 27
 M. O'Keeffe 27
 A. N. Oravesky 3
 A. E. Orel 18
 R. M. Osgood 25

 N. T. Padial 16
 E. Pahl 27
 A. Palma 10
 L. Pantano 10
 G. K. Paramonov 2
 C. -Y. Park 23
 R. G. Parr 3
 T. R. Passmore 15, 26
 L. Pauling 17
 J. F. Paulson 1
 A. V. Pavlitchenkov 15
 P. K. Pearson 24
 D. Peters 17
 S. Peyerimhoff 17
 S. D. Peyerimhoff 3, 19, 20
 P. Piecuch 23
 G. C. Pimentel 26
 J. C. Polanyi 2, 17
 J. A. Pople 7
 V. A. Popov 21
 A. W. Potts 17
 S. A. Pozdneev 17, 23
 V. Prasad 19
 W. C. Price 15, 17, 26

 J. W. Rabalais 7
 M. Radle 13, 14
 A. A. Radzic 17

M. Rafi 8
 N. K. Rahman 10
 N. F. Ramsey 24
 B. J. Ransil 9, 17
 T. N. Rescigno 18
 M. E. Riley 18
 G. Rimpel 27
 D. W. Robinson 26
 D. Rodgers 15
 W. R. Rodwell 27
 K. Rohr 18
 J. Romand 18, 25
 J. Romelt 3
 P. Rosmus 18, 26, 28
 W. G. Rothschild 27
 H. -G. Rubahn 18
 M. R. H. Rudge 18
 K. Ruedenberg 14
 M. -W. Ruf 21

 E. Safary 18
 A. Salama 18, 28
 E. O. Salant 25
 P. Salek 23
 J. A. R. Samson 9
 H. F. Schaefer III 21, 24
 B. Schimmelpfennig 19
 A. Schweig 20
 G. A. Segal 19
 A. -Ch. Sergenton 23
 B. Shao 1
 B. Sharma 19
 R. W. Shaw 19
 R. D. Shelton 19
 C. D. Sherrill 23
 T. Shirai 15
 D. A. Shirley 2, 24
 J. M. Sichel 19
 R. N. Sileo 28
 S. Silverman 3
 F. S. Simmons 19, 28
 J. Simons 1, 19, 28
 D. H. Slater 12
 V. N. Smirnov 10
 Yu. F. Smirnov 15
 A. L. Smith 21
 D. Smith 1, 28
 F. G. Smith 26, 28
 I. W. M. Smith 1
 K. A. Smith 15

V. H. Smith 14
W. D. Smith 28
C. P. Smyth 24
G. Snitchler 19
R. L. Spellicy 28
D. Spence 19
V. Spirko 23
R. Spohr 3, 10
J. G. Stamper 28
R. M. Stevens 20
A. P. Stogryn 20
D. E. Stogryn 20
I. H. Suzuki 24

R. M. Talley 28
I. Tamassy-Lentei 9
F. Tarantelli 27
D. C. Tardy 17
D. Teillet-Billy 1, 20
W. Thiel 20
T. D. Thomas 19
D. G. Thompson 10, 20
J. P. Thomson 4
R. Thorburn 20
B. A. Thrush 15
H. T. Thummel 20
D. Timlin 12
R. H. Tipping 27
J. P. Toennies 18
A. N. Tripathi 14
R. Tseng 6
J. E. Turner 12

W. J. van der Meer 20
J. T. Vanderslice 25
H. A. Van Sprang 20
H. Verleger 27
A. A. Viggiano 1
M. Vinodkumar 12
B. Vodar 18, 24, 25
M. Volmer 20
W. G. Von Holle 26
W. von Niessen 28
D. A. Vroom 9, 20, 25
H. Vu 24

M. G. Waggoner 21
A. C. Wahl 12
J. A. Walker 7
T. E. H. Walker 21

K. Wang 21
W. C. Wang 21
D. U. Webb 28
E. Weigold 4, 24
R. Weiss 21
H. J. Werner 28
H. -J. Werner 21
M. A. Whitehead 19
G. R. J. Williams 11
K. Wolf 19
S. F. Wong 2
K. B. Woodall 17
L. H. Woods 21

Y. Xu 9, 23

H. Y. Yamada 19
Y. Yamaguchi 21
R. N. Yardley 28
S. A. Yavna 21
V. A. Yavna 21
A. J. Yench 21, 22
M. Yoshimine 15

D. Zeroka 22
Q. Zhang 24
W. -H. Zhang 16
Y. Zhang 16
J. P. Ziesel 22

Hydrogen Chloride HCl

References for HCl, DCl (1900 - 1999)

(Hydrogen chloride, Hydrochloric acid)

[Hydrogen Halide, Halogen acid]

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 information,
	E : Exp., T : Theory.

The oldest paper in this list is given by J. S. Townsend (1903).

- A R. Abouaf and D. Teillet-Billy : J. Phys. B10, 2261-2268 (1977a) ○K
Fine structure in dissociative-attachment cross sections for HCl and DCl.
[E, HCl, DCl; 0.5 - 2.5 eV]
- A R. Abouaf and D. Teillet-Billy : 10th ICPEAC, Paris 2, 792-793 (1977b) -
Electron attachment to polar molecules : Structure in the dissociative
attachment cross sections for HCl, HBr, HF. [E, HCl, HBr, HF]
- O V. A. Adamovich, A. V. Dem'yanov, N. A. Dyatko, I. V. Kochetov, A. P. Napartovich and
A. P. Strel'tsov : Sov. Phys. Tech. Phys. 32, 568-572 (1987) -
Kinetics of slow electrons in an electron-beam pumped excimer laser.
[T, HCl, Xe, Ar]
- O V. A. Adamovich, A. V. Dem'yanov, I. V. Kochetov, D. D. Malyuta, Yu. B. Smakovskii and
A. P. Strel'tsov : Sov. J. Quant. Elect. 20, 1303-1309 (1990) -
Modeling of an XeCl excimer laser excited by a fast electron beam.
[T, HCl, Xe, Ar]
- A N. G. Adams, D. Smith, A. A. Viggiano, J. F. Paulson and M. J. Henchman : J. Chem. Phys.
84, 6728-6731 (1986) K
Dissociative attachment reactions of electrons with strong acid
molecules. [E, HF - HI, HNO₃, H₂SO₄, etc.; 300 and 510 K]
- O M. H. Alexander, B. Pouilly and T. Duhoo : J. Chem. Phys. 99, 1752-1764 (1993)
Spin-orbit branching in the photofragmentation of HCl.
[T, h ν , HCl, DCl]
- E Y. Alhassid and B. Shao : Phys. Rev. A46, 3991-4002 (1992) -
R Algebraic eikonal approach to electron-molecule scattering. II.
V Rotational-vibrational excitations.
[T, HCl, HF, LiF; 0.5 - 7 eV for HCl]

- A M. Allan and S. F. Wong : J. Chem. Phys. 74, 1687-1691 (1981) OK
Dissociative attachment from vibrationally and rotationally excited
HCl and HF. [E, HCl, HF; 300 - 1180 K]
- A D. A. Armstrong and S. S. Nagra : J. Phys. Chem. 79, 2875-2875 (1975)
Mechanisms of thermal electron capture by HCl and HBr.
[E, (HCl)₂, (HBr)₂]
- O D. A. Armstrong and S. S. Nagra : Can. J. Chem. 54, 3580-3591 (1976)
Hydrogen forming reactions of thermal electrons in hydrogen halides :
Kinetics and thermodynamics. [E, HCl, HBr]
- O D. Ascenzi, P. M. Regan and A. J. Orr-Ewing : Chem. Phys. Lett. 310, 477-484 (1999)
The ultraviolet photodissociation of DCl : H/D isotope effects on the
Cl(²P) atom spin-orbit branching. [E, hν, DCl]
- O M. N. R. Ashfold and J. D. Prince : Mol. Phys. 73, 297-315 (1991)
Third harmonic generation in molecular gases.
[E, hν, HCl, C₂H₂, CS₂, H₂S, CO, etc.]
- V D. E. Atoms and J. M. Wadehra : Chem. Phys. Lett. 197, 525-529 (1992)
Vibrational excitation of H₂ and HCl by low-energy electron impact.
An isotope scaling law. [T, HCl, H₂]
- A R. Azria, L. Roussier, R. Paineau and M. Tronc : Rev. Phys. Appl. 9, 469-473 (1974)
Attachment électronique dissociatif sur HCl et DCl.
[E, HCl, DCl; 0 - 12 eV]
- A R. Azria, Y. Le Coat, D. Simon and M. Tronc : J. Phys. B13, 1909-1918 (1980) K
Differential cross section dissociative attachment in HCl : Cl⁻ and H⁻
formation. [E, HCl]
- A R. Azria, Y. Le Coat and M. Tronc : 12th ICPEAC, Gatlinburg 411-412 (1981)
Spin-orbit splitting and dynamical coupling for differential H⁻ cross
section in hydrogen halides. [E, HCl, HBr, HI]
- A R. Azria : in Physics of Electronic and Atomic Collisions, 12th ICPEAC,
Gatlinburg 557-567 (1982) .
Electron molecule collision at low energy resonance and threshold
phenomena. [review, HCl, HF, HBr, HI]
- A V. A. Bailey and A. J. Higgs : Phil. Mag. 7, 277-286 (1929)
S On the attachment of electrons to the molecules HCl and NH₃.
[E, HCl, NH₃]
- S V. A. Bailey and W. E. Duncanson : Phil. Mag. 10, 145-160 (1930)
A On the behaviour of electrons amongst the molecules NH₃, H₂O and HCl.
[E, HCl, NH₃, H₂O]

- O C. H. Bair and F. Allario : Appl. Opt. 16, 97-100 (1977)
Measurement of HCl absorption coefficients with a DF laser.
[E, $h\nu$, HCl]
- V J. N. Bardsley : in Electron-Molecule and Photon-Molecule Collisions, Plenum
A 267-280 (1979)
Molecular resonance phenomena.
[review, HCl, H₂, N₂, O₂, NO, F₂, Cl₂, I₂]
- A J. N. Bardsley and J. M. Wahdera : J. Chem. Phys. 78, 7227-7234 (1983) ·
Dissociative attachment in HCl, DCl and F₂. [T, HCl, DCl, F₂]
- EX K. H. Becker : Comments At. Mol. Phys. 30, 261-284 (1994) ·
I Electron-impact ionization and dissociative excitation of halogen-
containing molecules. [comments, HF - HBr, BCl₃, NF₃, etc.]
- O N. S. Belokrinitskii, V. N. Gorshkov and A. I. Shchedrin : Tech. Phys. 38, 409-412
(1993) ·
Effect of inhomogeneities in pre-ionization, electric field, and gas
concentration on the arc formation dynamics in self-sustained discharges
in XeCl lasers. [T, HCl, Xe]
- O W. S. Benedict, R. Herman, G. E. Moore and S. Silverman : Can. J. Phys. 34, 850-875
(1956)
The strengths, widths, and shapes of infrared lines. II. The HCl
fundamental. [E, $h\nu$, HCl; 300 K]
- O D. M. Bishop and L. M. Vheung : J. Phys. Chem. Ref. Data 11, 119-133 (1982) ·
Vibrational contribution to molecular dipole polarizabilities.
[review, HCl, DCl, HF, HI, CO, NO, CH₄, SF₆, C₆H₆, etc., many molecules]
- A N. E. Bradbury : J. Chem. Phys. 2, 827-834 (1934)
Formation of negative ions in gases by electron attachment. Part I.
NH₃, CO, NO, HCl, and Cl₂. [E, HCl + Ar, NH₃, CO, NO, Cl₂]
- O B. A. Brice and F. A. Jenkins : Nature 123, 944-944 (1929)
A new ultra-violet band spectrum of hydrogen chloride.
[E, $h\nu$, HCl]
- O N. J. Bridge and A. D. Buckingham : Proc. Roy. Soc. London A295, 334-349 (1966)
The polarization of laser light scattered by gases.
[T and E, HCl, H₂, D₂, N₂, CO, NO, O₂, Cl₂, CO₂, N₂O, SO₂, NH₃, etc.]
- O C. E. Brion and J. P. Thomson : J. Elect. Spectrosc. Relat. Phenom. 33, 287-300
(1984a) ·
Compilation of valence shell molecular photoelectron branching ratios as
a function of energy. [compilation, HCl, HBr, HF, O₂, NO, CO, N₂, H₂O,
NH₃, CH₄, CO₂, COS, CS₂, N₂O]

- O C. E. Brion and J. P. Thomson : *J. Elect. Spectrosc. Relat. Phenom.* 33, 301-331 (1984b) .
 Compilation of dipole oscillator strengths (cross sections) for the photoabsorption, photoionization and ionic fragmentation of molecules. [compilation, HCl, HF, HBr, H₂, CO, N₂, O₂, NO, H₂O, NH₃, CH₄, N₂O, CO₂, COS, CS₂, SF₆]
- QT E. Bruche : *Ann. Phys.* 82, 25-38 (1926)
 Über die querschnitts Kurve des Chlorwasserstoffes gegenüber langsamen Elektronen und ihnen Vergleich mit der Argonkurve.
 [E, HCl, Ar]
- U P. Brumer and M. Shapiro : in Annual Review of Physical Chemistry, Vol. 43, Annu. Rev. Inc. 257-282 (1992)
 Laser control of molecular processes. [review, T, HCl, IBr]
- A I. S. Buchel'nikova : *Sov. Phys. JETP* 35, 783-791 (1959)
 Cross sections for the capture of slow electrons by O₂ and H₂O molecules and molecules of halogen compounds.
 [E, HCl, HBr, SF₆, CCl₄, CF₃I, CCl₂F₂, BCl₃, O₂, H₂O]
- A N. A. Burdett and A. N. Hayhurst : *Nature* 245, 77-78 (1973)
 Kinetics of formation of chloride ions in atmospheric pressure flames by way of $\text{HCl} + e^- \rightarrow \text{H} + \text{Cl}^-$. [, HCl]
- A N. A. Burdett and A. N. Hayhurst : *Proc. Roy. Soc. London A355*, 377-405 (1977)
 Kinetics of formation and removal of atomic halogen ions X⁻ by $\text{HX} + e^- \rightarrow \text{H} + \text{X}^-$ in atmospheric pressure flames for chlorine, bromine and iodine. [E, HCl, HBr, HI]
- E P. Burke, C. J. Gillan and L. A. Morgan : in Aspects of Electron-Molecule Scattering and Photoionization, AIP Conf. Proc. 204, New Haven 153-168 (1990)
 Threshold peaks in electron scattering by HF and HCl.
 [T, HCl, HF; R-matrix]
- E P. D. Burrow : *J. Phys.* B7, L385-L388 (1974)
 Threshold structure in the elastic cross section for scattering of slow electrons from HCl and HBr. [E, HCl, HBr]
- V M. Cacciatore, M. Capitelli, S. De Benedictis, M. Dilonardo and C. Gorse : in Nonequilibrium Vibrational Kinetics, Springer, M. Capitelli (Ed), 5-46 (1986)
 I Vibrational kinetics, dissociation, and ionization of diatomic molecules under nonequilibrium conditions. [T, HCl, N₂, H₂, CO]
- O P. E. Cade and W. M. Huo : *J. Chem. Phys.* 47, 649-672 (1967)
 Electronic structure of diatomic molecules. VII. A. Hartree-Fock wave-functions and energy quantities for the ground states of the second-row hydrides, AH. [T, HCl, NaH, SiH, PH, SH, etc.]

- A G. E. Caledonia : Chem. Rev. 75, 333-351 (1975) -
A survey of the gas-phase negative ion kinetics of inorganic molecules.
Electron attachment reactions. [review, HCl, F, Cl, Br, I, O, Br₂, I₂,
NO, OH, O₂, CO₂, H₂O, N₂O, NO₂, O₃, SO₂]
- V G. E. Caledonia and R. E. Center : J. Chem. Phys. 64, 4237-4238 (1976) -
A note on vibrational excitation of HCl by electron impact.
[E, HCl; reanalysis of R. E. Center (1974)]
- O M. Capitelli, M. Dilonardo and C. Gorse : Chem. Phys. 43, 403-414 (1979)
Electron energy distribution functions and dissociation kinetics of HCl
in non-equilibrium plasmas. [F, HCl]
- E M. Capitelli, R. Celiberto and M. Cacciatore : in Advances in Atomic, Molecular
V and Optical Physics, Vol. 33, Academic 321-372 (1994)
- EX Needs for cross sections in plasma chemistry.
I [review, HCl, HF, H₂, N₂, O₂, CO, F₂, Cl₂, CO₂, etc.]
- V R. E. Center and H. -L. Chen : J. Chem. Phys. 61, 3785-3788 (1974) -
Vibrational excitation of HCl by electron impact.
[E, HCl; rate const. for vib. ex., 0.8 - 1.7 eV]
- V R. E. Center and H. -L. Chen : IEEE J. Quant. Elect. 11, 687-687 (1975) -
Vibrational excitation of HCl by electron impact.
[E, HCl; $(1.2 \pm 0.4) \times 10^{-8}$ cm³/s at 1 eV mean electron temp.]
- V R. E. Center, J. H. Jacob, M. Rokni and Z. Rozenberg : Appl. Phys. Lett. 41, 116-118
(1982)
Vibrational excitation of HCl in electron beam excited Ar/HCl mixtures.
[E, HCl]
- O V. Cermak : J. Elect. Spectrosc. Relat. Phenom. 6, 135-144 (1975)
Electron spectroscopy of autoionizing states of oxygen, chlorine and
bromine atoms. [E, HCl, O₂, Cl₂, Br₂]
- A P. J. Chantry : in Applied Atomic Collision Physics, Vol. 3, Academic Press
35-70 (1982)
Negative ion formation in gas lasers.
[review, HCl, F₂, NF₃, HgBr₂, CO₂, Cl₂, CCl₄, I₂, SF₆]
- O A. I. Chichini : Chem. Phys. Lett. 209, 459-463 (1993)
Measurement of Cl(²P_{1/2}) quantum yield for the photodissociation of
NOCl, ICl, PCl₃, Cl₂O and COCl₂. [E, hν, HCl, Cl₂, CCl₄, NOCl, etc.]
- A A. A. Christodoulides, R. Schumacher and R. N. Schindler : J. Phys. Chem. 79,
1904-1911 (1975)
Studies of electron cyclotron resonance technique. X. Interactions of
thermal-energy electrons with molecules of chlorine, hydrogen chloride,
and methyl chloride. [E, HCl, Cl₂, CH₃Cl]

- A L. G. Christophorou, R. N. Compton and H. W. Dickson : 5th ICPEAC, Leningrad 582-583 (1967)
Electron capture by hydrogen halides. [E, HCl, DCl, DBr, HI]
- A L. G. Christophorou, R. N. Compton and H. W. Dickson : J. Chem. Phys. 48, 1949-1955 (1968a) ○K
Dissociative electron attachment to hydrogen halides and their deuterated analogs. [E, HCl, DCl, HBr, HI]
- A L. G. Christophorou and J. A. D. Stockdale : J. Chem. Phys. 48, 1956-1960 (1968b) ·
Dissociation electron attachment to molecules.
[compilation, HCl, HBr, HI, CCl₄, CCl₂F₂, etc.; about 40 molecules]
- A L. G. Christophorou, S. R. Hunter, J. G. Carter and S. M. Spyrou : in Swarm Studies and Inelastic Electron-Molecule Collisions, Springer-Verlag 303-328 (1987)
Effects of temperature on dissociative and nondissociative electron attachment.
[review, HCl, DCl, H₂, D₂, CClF₃, C₂F₆, 1-C₃F₆, C₆F₆, C₃F₈, etc.]
- V M. Cizek, J. Horacek and W. Domcke : Phys. Rev. A60, 2873-2881 (1999) ·
A Associative detachment, dissociative attachment, and vibrational excitation of HCl by low-energy electrons. [T, HCl]
- E L. A. Collins, R. J. W. Henry and D. W. Norcross : J. Phys. B13, 2299-2307 (1980)
V Electron collisions with polar molecules : exchange and polarization in inelastic scattering by HCl. [T, HCl]
- I K. T. Compton : Phys. Rev. 7, 501-508 (1916)
The theory of ionization by collisions. II. Case of inelastic impact.
[T,]
- I K. T. Compton and C. C. van Voorhis : Phys. Rev. 26, 436-453 (1925)
Probability of ionization of gas molecules by electron impacts.
[E, HCl, He - Ar, H₂, N₂, Hg; th. - 350 eV]
- I K. T. Compton and C. C. van Voorhis : Phys. Rev. 27, 724-731 (1926) ·
Probability of ionization of gas molecules by electron impacts. II. Critique. [E, HCl, He - Ar, H₂, N₂, Hg; th. - 350 eV]
- EX R. N. Compton, R. H. Huebner, P. W. Reinhardt and L. G. Christophorou : J. Chem. Phys. 48, 901-909 (1968) ·K
Threshold electron impact excitation of atoms and molecules : Detection of triplet and temporary negative ion states.
[E, HCl, He, N₂, H₂O, D₂O, C₆H₆, C₁₀H₈, SF₆]
- E J. D. Craggs and H. S. W. Massey : in Handbuch der Physik, 37/1, Springer EX 314-415 (1959)
I The collisions of electrons with molecules.
[review, T and E, HCl, H₂, N₂, CO, NO, N₂O, CO₂, NH₃, H₂O, H₂S, BF₃, BCl₃, CH₄, CH₃OH, C₂H₅OH, CCl₂F₂, CF₄, SiF₄, SiCl₄, CCl₄, SF₆, etc.]

- O D. M. Curtis and J. H. D. Eland : *Int. J. Mass Spectrom. Ion Process.* 63, 241-264 (1985) -
Coincidence studies of doubly charged ions formed by 30.4 nm photo-ionization.
[E, $h\nu$, HCl, O₂, NO, I₂, ICl, N₂O, CO₂, OCS, CS₂, SO₂, H₂S, CF₄, CH₃I]
- V S. Cvejanovic : in *AIP Conf. Proc.* 295, 18th ICPEAC, Aarhus 390-401 (1993)
Threshold and resonant feature in the vibrational excitation functions of hydrogen halides. [E, HCl, HF, HBr]
- E M. Dapor : *Nucl. Instrum. Meth.* B95, 470-476 (1995) -
Elastic scattering of electrons and positrons by atoms : differential and transport cross section calculations.
[T, Cl, Ne, Ar, C, Na, Cu, Hg, etc.]
- O V. V. Datsynk, I. A. Izmailov and V. A. Kochelap : *Phys. Usp.* 41, 379-402 (1998) -
Vibrational relaxation of excimers. [review, HCl, F₂, Cl₂, He - Xe]
- O S. Daviel, Y. Iida, F. Carnovale and C. E. Brion : *Chem. Phys.* 83, 391-406 (1984a)
Absolute oscillator strengths for the partial photoionization, ionic fragmentation and photoabsorption of HCl. [E, $h\nu$, HCl]
- O S. Daviel, C. E. Brion and A. P. Hitchcock : *Rev. Sci. Instrum.* 55, 182-191 (1984b)
EX New high-performance electron energy loss spectrometer for valence and inner-shell excitation studies. [E, HCl, N₂; 3 keV]
- S D. K. Davies : 33rd GEC, Oklahoma KA-6, 85-85 (1980)
 α Measurements of electron transport, attachment, and ionization in HCl.
A [E, HCl; W, α/N , η/N , $E/N = 3 - 300$ Td; see P. J. Chantry (1982)]
- S D. K. Davies : Report AFWAL-TR-82-2083, Aero Propulsion Lab., AFWA Lab., 1-94 (1982)
Measurement of swarm parameters in chlorine-bearing molecules. [E, HCl,
- S D. K. Davies : in *Nonequilibrium Effects in Ion and Electron Transport*, Plenum 177-195 (1990)
Measurements of attachment coefficients in the presence of ionization.
[E, HCl, N₂ + O₂, N₂ + O₂ + H₂O, CO₂, CCl₄]
- O E. de Beer, W. J. Buma and C. A. de Lange : *J. Chem. Phys.* 99, 3252-3261 (1993)
Resonance enhanced multiphoton ionization photoelectron spectroscopy and pulsed field ionization via the $F^1\Delta_2(v'=0)$ and $f^3\Delta_2(v'=0)$ Rydberg states of HCl. [E, $h\nu$, HCl]
- O F. H. de Leeuw and A. Dymanus : *J. Mol. Spectrosc.* 48, 427-445 (1973)
Magnetic properties and molecular quadrupole moment of HF and HCl by molecular-beam electric-resonance spectroscopy. [E, HCl, HF]

- V A. B. Dem'yanov, I. V. Kochetov and V. G. Pevgov : Sov. Phys. Tech. Phys. 24, 1234-1235 (1979) -
Vibrational excitation of HCl in an electric discharge.
[T, HCl; B. Eq.]
- O A. V. Dem'yanov, I. V. Kochetov, S. M. Kurkin, V. G. Pevgov and V. M. Shashkov : High
A Temp. 20, 5-9 (1982) -
Determination of the rate constants of dissociative electron attachment
in HCl molecules in a non-self-sustaining discharge. [E, HCl]
- I H. Deutsch, K. Becker and T. D. Mark : Int. J. Mass Spectrom. Ion Process. 167/168,
503-517 (1997) K
A modified additivity rule for the calculation of electron impact
ionization cross-section of molecules AB_n.
[T, HCl, HF, HBr, SF₆, CF₄, CCl₄, etc.]
- R A. S. Dickinson and D. Richards : J. Phys. B8, 2846-2857 (1975) -
The rotational excitation of polar molecules by electrons.
[T, HCl, CsF, CsCl, KI, CO, CN; 0.01 - 10 eV for HCl]
- A J. D. Dillard : Chem. Rev. 73, 589-643 (1973)
Negative ion mass spectrometry.
[review, HCl, HF, H₂, F₂, Cl₂, O₂, CO, NO, H₂O, N₂O, NO₂, CO₂, etc.]
- V W. Domcke and L. S. Cederbaum : J. Phys. B14, 149-173 (1981) -
On the interpretation of low-energy electron - HCl scattering phenomena.
[T, HCl; th. - 5 eV]
- V W. Domcke and C. Mundel : J. Phys. B18, 4491-4509 (1985)
A Calculation of cross sections for vibrational excitation and dissociative
attachment in HCl and DCl beyond the local-complex-potential approximation.
[T, HCl, DCl]
- V W. Domcke : in Aspects of Electron-Molecule Scattering and Photoionization,
A AIP Conf. Proc. 204, A. Herzenberg (Ed), New Haven 169-180 (1990)
Threshold phenomena in low-energy electron-polar-molecule collisions :
The nonlocal resonance model. [T, HCl]
- V W. Domcke : Phys. Rep. 208, 97-188 (1991) ○
A Theory of resonance and threshold effects in electron-molecule
collisions : The projection-operator approach.
[T, review, HCl, N₂, F₂, H₂, CO₂]
- EX A. E. Douglas and F. R. Greening : Can. J. Phys. 57, 1650-1661 (1979) -
The electronic spectra of HCl and HF. [E, HCl, HF]
- V L. Dube and A. Herzenberg : 10th ICPEAC, Paris 2, 794-795 (1977a) -
Vibrational excitation of HCl by electrons at threshold.
[T, HCl]

- V L. Dube and A. Herzenberg : Phys. Rev. Lett. 38, 820-823 (1977b)
Vibrational excitation of polar molecules by slow electrons : HCl.
[T, HCl]
- O T. Duhoo and B. Pouilly : J. Chem. Phys. 103, 182-193 (1995)
Analytical semiclassical calculation of photodissociation of the HCl
molecule. [T, $h\nu$, HCl]
- S J. Dutton : J. Phys. Chem. Ref. Data 4, 577-856 (1975)
A survey of electron swarm data. [compilation, HCl, etc.]
- E A. M. Efremov, V. I. Svetsov and D. I. Balashov : Contrib. Plasma Phys. 39, 247-250
V (1999) .
- EX Compilation of cross section data of elementary processes of HCl
I applicable for plasma modeling. [compilation, HCl]
- R H. Ehrhardt : in Aspects of Electron-Molecule Scattering, AIP Conf. Proc.
V 204, A. Herzenberg (Ed), New Haven 145-152 (1990)
Nuclear-excited Feshbach resonances in the electron scattering from HCl
and HF. [E, HCl, HF]
- EX H. Ehrhardt and L. Frost : Comments At. Mol. Phys. 29, 123-144 (1993) .
Near threshold electron impact electronic excitation of molecules.
[comments, HCl, N₂, HF, etc.]
- R A. Ernesti, M. Gote and H. J. Korsch : Phys. Rev. A52, 1266-1271 (1995) .K
Rotational excitation in two-center Coulomb-scattering systems :
Application to electron-molecule collisions.
[T, HCl, CO, N₂, Cl₂; 10² - 10³ eV]
- O H. Estrade and W. Domcke : J. Phys. B17, 279-297 (1984)
Analytic properties of the S matrix for a simple model of fixed-
nuclei electron-polar-molecule scattering.
[T, general theory for polar molecules, HCl, HF, HBr, etc.]
- V I. I. Fabrikant : J. Phys. B11, 3621-3633 (1978)
The influence of long-range interaction on the vibrational excitation of
polar molecules by electrons. [T, HCl, HF]
- V I. I. Fabrikant : J. Phys. B18, 1873-1879 (1985)
R-matrix theory of vibrational excitation of the HCl molecule by slow
electrons in the adiabatic approximation. [T, HCl; 0.3 - 4 eV]
- V I. I. Fabrikant : Z. Phys. D3, 401-410 (1986) .
- A R-matrix theory of inelastic processes in low-energy electron collisions
with HCl molecule. [T, HCl]
- V I. I. Fabrikant, S. A. Kalin and A. K. Kazansky : J. Chem. Phys. 95, 4966-4971 (1991a) .
- D Inelastic processes in e - HCl collisions in the energy range including
the dissociation threshold. [T, HCl; th. - 7 eV]

- V I. I. Fabrikant : Phys. Rev. A43, 3478-3486 (1991b) -
 A Quasiclassical R-matrix theory of inelastic processes in collisions of electrons with HCl molecules. [T, HCl]
- O D. Feller, C. Boyle and E. R. Davidson : J. Chem. Phys. 86, 3424-3440 (1987)
 One-electron properties of several small molecules using near Hartree-Fock limit basis sets. [T, HCl, HF, H₂O, CO, N₂, H₂S, NH₃, PH₃]
- O R. F. Fink, M. Kivilompolo and H. Aksela : J. Chem. Phys. 111, 10034-10045 (1999)
 Theory and ab initio calculations of 2p photoabsorption spectra : The lowest Rydberg resonances in HCl. [T, h ν , HCl]
- A F. Fiquet-Payard : J. Phys. B7, 810-816 (1974a) K
 Theoretical investigation of dissociative attachment in HCl and DCl. [T, HCl, DCl]
- A F. Fiquet-Payard : Vacuum 24, 533-547 (1974b) -
 Theoretical problems in the interpretation of dissociative attachment experiments. [T, HCl, H₂, NO₂, O₂, NO]
- A R. E. Fox : J. Chem. Phys. 26, 1281-1284 (1957)
 Negative ion formation in hydrogen chloride by electron impact. [E, HCl]
- I R. E. Fox : J. Chem. Phys. 32, 385-386 (1960)
 Threshold ionization of HCl by electron impact. [E, HCl]
- A D. C. Frost and C. A. McDowell : J. Chem. Phys. 29, 503-506 (1958)
 Electron capture processes in the hydrogen halides. [E, HCl, HF, HBr, HI, SF₆, O₂]
- S J. W. Gallagher, E. C. Beaty, J. Dutton and L. C. Pitchford : JILA Information Center Report No. 22, 1-258 (1982) -
 A compilation of electron swarm data in electro-negative gases. [compilation, HCl, F₂ - I₂, NF₃, SF₆, etc.]
- S J. W. Gallagher, E. C. Beaty, J. Dutton and L. C. Pitchford : J. Phys. Chem. Ref. Data 12, 109-152 (1983) -K
 An annotated compilation and appraisal of electron swarm data in electronegative gases. [compilation, HCl, Cl₂, CF₄, NH₃, H₂O, SF₆, etc.; 19 molecules]
- 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 photo-ionization, and ionic photofragmentation processes. [compilation, h ν , HCl, HF, HBr, HI, H₂, N₂, CO, O₂, NO, CO₂, N₂O, H₂O, NH₃, CH₄, H₂S, CS₂, OCS, SF₆, Cl₂, CCl₄]

- D B. C. Garrett, L. T. Redmon and M. J. Redmon : Phys. Rev. A33, 2091-2092 (1986) ·
Electron-impact dissociation of HCl.
[T, HCl; th. - 25 eV, through the A state]
- E W. R. Garrett : Phys. Rev. A11, 509-515 (1975) ·
Rotational resonances in molecular scattering of ultra-low-energy
electrons. [T, Feshbach resonances of diatomic polar molecules]
- V J. P. Gauyacq and A. Herzenberg : Phys. Rev. A25, 2959-2967 (1982)
Nuclear-excited Feshbach resonances in $e + \text{HCl}$ scattering. [T, HCl]
- A J. P. Gauyacq : Europhys. Lett. 1, 287-294 (1986)
On the dynamical aspect of the dissociative attachment in electron-
molecule collisions. [T, HCl, H_2 ; 0 - 1.5 eV for HCl]
- V J. P. Gauyacq : in Aspects of Electron-Molecule Scattering and Photoioniza-
tion, AIP Conf. Proc. No. 204, A. Herzenberg (Ed), New Haven 181-190 (1990)
Dissociation and association near threshold peaks. [T, HF - HI]
- V F. Gemperle and J. Horacek : Czech. J. Phys. 47, 305-315 (1997)
Threshold peak structures in the vibrational excitation of HCl by
low-energy electron impact. [T, HCl]
- V P. L. Gertitschke and W. Domcke : Z. Phys. D16, 189-200 (1990)
Threshold peaks in the vibrational excitation of molecules by electron
impact : A time-dependent view. [T, model]
- E F. A. Gianturco and D. G. Thompson : J. Phys. B10, L21-L26 (1977a)
Theoretical evidence for short-lived resonances in electron scattering
by HCl and HF molecules. [T, HCl, HF]
- V F. A. Gianturco and N. K. Rahman : Chem. Phys. Lett. 48, 380-384 (1977b)
Threshold behaviour of polar molecule vibrational excitations by electron
impact. [T, HCl, HF, HBr, HI]
- R F. A. Gianturco and N. K. Rahman : 10th ICPEAC, Paris 798-798 (1977c)
Close coupling calculations for HF and HCl molecules. Rotational
excitation in collisions with electrons. [T, HCl, HF]
- R F. A. Gianturco and N. K. Rahman : J. Phys. B11, 727-740 (1978)
Rotational excitations of HF and HCl molecules by collision with electrons.
[T, HCl, HF]
- O F. A. Gianturco and N. K. Rahman : J. Phys. B12, 2789-2795 (1979) ·
Internuclear dependence of static polarizability in hydrogen halides.
[T, HCl, HF, HBr]
- O F. A. Gianturco, A. Palma and L. Pantano : Nuovo Cimento 7D, 339-361 (1986) ·
Electron-molecule scattering processes. I. Bound-continuum interactions
in polar diatomic targets. [T, HCl, HF, LiH; mostly for HF]

- O S. C. Givertz and G. G. Balint-Kurti : J. Chem. Soc. Faraday Trans. 2, 82, 1231-1242 (1986)
Prediction of the $\text{Cl}(^2\text{P}_{3/2})/\text{Cl}(^2\text{P}_{1/2})$ branching ratio in the photo-dissociation of HCl. [T. $h\nu$, HCl]
- O Th. Glenewinkel-Meyer and Ch. Ottinger : J. Chem. Phys. 100, 1148-1160 (1994)
Near-resonant versus nonresonant chemiluminescent charge-transfer reactions of atomic ions with HCl.
[E. HCl; 1 keV electrons; mainly charge transfer]
- O E. Goldstein, G. A. Segal and R. W. Wetmore : J. Chem. Phys. 68, 271-279 (1978) K
Configuration interaction calculation on the resonance states of HCl^- .
[T. HCl]
- 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. HCl, H_2]
- O Z. W. Gortel, R. Teshima and D. Menzel : Phys. Rev. A60, 2159-2175 (1999)
Auger resonant Raman effect for dissociative core-excited states : General treatment and application to the HCl case. [T. HCl]
- R M. Gote and H. Ehrhardt : J. Phys. B28, 3957-3986 (1995) OK
Rotational excitation of diatomic molecules at intermediate energies : absolute differential state-to-state transition cross sections for electron scattering from N_2 , Cl_2 , CO and HCl.
[E. HCl, N_2 , Cl_2 , CO; 10 - 200 eV, 10 - 160°]
- O D. S. Green, G. A. Bickel and S. C. Wallance : J. Mol. Spectrosc. 150, 303-353 (1991a)
(2+1) resonance enhanced multiphoton ionization of hydrogen chloride in a pulsed supersonic jet : Spectroscopic survey. [E. $h\nu$, HCl]
- O D. S. Green, G. A. Bickel and S. C. Wallance : J. Mol. Spectrosc. 150, 354-387 (1991b)
(2+1) resonance enhanced multiphoton ionization of hydrogen chloride in a pulsed supersonic jet : Spectroscopy and Rydberg - valence interactions of the $^1\Sigma^+(0^+)$ and $^3\Sigma^-(1, 0^+)$ states. [E. $h\nu$, HCl]
- O D. S. Green, G. A. Bickel and S. C. Wallance : J. Mol. Spectrosc. 150, 388-469 (1991c)
(2+1) resonance enhanced multiphoton ionization of hydrogen chloride in a pulsed supersonic jet : Vacuum wavenumbers of rotational lines with detailed band analysis for excited electronic states of H^{35}Cl .
[E. $h\nu$, HCl]
- O L. A. Gribov and V. N. Smirnov : Sov. Phys. Usp. 4, 919-946 (1962) -
Intensities in the infra-red absorption spectra of polyatomic molecules.
[review, HCl, CO, NO, HBr, etc., many molecules]
- A H. Gutbier und H. Neuert : Z. Naturforsch. 9a, 335-337 (1954) -
Negative Ionen bei Dissoziation von HCl und HBr durch Elektronenstoss.
[E. HCl, HBr; 0 - 70 eV, relative]

- O R. T. Hall, D. Vrabec and J. M. Dowling : Appl. Opt. 5, 1147-1158 (1966)
A high-resolution, far infrared double-beam Lamellar grating interferometer. [E, $h\nu$, DCl, H₂O]
- QT A. Hamada and O. Sueoka : J. Phys. B27, 5055-5064 (1994) ○K
Total cross section measurements for positrons and electrons colliding with molecules : II. HCl. [E, HCl; 0.7 - 400 eV]
- I E. E. Hanson : Phys. Rev. 51, 86-94 (1937) K
A study of kinetic energies of atomic ions formed by electron impact in nitric oxide and hydrogen chloride. [E, HCl, NO]
- E M. Hayashi : in Swarm Studies and Inelastic Electron-Molecule Collisions,
V Springer-Verlag 167-187 (1987) K
I Electron collision cross-sections for molecules determined from beam
A and swarm data. [compilation, HCl, CF₄, H₂O, SO₂, CH₄, C₂H₄, SiH₄, etc.]
- O M. Hayashi and Y. Nakamura : EMS-99, Tokyo 175-176 (1999) .
May we measure the exact values of electron collision cross sections for molecules by beam and swarm experiments ?
[general comment, HCl molecules are mixtures of HCl(r) and HCl(v)]
- O W. Hayes and F. C. Brown : Phys. Rev. A6, 21-30 (1972)
Absorption by some molecular gases in the extreme ultraviolet.
[E, $h\nu$, HCl, SiH₄, PH₃, H₂S; 100 - 200 eV]
- O A. Henglein and G. A. Muccini : Z. Naturforsch. 17a, 452-460 (1962) .
Mass spectrometric observation of electron and photon transfer reactions between positive ions and neutral molecules.
[E, HCl, CH₄, H₂S, H₂O, NH₃, etc.]
- E R. J. W. Henry : Int. J. Quant. Chem. : Quant. Chem. Sympo. 13, 633-644 (1979)
Low-energy-electron-diatomic molecule scattering.
[T, HCl; exchange and polarization effect]
- A. Herzenberg : Notas de Fisica 5, 227- (1982)
[T, HCl, ; 0 - 1.5 eV]
- EX M. Higo and T. Ogawa : Chem. Phys. 44, 279-285 (1979)
Translational energy distribution of the excited hydrogen atom produced by controlled electron impact on HCl. [E, HCl; 25 - 300 eV]
- A J. Horacek : J. Phys. B28, 1585-1591 (1995) .
Application of the Schwinger-Lanczos method to the calculation of dissociative attachment of electrons to diatomic molecules. [T, HCl]
- O K. P. Huber and G. Herzberg : Molecular Spectra and Molecular Structure IV. Constants of Diatomic Molecules, Van Nostrand-Reinhold 304-308 (1979)

- O M. Inokuti : Rev. Mod. Phys. 43, 297-347 (1971)
Inelastic collisions of fast charged particles with atoms and molecules —
The Bethe theory revisited. [T, 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)].
[T, general theory]
- R Y. Itikawa and K. Takayanagi : J. Phys. Soc. Jpn. 26, 1254-1264 (1969a)
Rotational transition in polar molecules to electron collisions —
Application to CN and HCl. [T, HCl, CN]
- E Y. Itikawa : J. Phys. Soc. Jpn. 27, 444-452 (1969b). Errata 27, 1374-1374 (1969)
R Rotational transition in polar molecules by electron collisions. II.
Differential cross sections. [T, HCl, CN; 0.01 - 5 eV for HCl]
- R Y. Itikawa and O. Ashihara : J. Phys. Soc. Jpn. 30, 1461-1466 (1971)
Exchange effects on the rotational excitation of HCl by electron
collisions. [T, HCl]
- E Y. Itikawa : Phys. Rep. 46, 117-164 (1978)
V Electron scattering by polar molecules.
[T, review, HCl, HF, HBr, KI, LiF, CsF, CsCl, CN, CO, NO, etc.]
- QT A. Jain and K. L. Baluja : Phys. Rev. A45, 202-218 (1992) K
Total (elastic plus inelastic) cross sections for electron scattering
from diatomic and polyatomic molecules at 10 - 5000 eV : H₂, Li₂, HF, CH₄,
N₂, CO, C₂H₂, HCN, O₂, HCl, H₂S, PH₃, SiH₄ and CO₂. [T, HCl, PH₃, etc.]
- A G. R. A. Johnson and J. L. Redpath : Trans. Faraday Soc. 66, 861-868 (1970)
Electron capture processes in the radiolysis of hydrogen chloride and of
propane + hydrogen chloride mixtures. [E, HCl, HCl + C₃H₈]
- O J. H. Johnson, H. E. Cartland, T. C. Genoni and A. M. Hunter : J. Appl. Phys. 66,
5707-5725 (1981) -
A comprehensive kinetic model of the electron-beam-excited xenon chloride
laser. [T, HCl, Ne, Ar, Xe, Cl₂]
- EX J. Jureta, S. Cvejanovic, D. Cvejanovic, M. Kurepa and D. Cubric : J. Phys. B22,
2623-2631 (1989) K
Threshold electron impact excitation of hydrogen chloride.
[E, HCl; 4.2 - 14 eV]
- V S. A. Kalin and A. K. Kazansky : J. Phys. B23, 4377-4400 (1990)
A The semiclassical version of the non-local resonance theory of electron-
molecule collisions. [T, HCl, F₂]
- O F. Kannari, W. D. Kimura and J. J. Ewing : J. Appl. Phys. 68, 2615-2631 (1990) K
Comparison of model predictions with detailed species kinetic measure-
ments of XeCl laser mixtures. [modeling, cross section set for HCl]

- O N. V. Karel'ov, V. Zh. Madirbaev, P. A. Skovorodko, G. I. Sukhinin and R. G. Sharafutdinov : Sov. Phys. Tech. Phys. 27, 1032-1034 (1982) .
Inverse distribution of populations of vibrational levels in the $A^2\Sigma$ state of the HCl^+ ion excited by electron impact. [E, HCl ; 10 keV]
- V A. K. Kazansky : Theor. Math. Phys. 36, 825-832 (1978)
Model of the passing of the s term through the parabolic boundary of the continuum. [T,
- V A. K. Kazansky : Sov. Phys. JETP 55, 824-827 (1982) .
A Antibonding intermediate state in the theory of vibrational excitation of diatomic molecules by slow electrons. [T, HCl only; $0 \rightarrow 1$, $0 \rightarrow 2$]
- V A. K. Kazansky : J. Phys. B16, 2427-2443 (1983) .
A Vibrational excitation of molecule by electron impact via the virtual intermediate state. [T, HCl ; 0.4 - 1.6 eV]
- E A. K. Kazanskii and I. I. Fabrikant : Sov. Phys. Usp. 27, 607-630 (1984) .
R Scattering of slow electrons by molecules.
V [T, review, HCl , N_2 , H_2 , CO_2 , CH_4 , LiF , HCN]
- V A. K. Kazansky : J. Phys. B29, 4709-4725 (1996) .
A Discretization of the electron continuum in the non-local theory of inelastic electron-molecule collisions. [T, HCl , DCl ; th. - 5 eV]
- O V. K. Khersonskii : Opt. Spectrosc. 43, 19-21 (1977)
Photodissociation of Poschl-Teller oscillators.
[T, $h\nu$, HCl ; from high vibrational levels]
- I B. K. Kittams, K. C. Hsieh and L. C. McIntyre, Jr. : J. Chem. Phys. 82, 3707-3715 (1985)
A time-of-flight study of H^+ fragments produced by low-energy electron bombardment of the hydrogen halides. [E, HF - HI ; 21.2 - 51.2 eV]
- O A. Kivimaki, H. Aksela, S. Aksela, A. Yagishita and E. Shigemasa : J. Phys. B26, 3379-3386 (1993)
Electron spectra of HCl at core to Rydberg resonances.
[E, $h\nu$, HCl ; 195.8 - 208.4 eV]
- A D. Kligler, Z. Rozenberg and M. Rokni : Appl. Phys. Lett. 39, 319-321 (1981) K
Measurement of HCl electron attachment in relation to $XeCl$ laser kinetics.
[E, HCl]
- A D. Kligler, Z. Rozenberg and M. Rokni : J. Chem. Phys. 77, 3458-3463 (1982) .
Electron attachment by chlorine donors in e-beam pumped laser gas mixtures. [E, HCl , F_2 , CCl_4 , CH_3Cl , etc.]
- O L. E. Kline and M. J. Kushner : Crit. Rev. in Solid State Materi. Sci. 16, 1-35 (1989)
Computer simulation of materials processing plasma discharges. [review, HCl , CF_4 , CCl_2F_2 , F_2 , Cl_2 , C_2F_6 , CCl_4 , SF_6 , SiH_4 , Si_2H_6 , CH_4 , C_2H_6]

- E G. Knoth, M. Radle, M. Ehrhardt and K. Jung : Europhys. Lett. 4, 805-810 (1987) ·K
V Rovibrational threshold structures in the electron scattering from hydrogen halides. [E, HCl, HF; DCS, 0.15 - 5.5 eV, 15 - 135°]
- E G. Knoth, M. Radle, M. Gote, H. Ehrhardt and K. Jung : J. Phys. B22, 299-326 (1989a) ○K
V Near-threshold electron impact rovibrational excitation of HCl and HF. [E, HCl, HF; DCS, 0.5 and 1.5 eV, 15 - 135° for HCl]
- V G. Knoth, M. Gote, M. Radle, F. Leber, K. Jung and H. Ehrhardt : J. Phys. B22, 2797-2816 (1989b) ○K
Electron impact rovibrational excitation close to threshold of the $v=2$ and $v=3$ levels of HF and HCl. [E, HCl, HF]
- V G. Knoth, M. Gote, M. Radle, K. Jung and H. Ehrhardt : Phys. Rev. Lett. 62, 1735-1737 (1989c) ○
Nuclear-excited Feichbach resonances in the electron scattering from hydrogen halides. [E, HCl, HF]
- V I. V. Kochetov, A. V. Dem'yanov, A. P. Napartovich, M. Capitelli, C. Gorse and S. Longo : Sov. J. Plasma Phys. 18, 569-570 (1992) ·
Excitation of the vibrational states of HCl molecules in a Ar - HCl plasma produced by an electron beam : critical analysis of the experimental data. [E, HCl + Ar]
- O M. Krauss, J. A. Walker and V. H. Dibeler : J. Res. Natl. Bur. Std. 72A, 281-293 (1968)
Mass spectrometric study of photoionization. X. Hydrogen chloride and methyl halides. [E, $h\nu$, HCl, CH₃Cl, CH₃F]
- O M. Krauss and W. J. Stevens : J. Chem. Phys. 74, 570-577 (1981)
Electronic structure of the negative ion of HCl. [T, HCl]
- O E. Kukk, H. Aksela, O. -P. Sairanen, E. Nommiste, S. Aksela, S. J. Osborne, A. Ausmees and S. Svensson : Phys. Rev. A54, 2121-2126 (1996)
Core-to-Rydberg excitations and their Auger decay in the HCl and DCl molecules. [E, $h\nu$, HCl, DCl]
- O E. Kukk, A. Wills, N. Berrah, B. Langer, J. D. Bozek, U. Nayadin, M. Aisherhi, A. Farhat and D. Cubaynes : Phys. Rev. A57, R1485-R1488 (1998) ·
Angle-resolved two-dimensional mapping of electron emission following Cl 2p excitations in the HCl molecule. [E, $h\nu$, HCl]
- O M. Kulp : Z. Phys. 67, 7-23 (1931)
Analyse und Deutung der ultravioletten Salzsäurebanden. [E, $h\nu$, HCl; 3000 - 4000 Å]
- O P. Laborie, J. P. Rocard and J. A. Rees : in Electronic Cross-Sections and Macroscopic Coefficients. 2 - Metallic Vapours and Molecular Gases, Dunod 256-260 (1971)

- O H. M. Lambert, P. Dagdigian and M. H. Alexander : J. Chem. Phys. 108, 4460-4466 (1998)
Spin-orbit branching in the photofragmentation of HCl at long wavelength.
[E, $h\nu$, HCl: 1933 - 2353 Å]
- I F. W. Lampe, J. L. Franklin and F. H. Field : J. Am. Chem. Soc. 79, 6129-6132 (1957) K
Cross sections for ionization by electrons.
[E, HCl, He - Xe, H₂O, H₂S, NH₃, etc.; 75 eV]
- E N. F. Lane : Rev. Mod. Phys. 52, 29-119 (1980)
The theory of electron-molecule collisions.
[review, HCl, HF, HBr, H₂, N₂, O₂, CO₂, CO, N₂O, H₂O, NO]
- O F. P. Larkins : J. Elect. Spectrosc. Relat. Phenom. 67, 159-162 (1994) .
Influence of core hole screening on molecular Auger rates and inner-shell lifetimes. [T, HCl, HF, CH₄, NH₃, PH₃, H₂O, SiH₄, H₂S]
- O H. J. Lempka, T. R. Passmore and W. C. Price : Proc. Roy. Soc. London A304, 53-64 (1968)
The photoelectron spectra and ionized states of the halogen acids.
[E, $h\nu$, HCl, HF, HBr, HI]
- E F. Linder : 10th ICPEAC, Invited Paper, Paris 51-69 (1977) .
V Electron scattering by polar molecules. [review, HCl, HF, HBr, H₂O]
- QT Y. Liu and J. Sun : Phys. Lett. A222, 233-236 (1996) .
A semi-empirical formula for total cross sections of electron scattering from diatomic molecules.
[T, HCl, CO, N₂, NO, O₂; 10 - 4000 eV, Born approx.]
- U R. Liyanage, Y. Yang, S. Hashimoto, R. J. Gordon and R. W. Field : J. Chem. Phys. 103, 6811-6814 (1995)
Electronic control of the spin-orbit branching ratio in the photo-dissociation and predissociation of HCl. [E, $h\nu$, HCl]
- O S. Longo, C. Gorse and M. Capitelli : IEEE Trans. Plasma Sci. 19, 379-386 (1991) .
Open problems in the XeCl laser physics. [T, HCl + Xe + Ne]
- O S. -P. Lu, S. M. Park, Y. Xie and R. J. Gordon : J. Chem. Phys. 96, 6613-6620 (1992)
Coherent laser control of bound-to-bound transitions of HCl and CO.
[E, $h\nu$, HCl, CO]
- O F. Magnotta, D. J. Nesbet and S. R. Leone : Chem. Phys. Lett. 83, 21-25 (1981)
Excimer laser photolysis studies of translational-to vibrational energy transfer. [E, $h\nu$, HCl, HBr, H₂S]
- O M. Makarov and Y. Bychkov : J. Phys. D29, 350-363 (1996)
The dynamics of XeCl discharge contraction. [E, HCl + Ne + Xe]
- E L. Malegat and M. Le Dourneuf : J. Phys. B23, 527-547 (1990) K
e - HCl and e - HBr scattering calculations in the valence space.
[T, HCl, HBr]

- O G. Maroulis : J. Chem. Phys. 108, 5432-5448 (1998) .
A systematic study of basis set, electron correlation, and geometry effects on the electric multipole moments, polarizability, and hyperpolarizability of HCl. [T, HCl]
- O Y. Matsumi, P. K. Das and M. Kawasaki : J. Chem. Phys. 92, 1696-1701 (1990a)
Doppler spectroscopy of chlorine atoms generated from photodissociation of hydrogen chloride and methyl chloride at 157 and 193 nm.
[E, $h\nu$, HCl, CH₃Cl]
- O Y. Matsumi, K. Tonokura and M. Kawasaki : J. Chem. Phys. 93, 7981-7985 (1990b) .
Photodissociation of hydrogen chloride and hydrogen bromide.
[E, $h\nu$, HCl, HBr; 157, 193 and 243 nm]
- O M. McCartney, P. G. Burke, L. A. Morgan and U. J. Gillan : J. Phys. B23, L415-L418 (1990)
Resonance effects in low energy electron scattering by HCl.
[T, HCl; resonance was observed near 3 eV]
- O A. G. McConkey, G. Dawber, L. Avaldi, M. A. MacDonald, G. C. King and R. I. Hall : J. Phys. B27, 271-282 (1994)
Threshold photoelectrons coincidence spectroscopy of doubly charged ions of hydrogen chloride and chlorine. [E, $h\nu$, HCl, Cl₂]
- O A. D. McLean and M. Yoshimine : J. Chem. Phys. 47, 3256-3262 (1967) .
Computed grand-state properties of FH and ClH. [T, HCl, HF]
- V A. Mengoni and T. Shirai : Phys. Rev. A44, 7258-7268 (1991) .
Algebraic-eikonal approach to the electron-molecule-collision process : Vibrational excitation and quadrupole interaction. [T, HCl, HF]
- A W. J. Miller and R. K. Gould : J. Chem. Phys. 68, 3542-3547 (1978)
Electron attachment kinetics in flames. II. Dissociative attachment to HCl.
[E, HCl; attach. rate coeff., 1730 - 2475 K]
- O R. Mocca : J. Chem. Phys. 40, 2186-2192 (1964)
One-center basis set SCF MO's. III. H₂O, H₂S and HCl.
[T, HCl, H₂O, H₂S, grand-state wavefunctions]
- R S. Mohanan and K. N. Joshipura : Z. Phys. D15, 67-70 (1990) .
Slow electron collisions with polar molecules in plasma.
[T, HCl, H₂O, HCN; DCS for rot. excitation, 0.01 - 1 eV]
- EX G. R. Mohlmann, S. Tsurubuchi and F. J. de Heer : Chem. Phys. 18, 145-154 (1976)
Excitation cross sections for 3s, 3p and 3d sublevels of atomic hydrogen split from simple molecules by high-energy electron impact.
[E, HCl, H₂, H₂O, NH₃, CH₄; 1000 and 2000 eV]
- EX G. R. Mohlmann, K. K. Bhutani and F. J. de Heer : Chem. Phys. 21, 127-134 (1977a) .
Emission cross sections of HCl⁺(A²Σ⁺, v' → X²Π₁, v'') for electrons on HCl and lifetimes of the HCl⁺(A²Σ⁺, v') states. [E, HCl; 0 - 2000 eV]

- O G. R. Mohlmann and F. J. de Heer : Phys. Scr. 16, 51-59 (1977b) ·
Measurements of lifetimes and corresponding branching ratios for excited states in simple molecules and molecular ions.
[E, HCl, H₂S, H₂O, CO]
- EX 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, HCl, HBr, N₂O, H₂S, NH₃, CH₄; 20 - 2000 eV]
- EX G. R. Mohlmann and F. J. de Heer : Chem. Phys. 40, 157-162 (1979) K
Production of Balmer radiation by electron impact (0 - 2000 eV) on small hydrogen containing molecules.
[E, HCl, HBr, H₂, H₂O, H₂S, NH₃, CH₄; 20 - 2000 eV]
- E L. A. Morgan, P. G. Burke and C. G. Gillan : J. Phys. B23, 99-113 (1990a) ○
V Low-energy electron scattering by HCl.
A [T, HCl; R-matrix, 0.01 - 5 eV]
- V L. A. Morgan : in AIP Conf. Proc. No. 205, 16th ICPEAC, New York 96-102 (1990b)
R-matrix calculations of electron molecule scattering.
[T, HCl, HF, H₂, N₂]
- O W. L. Morgan and M. J. Pound : Bull. Am. Phys. Soc. 26, 722-722 (1981a) ·
Kinetics of e-beam excited XeCl. [T, HCl + Ne + Xe, Cl₂ + Ne + Xe]
- U W. L. Morgan, N. W. Winter and K. C. Kulander : UCRL-50021-80, Lawrence Livermore Natl. Labo. 844- (1981b)
- S W. L. Morgan : JILA Report No. 34, 1-46 + figures (1991)
A critical evaluation of low energy electron impact cross sections for plasma processing modeling : I. Cl₂, F₂, and HCl. II. CF₄, SiH₄, and CH₄.
[compilation, HCl, Cl₂, F₂, CF₄, SiH₄, CH₄]
- S W. L. Morgan : Plasma Chem. Plasma Process. 12, 449-476 (1992) ○K
A critical evaluation of low-energy electron impact cross sections for plasma processing modeling. I. Cl₂, F₂, and HCl.
[compilation, HCl, F₂, Cl₂]
- I J. D. Morrison : J. Chem. Phys. 21, 1767-1772 (1953)
Studies of ionization efficiency. Part III. The detection and interpretation of fine structure. [E, HCl, He - Xe, Hg, N₂, CO₂, C₆H₆]
- O M. A. Morrison and L. A. Collins : Phys. Rev. A23, 127-138 (1981)
Exchange in low-energy electron-molecule scattering : Orthogonalization and free-electron-gas approximations for collisions with polar and nonpolar molecules. [T, HCl, H₂, N₂, CO, LiH, LiF; 0.01 - 1.0 Ry]

- E M. A. Morrison : in Advances in Atomic and Molecular Physics, Vol. 24,
V Academic Press 51-156 (1988) .
Near-threshold electron-molecule scattering.
[T, review, HCl, HBr, H₂, N₂, F₂, CO, Li₂, CO₂, CH₄]
- O R. S. Mulliken : Rev. Mod. Phys. 4, 1-86 (1932)
Interpretation of band spectra. Part III. Electron quantum numbers and
states of molecules and their atoms.
[T, review, HCl, CO, NO, F₂, Cl₂, Br₂, I₂, etc.]
- O R. S. Mulliken : Phys. Rev. 51, 310-332 (1937)
Low electronic states of simple heteropolar diatomic molecules : III.
Hydrogen and univalent metal halides. [T, HF - HI, etc.]
- O R. S. Mulliken : J. Chem. Phys. 8, 382-395 (1940)
Intensities in molecular electronic spectra. X. Calculations on mixed-
halogen, hydrogen halide, alkyl halide, and hydroxyl spectra.
[T, HF - HI, F₂ - Br₂, OH, CH₃Cl - CH₃I, etc.]
- O W. F. Murphy, W. Holzer and H. J. Bernstein : Appl. Spectrosc. 23, 211-218 (1969)
Gas phase Raman intensities : A review of "pre-laser" data.
[compilation, HCl, HBr, H₂, D₂, N₂, O₂, CO, CO₂, CS₂, H₂S, C₄F₈, etc.]
- O J. A. Myer and J. A. R. Samson : J. Chem. Phys. 52, 266-271 (1970)
Vacuum-ultraviolet absorption cross sections of CO, HCl, and ICN
between 1050 and 2100 Å. [E, hν, HCl, CO, ICN]
- A S. S. Nagra and D. A. Armstrong : J. Phys. Chem. 81, 599-600 (1977)
Electron capture reactions in mixtures of HCl and HBr. [E, HCl + HBr]
- O Zs. Naray : Acta Phys. Acad. Sci. Hung. 2, 55- (1952)
Zur wellenmechanischen Theorie des HCl Molekuls. [T, HCl]
- A R. K. Nesbet : J. Phys. B10, L739-L743 (1979) .
Interpretation of low-energy electron - HCl scattering phenomena.
[T, HCl]
- I H. K. Nasrallah and P. Marmet : J. Phys. B18, 2075-2086 (1985)
Excited states of HCl and DCl and their negative ions between 12.5 and
28 eV. [E, HCl, DCl]
- O A. J. C. Nicholson : J. Chem. Phys. 43, 1171-1177 (1965)
Photoionization-efficiency curves. II. False and genuine structure.
[E, HCl, CH₃Cl, C₂H₄, C₃H₆, C₂H₂, CH₄, CD₄, C₂H₆, C₃H₈, etc.]
- I A. O. Nier and E. E. Hanson : Phys. Rev. 50, 722-726 (1936) K
A mass-spectrographic analysis of the ions produced in HCl under electron
impact. [E, HCl]

- O W. L. Nighan and R. T. Brown : Appl. Phys. Lett. 36, 498-500 (1980) K
Efficient XeCl(B) formation in an electron-beam assisted Xe/HCl laser discharge. [E, HCl + Xe]
- R D. W. Norcross and N. T. Padial : Phys. Rev. A25, 226-238 (1982)
The multipole-extracted adiabatic-nuclei approximation for electron-molecule collisions. [T, HCl, CO]
- E D. W. Norcross : Int. J. Quant. Chem. : Quant. Chem. Sympo. 17, 191-191 (1983)
Review of electron-molecule scattering. [T, HCl, N₂]
- O F. Norling : Z. Phys. 104, 638-652 (1937a)
Über die Bandenspektren der ionisierten Halogenwasserstoffe. II. Chlorhydrid- und Chlordeutridspektren. [E, $h\nu$, HCl, DCl]
- O F. Norling : Z. Phys. 106, 177-204 (1937b)
Über die Bandenspektren der ionisierten Halogenwasserstoffe. III. Feinstruktur und Isotopieeffekt in den Chlorhydrid- und Chlordeutridspektren. Termschema. [T, $h\nu$, HCl, DCl]
- EX T. Ogawa, T. Tsuboi and K. Nakashima : J. Chem. Phys. 101, 3696-3703 (1994)
Electron-impact dissociation of HCl : Translational energy and angular distributions of excited hydrogen atoms. [E, HCl; 22 - 100 eV]
- A O. J. Orient and S. K. Srivastava : Phys. Rev. A32, 2678-2681 (1985) OK
Cross sections for H⁻ and Cl⁻ production from HCl by dissociative electron attachment. [E, HCl]
- 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, HCl, He - Xe, H₂, N₂, O₂, CO₂, N₂O, CH₄ - C₅H₁₂, C₂H₄ - C₅H₁₀, etc.]
- E N. T. Padial, D. W. Norcross and L. A. Collins : Phys. Rev. A27, 141-148 (1983)
R Vibrationally elastic scattering of electrons by HCl. [T, HCl]
- R N. T. Padial and D. W. Norcross : Phys. Rev. A29, 1590-1593 (1984a) ·
V Ro-vibrational excitation of HCl by electron impact. [T, HCl]
- O N. T. Padial and D. W. Norcross : Phys. Rev. A29, 1742-1748 (1984b) ·
Parameter-free model of the correlation-polarization potential for electron-molecule collisions. [T, HCl, HF, H₂, N₂, CO₂, CO]
- O J. Park, Y. Lee and G. W. Flynn : Chem. Phys. Lett. 186, 441-449 (1991)
Tunable diode laser probe of chlorine atoms produced from the photodissociation of a number of molecular precursors.
[E, $h\nu$, HCl, Cl₂, S₂Cl₂, CCl₄, etc.]
- O L. Pauling : J. Am. Chem. Soc. 54, 988-1003 (1932)
The nature of the chemical bond. III. The transition from one extreme bond type to another. [T, HF - HI, etc.; potential energy curve]

- A B. M. Penetrante and J. N. Bardsley : J. Appl. Phys. 54, 6150-6153 (1983) K
Monte Carlo studies of attachment in HCl and HCl - N₂ mixtures.
[T, HCl, HCl + N₂]
- O S. S. Penner and D. Weber : J. Chem. Phys. 21, 649-654 (1953)
Infrared intensity measurements on nitric oxide, hydrogen chloride, and
hydrogen bromide. [E, h ν , HCl, HBr, NO]
- A Z. Lj. Petrovic, W. C. Wang and L. C. Lee : J. Appl. Phys. 64, 1625-1631 (1988) K
Attachment of low-energy electrons to HCl. [E, HCl]
- R K. Pfingst, H. T. Thummel and S. D. Peyerimhoff : J. Phys. B25, 2107-2119 (1992) -K
Near-threshold rotational excitation in electron scattering by the HCl
molecule. [T, HCl; R-matrix calculation, 0.1 - 10 eV]
- EX V. Pless, B. M. Nestmann, V. Krumbach and S. D. Peyerimhoff : J. Phys. B25, 2089-2105
(1992a) -
An ab initio study of resonant low-energy electron scattering by HCl.
[T, HCl; $^2\Sigma^+$ state of HCl⁻]
- V V. Pless, B. M. Nestmann and S. D. Peyerimhoff : J. Phys. B25, 4649-4659 (1992b) -
A Vibrational excitation and dissociative attachment in low-energy
scattering from diatomic molecules. [T, HCl only; v = 1 - 4; th. - 5 eV]
- A S. A. Pozdnev : Sov. Phys. Tech. Phys. 27, 919-923 (1982) -
Use of quantum three-body theory to calculate the cross sections for
the dissociative attachment of electrons to hydrogen halide molecules.
[T, HCl, HBr, HI]
- E S. Pozdnev 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, HCl, HBr, H₂, HD, D₂, Cl₂, Br₂, I₂, N₂]
- R M. Radle, G. Knoth, K. Jung and H. Ehrhardt : J. Phys. B22, 1455-1476 (1989) OK
V Rotational and rovibrational excitation of HCl and HF by low-energy
electron impact. [E, HCl, HF; DCS, 0.5 - 10 eV, 15 - 135°]
- U A. A. Radzic and B. M. Smirnov : Reference Data on Atoms, Molecules and Ions,
Springer-Verlag (1985)
- E M. E. Riley, C. J. MacCallum and F. Biggs : Atomic Data Nucl. Data Tables 15,
443-476 (1975), Erratum 28, 379-379 (1983)
Theoretical electron-atom elastic scattering cross sections. Selected
elements, 1 keV to 256 keV. [T, Cl, etc.]
- V K. Rohr and F. Linder : 9th ICPEAC, Seattle I, 289-290 (1975a)
Low energy electron scattering by polar molecules. Beam experiments for
the e - HCl system. [E, HCl]

- V K. Rohr and F. Linder : J. Phys. B8, L200-L204 (1975b)
Vibrational excitation in e - HCl collisions at low energies. [E, HCl]
- V K. Rohr and F. Linder : J. Phys. B9, 2521-2537 (1976)○
Vibrational excitation of polar molecules by electron impact. I.
Threshold resonances in HF and HCl. [E, HCl, HF]
- V K. Rohr : Sympo. Electron-Molecule Collisions, Tokyo 67-76 (1979)
Threshold resonances in vibrational excitation of molecules by electron impact : experimental results. [E, HCl]
- O J. Romand et B. Vodar : Compt. Rend. Acad. Sci. 226, 238-240 (1948a)
Spectre d'absorption de l'acide chlorhydrique gazeux dans la region de Schumann. [E, h ν , HCl]
- O J. Romand et B. Vodar : Compt. Rend. Acad. Sci. 226, 2062-2064 (1948b)
Determination of the potential energy curves for the excited states of gaseous HCl : Comparison of theoretical and experimental extinction coefficients. [E, h ν , HCl; in French, PA '49-2425]
- O J. Romand : Ann. Physique 4, 527-592 (1949)
Absorption ultraviolette dans la region de Schumann etude de ClH, BrH, et IH gazeux. [E, h ν , HCl, HBr, HI]
- U A. Rosenberg, A. Lightman and A. Ben-Reuven : J. Quant. Spectrosc. Radiat. Transf. 12, 219-226 (1972)
Interferometric measurements of the pure rotational spectra of HCl and DCl. [E, h ν , HCl, DCl]
- O K. L. Saenger, R. N. Zare and C. W. Mathews : J. Mol. Spectrosc. 61, 216-230 (1976)
A reexamination of the spin-rotation constant for $^2\Pi$ states : The A-X band system of HCl $^+$. [T, HCl]
- V O. Schafer and M. Allen : J. Phys. B24, 3069-3076 (1991)○
Measurement of near-threshold vibrational excitation of HCl by electron impact. [E, HCl]
- O B. Schimmelpfennig, B. Nestmann and S. D. Peyerimhoff : J. Phys. B25, 1217-1231 (1992)
Ab initio calculation of partial linewidths in the Auger decay of K-shell excited HCl. [T, HCl]
- 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, diatomic molecules, no specified target]
- O W. H. E. Schwarz : Chem. Phys. 9, 157-164 (1975a)
Continuous change from valence to Rydberg type states. An example of XUV spectroscopy. [E, h ν , HCl, Ar, PH $_3$, H $_2$ S, SiH $_4$]

- O W. H. E. Schwarz : Chem. Phys. 11, 217-228 (1975b)
Interpretation of the core electron excitation spectra of hydride molecules and the properties of hydride radicals. [E, HCl, PH₃, H₂S, SiH₄, CH₄]
- EX D. A. Shaw, D. Cvejjanovic, G. C. King and F. H. Read : J. Phys. B17, 1173-1187 (1984) K
Inner-shell and outer-shell excitation of HCl, HBr and Br₂ by electron impact with high resolution. [E, HCl, HBr, Br₂]
- O W. D. Sheasley and C. W. Mathews : J. Mol. Spectrosc. 47, 420-439 (1973)
The emission spectra of H³⁵Cl⁺, H³⁷Cl⁺, D³⁵Cl⁺, and D³⁷Cl⁺ in the region 2700 - 4100 Å. [E, hν, HCl, DCl]
- E M. Shimoi and Y. Itikawa : J. Phys. B32, 65-79 (1999) ○ K
R Electron collisions with HCl : elastic scattering and rotational excitation. [T, HCl; 1 - 50 eV]
- A V. H. Shui, P. I. Singh, B. Kivel and E. R. Bressel : AIAA J. 17, 1178-1184 (1979) .
Electron attachment at high temperatures.
[E, HCl, HI, SF₆, CCl₄, etc.; 500 - 3500 K]
- I H. D. Smyth : Rev. Mod. Phys. 3, 347-391 (1931)
Products and processes of ionization by low speed electrons.
[review, E, HCl, He - Ar, Hg, H₂, N₂, O₂, NO, CO, I₂, K, CO₂, N₂O, NO₂, H₂O, C₂N₂, NH₃, CH₄, C₃H₈, C₄H₁₀]
- O D. Spence and T. Noguchi : J. Chem. Phys. 63, 505-514 (1975) K
Feshbach resonances associated with Rydberg states of the hydrogen halides. [E, HCl, HF, HBr, HI]
- O E. J. Stansbury, M. F. Crawford and H. L. Welsh : Can. J. Phys. 31, 954-961 (1953)
Determination of rates of change of polarizability from Raman and Rayleigh intensities. [E, hν, HCl, HBr, H₂, D₂, N₂, O₂, CO₂, CH₄]
- 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, HCl, H₂]
- I I. H. Suzuki, C. E. Brion, E. Weigold and G. R. J. Williams : Int. J. Quant. Chem. 18, 275-280 (1980)
Binding energies at different momenta for the valence orbitals of HCl by the binary (e, 2e) method. [E, HCl; 1200 eV]
- A I. Szamrej and H. Janicka : Radiat. Phys. Chem. 33, 387- (1989)
Thermal electron attachment processes in gas mixtures containing H₂S, HCl and HBr. [E, HCl, HBr, H₂S]
- A R. C. Sze and A. E. Greene : 33rd GEC, Norman 85 (1980)
Ground state electronic attachment rates in HCl. [E, HCl + (N₂, Ar)]

- A R. C. Sze, A. E. Greene and C. A. Brau : J. Appl. Phys. 53, 1312-1316 (1982) ·K
Ground-state dissociative attachment rates in HCl and Cl₂.
[E, HCl + N₂, HCl + Ar, Cl₂ + N₂, Cl₂ + Ar; 0.7 - 5 eV]
- A H. S. Tayler, E. Goldstein and G. A. Segal : J. Phys. B10, 2253-2259 (1977) ·K
Resonance states of HCl⁻ and electron - HCl scattering processes.
[T, HCl; HCl⁻ → H⁻ + Cl and Cl⁻ + H]
- A D. Teillet-Billy and J. P. Gauyacq : J. Phys. B17, 3329-3340 (1984a)
Angular dependence of dissociative attachment to polar molecules.
[T, HCl, HF, H₂O, H₂S, NaCl]
- A D. Teillet-Billy and J. P. Gauyacq : J. Phys. B17, 4041-4058 (1984b) K
Dissociative attachment in e⁻ - HCl, DCl collisions.
[T, HCl, DCl; 0 - 1.2 eV]
- A D. Teillet-Billy and J. P. Gauyacq : in Lecture Notes in Chemistry, Vol. 35, Wavefunctions and Mechanisms from Electron Scattering Processes,
F. A. Gianturco and G. Stefani (Ed), Springer 126-128 (1984c) ·
Electron dissociative attachment on HCl molecules. [T, HCl]
- A D. Teillet-Billy : J. Chim. Phys. Chim. Biol. 90, 1239-1265 (1993)
Attachment and electron bombardment. [review, HCl, etc.]
- O W. Thiel and A. Schweig : Chem. Phys. Lett. 12, 49-52 (1971)
Photoionization cross sections in the valence electron approximation.
I. Linear molecules. [T, hν, HCl, HF, F₂, Cl₂]
- V D. G. Thompson : in Advances in Atomic and Molecular Physics, Vol. 19,
Academic Press 309-343 (1983)
The vibrational excitation of molecules by electron impact.
[review, HCl, H₂, N₂, CO, CO₂, etc.]
- I R. Thorburn : Proc. Phys. Soc. London 73, 122-126 (1959) ·
Ionization and dissociation by electron impact in fluorine, hydrogen
fluoride, chlorine and hydrogen chloride. [E, HCl, HF, F₂, Cl₂]
- O J. A. Tossell, J. H. Moore and J. C. Giordan : Inorg. Chem. 24, 1100-1103 (1985)
E Energies of π-acceptor orbitals in SiH₄, PH₃, H₂S, and HCl and their
permethylated. [E, HCl, PH₃, SiH₄, H₂S, etc.; q_t 0.3 - 5 eV for HCl]
- S J. S. Townsend : Phil. Mag. 5, 389-398 (1903)
The conductivity produced in gases by the aid of ultra-violet light.
[E, HCl,
- E S. Trajmar, D. F. Register and A. Chutjian : Phys. Rep. 97, 219-356 (1983)
V Electron scattering by molecules II. Experimental methods and data.
EX [E, compilation, HCl, etc.]

- A M. Tronc, R. Azria, Y. Le Coat and D. Simon : J. Phys. B12, L467-L471 (1979)
Differential cross section for dissociative attachment in HCl : H⁻ formation. [E, HCl]
- 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, HCl, H₂, H₂O, NH₃, CH₄]
- O D. W. Turner : in Molecular Photoelectron Spectroscopy, D. W. Turner, et al. (Ed), Wiley-Interscience 57- (1970)
- EX R. 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. [compilation, HCl, CH₄, NH₃, etc., many atoms and molecules]
- O E. F. van Dishoeck, M. C. van Hemert and A. Dalgarno : J. Chem. Phys. 77, 3693-3702 (1982)
Photodissociation processes in the HCl molecule. [T, hν, HCl]
- U W. von Niessen, L. S. Cederbaum, W. Domcke and G. H. F. Dierksen : Chem. Phys. 56, 43-52 (1981)
Green's function calculations on the complete valence ionization spectra of HF, HCl, HBr and HI. [T, HF - HI]
- O W. von Niessen and P. Tomasello : Phys. Scr. 41, 841-845 (1990) -
Many-body calculation of the inner valence photoelectron spectra of HCl and H₂S. [T, hν, HCl, H₂S]
- O D. A. Vroom : Thesis, University of British Columbia 1-202 (1965)
Photoelectron spectroscopy of gases. [E, hν, HCl, HF,
- V J. M. Wadehra : in Nonequilibrium Vibrational Kinetics, 191-232 (1989)
- A Vibrational excitation and dissociative attachment.
[review, HCl, H₂, N₂, CO,]
- EX R. G. Wang, M. A. Dillon and D. Spence : J. Chem. Phys. 80, 63-69 (1984)
Electron spectroscopy of hydrogen chloride from 5 to 19 eV.
[E, HCl; 200 eV, 0 - 19°]
- O W. C. Wang and L. C. Lee : J. Phys. D21, 675-682 (1988) -
Photodetachment cross sections of negative halogen ions in discharge media. [E, hν, HCl, HF, HBr, F₂, Cl₂, CH₃Br, etc.]
- O M. J. Weiss, G. M. Lawrence and R. A. Young : J. Chem. Phys. 52, 2867-2870 (1970)
Photoelectron spectroscopy of HCl and DCl using molecular beams.
[E, hν, HCl, DCl]

- O D. E. Wilson and D. A. Armstrong : Radiat. Res. Rev. 2, 297- (1970)
[, HCl,]
- E Li Xi and D. Aiping : Int. Symp. Electron- Photon-Molecule collisions and Swarms, Berkeley H-29 (1995)
Energy dependence of the differential total cross sections in low-energy electron collisions with the HCl molecule.
[T. HCl; variational R-matrix, 0.5 - 10 eV]
- O V. A. Yavna, V. A. Popov and S. A. Yavna : Opt. Spectrosc. 75, 23-27 (1993a)
Correlation and vibronic effects in the K photoabsorption of HF and HCl.
[T. $h\nu$, HCl, HF]
- O V. A. Yavna, V. A. Popov, S. A. Yavna and L. A. Demekhina : Opt. Spectrosc. 75, 171-176 (1993b)
Multielectron effects near the photoabsorption thresholds of the outer shells of diatomic hydride molecules. [T. $h\nu$, HCl, HF, HBr]
- O A. J. Yench, D. Kaur, R. J. Donovan, A. Kvaran, A. Hopkirk, H. Lefebvre-Brion and F. Keller : J. Chem. Phys. 99, 4986-4992 (1993)
Ion-pair formation in the photodissociation of HCl and DCl.
[E. $h\nu$, HCl, DCl]
- EX T. A. York and J. Comer : J. Phys. B17, 2563-2575 (1984) K
Electron energy-loss studies using a position sensitive multidetector electron spectrometer : the spectrum of hydrogen chloride.
[E, HCl]
- O J. Zhang, M. Dulligan and C. Wittig : J. Chem. Phys. 107, 1403-1405 (1997)
Photodissociation of HCl at 193.3 nm : Spin-orbit branching ratio.
[E, $h\nu$, HCl]
- V J. P. Ziesel, I. Nenner and G. J. Schulz : J. Chem. Phys. 63, 1943-1949 (1975) K
A Negative ion formation, vibrational excitation, and transmission spectroscopy in hydrogen halides. [E, HCl, DCl, HBr, DBr]
- A J. P. Ziesel : in Lecture Notes in Chemistry, Vol. 35, Wavefunctions and Mechanisms from Electron Scattering Processes, Springer 39-47 (1984) .
Dissociative attachment in polar and highly polar molecules.
[review, HCl, HF, HBr, HI, NaCl, NaBr]
- J. P. Ziesel and D. Field : in Photophysics and Photochemistry above 6 eV, F. Lahmani (Ed), Elsevier 221-225 (1985)
Collisions of electrons with NO and HCl at low energies.
[E, HCl, NO]

Addenda of References for HCl

(published in 2000, plus some old papers)

2000 (2 pages)

- E M. Allan, M. Cizek, J. Horacek and W. Domcke : J. Phys. B33, L209-L213 (2000)
Electron scattering in cooled HCl : boomerang structures and outer-well resonances in elastic and vibrational excitation cross sections.
[E and T, HCl; 0.2 - 1 eV]
- V M. Cizek, J. Horacek, M. Allan and W. Domcke : Czech. J. Phys. 52, 1057-1070 (2002)
A Resonances and threshold phenomena in low-energy electron collisions with hydrogen halides : new experimental and theoretical results.
[E and T, HCl, DCl, HBr, DBr]
- O R. C. Guedes, P. C. do Couto and B. J. Costa Cabral : J. Chem. Phys. 118, 1272-1281 (2003)
Binding energy, structure, and vibrational spectra of (HCl)₂₋₆ and (HF)₂₋₁₀ clusters by density functional theory. [T, (HCl)_N, (HF)_N]
- V J. Horacek : in AIP Conf. Proc. No. 500, 21th ICPEAC, Sendai 329-338 (2000) ○
Inelastic low-energy electron collisions with hydrogen-halides.
[T, HCl, HBr, HI]
- A K. Houfek, M. Cizek, M. Kovacic and J. Horacek : EMS-2001, Lincoln 178-179 (2001)
Temperature-averaged cross-sections and rate constants for dissociative electron attachment to HBr and HCl. [T, HCl, HBr]
- A K. Houfek, M. Cizek and J. Horacek : Phys. Rev. A66, 062702/1-9 (2002)
Calculation of rate constants for dissociative attachment of low-energy electrons to hydrogen halides HCl, HBr, and HI and their deuterated analogs. [T, HCl, DCl, HBr, DBr, HI, DI, etc.]
- E G. P. Karwasz, R. S. Brusa and A. Zecca : Rivista Nuovo Cimento 24, No. 1, 1-118
V (2000) ○
- EX One century of experiments on electron-atom and molecule scattering :
I A critical review of integral cross-sections. II. - Polyatomic molecules.
A [compilation, HCl, HF, HBr, CO₂, O₃, CH₄, etc.]
- O M. Kivilompolo, A. Kivimäki, M. Juranus, H. Aksela, S. Aksela and R. F. Fink : J. Phys. B33, L157-L164 (2000)
The Cl(2p) photoelectron spectra of the HCl and DCl molecules : the effects of the molecular field. [E, hν, HCl, DCl; hν = 220 - 250 eV]
- A J. B. A. Mitchell : EMS-2001, Lincoln 15-16 (2001)
CRESU studies of low energy electron-molecule collisions.
[E, HCl, HBr, C₃F₆; 48 - 170 K]

- V S. A. Pozdneev : J. Exp. Theor. Phys. 90, 30-44 (2000) ·
D Collisions of electrons with molecules in excited vibrational-rotational
A states. [T, HF - HBr, H₂, HD, D₂, N₂, Li₂, Na₂]
- A T. Speck, J.-L. Le Garrec, S. Le Picard, A. Canosa, J. B. A. Mitchell and B. R. Rowe :
J. Chem. Phys. 114, 8303-8309 (2001)
Electron attachment in HBr and HCl. [E, HCl, HBr; 48 - 170 K]
- I D. G. Thompson and K. Blum : J. Phys. B33, L773-L777 (2000)
Chiral effects in the ionization of HCl by electron impact. [T, HCl]

Addenda (1901 - 1999)

- O R. Ahlrichs, F. Keil, H. Lischka, W. Kutzelnigg and V. Staemmler : J. Chem. Phys. 63,
455-463 (1975)
PNO-CI (pair natural-orbital configuration interaction) and CEPA-PNO
(coupled electron pair approximation with pair natural orbitals)
calculations of molecular systems. III. The molecules MgH₂, AlH₃, SiH₄,
PH₃ (planar and pyramidal), H₂S, HCl, and the Ar atom.
[T, HCl, SiH₄, PH₃, H₂S, Ar, etc.]
- O C. Alamichel et F. Legay : J. Physiq. 27, 233-236 (1966)
Etude de la dispersion dans le doublet isotopique R2 de la premiere
bande harmonique de vibration-rotation de HCl. [E, hν, HCl]
- O P. W. Anderson : Phys. Rev. 76, 647-661 (1949)
Pressure broadening in the microwave and infra-red regions.
[T, hν, HCl, HCN, NH₃]
- O P. O. Astrand and G. Karlstrom : Chem. Phys. Lett. 175, 624-628 (1990)
A bound HCl⁻ species : an ab initio quantum-chemical study. [T, HCl⁻]
- O M. R. Atwood, H. Vu et B. Vodar : Spectrochimica Acta 23A, 553-563 (1967)
Forme et structures fines de la bande induite par la pression dans la
bande fondamentale de vibration-rotation des molecules HF, HCl et HBr.
[E, hν, HF - HBr]
- O H. Babrov, G. Ameer and W. Benesch : J. Mol. Spectrosc. 3, 185- (1959)
- O H. Babrov, G. Ameer and W. Benesch : J. Chem. Phys. 33, 145-150 (1960)
Molecular collision cross sections from infrared absorption measure-
ments. [E, hν, HCl + (HCl, Ar, CO₂, etc.)]
- O W. S. Benedict, R. Herman, G. E. Moore and S. Silverman : Can. J. Phys. 34, 850-875
(1956)
The strengths, widths, and shapes of infrared lines. II. The HCl
fundamental. [E, hν, HCl; 300 K]

- 0 W. S. Benedict, R. Herman, G. E. Moore and S. Silverman : J. Chem. Phys. 26, 1671-1677 (1957)
Infrared line and band strengths and dipole moment function in HCl and DCl. [E, $h\nu$, HCl, DCl]
- 0 A. Ben-Reuven, S. Kimmel, M. A. Hirshfield and J. H. Jaffe : J. Chem. Phys. 35, 955-962 (1961)
Theory and measurement of pressure-induced shifts of HCl lines due to noble gases. [T and E, $h\nu$, HCl; He - Xe]
- 0 E. Boursey : J. Chem. Phys. 62, 3353-3354 (1975)
Electronic excitation of HCl trapped in inert matrices.
[E, $h\nu$, HCl; Ne, Ar, CF₄ matrices at 5 K]
- 0 P. R. Bunker : J. Mol. Spectrosc. 42, 478-494 (1972)
On the breakdown of the Born-Oppenheimer approximation for a diatomic molecule. [T, HCl - HI, CO, H₂, D₂]
- 0 P. R. Bunker : J. Mol. Spectrosc. 45, 151-158 (1973)
The breakdown of the Born-Oppenheimer approximation for a diatomic molecule : The dipole molecule and nuclear quadrupole coupling constants.
[T, HCl]
- 0 P. E. Cade, R. F. W. Bader, W. H. Henneker and I. Keaveny : J. Chem. Phys. 50, 5313-5333 (1969)
Molecular charge distributions and chemical binding. IV. The second-row diatomic hydride AH. [T, HCl, NaH, SiH, etc.]
- 0 J. E. Chamberlain and H. A. Gebbie : Nature 208, 480-481 (1965)
Sub-millimeter dispersion and rotational line strengths of the hydrogen halides. [E, $h\nu$, HCl - HI]
- 0 J. M. Cherlow, H. A. Hyatt and S. P. S. Porto : J. Chem. Phys. 63, 3996-4000 (1975)
Raman scattering in hydrogen halide gases. [E, $h\nu$, HCl - HI]
- 0 A. Coehn und K. Stuckardt : Z. phys. Chem. 91, 722-744 (1916)
Die Einwirkung des Lichtes auf die Bildung und Zersetzung der Halogenwasserstoffe. [E, $h\nu$, HCl - HI, Cl₂ - I₂]
- 0 R. F. Code, A. Khosla, I. Ozier, N. F. Ramsey and P. N. Yi : J. Chem. Phys. 49, 1895-1901 (1968)
Nuclear magnetic hyperfine spectra of H³⁵Cl and H³⁷Cl. [E, $h\nu$, HCl]
- 0 F. H. de Leeuw and A. Dymanus : J. Mol. Spectrosc. 48, 427-445 (1973)
Magnetic properties and molecular quadrupole moment of HF and HCl by molecular-beam electric-resonance spectroscopy. [E, HCl, HF]
- 0 D. C. Frost, C. A. McDowell and D. A. Vroom : J. Chem. Phys. 46, 4255-4259 (1967)
Photoelectron spectra of the halogens and the hydrogen halides.
[E, $h\nu$, HF - HI, F₂ - I₂; ionization potentials]

- QT G. Garcia and F. Manero : Chem. Phys. Lett. 280, 419-422 (1997)
Correlation of the total cross section for electron scattering by molecules with 10 - 22 electrons, and some molecular parameters at intermediate energies. [T, HCl, HF, C₂H₂, H₂CO, CH₃OH, etc. at 1 keV, N₂, CO, CO₂, NH₃, CH₄; 0.5 - 5 keV]
- O H. A. Gebbie and N. W. B. Stone : Proc. Phys. Soc. London 82, 309-314 (1963)
Measurement of widths and shifts of pure rotation lines of hydrogen chloride perturbed by rare gases. [E, $h\nu$, HCl; He, Ar - Xe]
- O H. Goldring and W. Benesch : Can. J. Phys. 40, 1801-1813 (1962)
Widths of HCl overtone lines at various temperatures. [E, $h\nu$, HCl; 200 - 1283 K]
- O G. Guelachvili : Opt. Comm. 19, 150-154 (1976)
Absolute wavenumber measurements of 1-0, 2-0, HF and 2-0, H³⁵Cl, H³⁷Cl absorption bands. [E, $h\nu$, HCl, HF; 2-0 of H³⁵Cl 5667.9832 cm⁻¹]
- O R. L. Hansler and R. A. Oetjen : J. Chem. Phys. 21, 1340-1343 (1953)
The infrared spectra of HCl, DCl, HBr, and NH₃ in the region from 40 to 140 microns. [E, $h\nu$, HBr, HCl, DCl, NH₃]
- O W. J. Hehre and W. A. Lathan : J. Chem. Phys. 56, 5255-5257 (1972)
Self-consistent molecular orbital methods. XIV. An extended Gaussian-type basis for molecular orbital studies of organic molecules. Inclusion of second row elements. [T, HCl, PH₃, PF₃, H₂S, Cl₂, etc.]
- O R. M. Herman and A. Asgharian : J. Chem. Phys. 45, 2433-2438 (1966)
Finite nuclear mass effects on the centrifugal stretching constant in H³⁵Cl. [T, $h\nu$, HCl]
- O J. -P. Houdeau, M. Larvor and C. Haeusler : J. Quant. Spectrosc. Radiat. Transf. 16, 457-465 (1976)
Widths and shifts of H³⁵Cl lines in the fundamental band induced by argon and xenon at low temperatures. [E, $h\nu$, HCl + (Ar, Xe); 298 - 163 K]
- O J. -P. Houdeau, M. Larvor and C. Haeusler : C. R. Hebd. Seances Acad. Sci. C284, 307-310 (1977)
Low temperature study of the vibration-rotation linewidths and shifts in the fundamental band of H³⁵Cl broadened by N₂. [E, $h\nu$, HCl + N₂; 298 - 163 K]
- O E. S. Imes : Astrophys. J. 50, 251-276 (1919)
Absorption of some diatomic gases in the near infra-red. [E, $h\nu$, HCl, HF, HBr]
- O N. Jacobi : J. Mol. Spectrosc. 22, 76-79 (1967)
Electrical anharmonicities of diatomic molecules. [T, HCl - HI, CO]

- 0 J. K. Jacques and R. F. Barrow : Proc. Phys. Soc. London 73, 538-539 (1959)
The transition $V^1\Sigma^+ - X^1\Sigma^+$ in hydrogen chloride. [E, $h\nu$, HCl]
- 0 J. H. Jaffe, S. Kimel and M. A. Hirshfeld : Can. J. Phys. 40, 113-121 (1962)
Refraction spectrum of gases in the infrared intensities and widths of lines in the 2-0 band of HCl. [E, $h\nu$, HCl]
- 0 J. H. Jaffe, H. Friedmann, M. A. Hirshfeld and A. Ben-Reuven : J. Chem. Phys. 39, 1447-1448 (1963)
Pressure-induced shifts of molecular lines in emission and in absorption. [E, $h\nu$, HCl; 2-0 band]
- 0 J. H. Jaffe, M. A. Hirshfeld and A. Ben-Reuven : J. Chem. Phys. 40, 1705-1706 (1964)
Pressure-induced shifts of DCl lines due to HCl : Shift oscillation. [E, $h\nu$, DCl]
- 0 G. Jones and W. Gordy : Phys. Rev. 135, A295-A296 (1964a)
Extension of submillimeter wave spectroscopy below a half-millimeter wavelength. [E, $h\nu$, HCl, CO]
- 0 G. Jones and W. Gordy : Phys. Rev. 136, A1229-A1232 (1964)
Submillimeter-wave spectra of HCl and HBr. [E, $h\nu$, HCl, HBr, HI; 0.48 - 0.59 mm]
- 0 E. W. Kaiser : J. Chem. Phys. 53, 1686-1703 (1970)
Dipole moment and hyperfine parameters of $H^{35}Cl$ and $D^{35}Cl$. [E, HCl, DCl]
- 0 E. W. Kaiser : J. Quant. Spectrosc. Radiat. Transf. 14, 317-317 (1974)
Comment to "Dipole moment function and vibration-rotation matrix elements of HCl^{35} and DCl^{35} ". [comment, HCl, DCl; see F. G. Smith (1973)]
- 0 B. Katz and A. Ron : Chem. Phys. Lett. 7, 357-359 (1970)
Far infrared spectra of HCl and DCl in a nitrogen matrix. [E, $h\nu$, HCl, DCl]
- 0 P. Khatibi et H. Vu : J. Chim. Phys. 69, 654-661 (1972a)
Spectres d'absorption infrarouge de HCl et de HBr en phases denses. I. - Spectres dans le fondamental de vibration-rotation. [E, $h\nu$, HCl, HBr]
- 0 P. Khatibi et H. Vu : J. Chim. Phys. 69, 662-673 (1972b)
Spectres d'absorption infrarouge de HCl et de HBr en phases denses. II. - Spectres dans le premier harmonique de vibration-rotation ($0 \rightarrow 2$). [E, $h\nu$, HCl, HBr]
- 0 P. Khatibi et H. Vu : J. Chim. Phys. 69, 674-680 (1972c)
Spectres d'absorption infrarouge de HCl et de HBr en phases denses. III. - Spectres dans le deuxieme harmonique de vibration-rotation ($0 \rightarrow 3$). [E, $h\nu$, HCl, HBr]

- 0 J. A. Leavitt, M. R. Baker, H. M. Nelson and N. F. Ramsey : Phys. Rev. 124, 1482-1486 (1961)
Proton radio-frequency spectrum of HCl^{33} . [E, $h\nu$, HCl]
- 0 F. Legay : Revue d'Optique 37, 11-17 (1958)
Infrared dispersion in the neighbourhood of the R(2) lines of the first harmonic band of hydrochloric acid. [E, $h\nu$, HCl + (A and M)]
- 0 A. Levy, I. Rossi, C. Joffrin et N. V. Thanh : J. Chim. Phys. 62, 600-603 (1965)
Spectre de vibration-rotation de l'acide chlorhydrique gazeux. Etude de la bande ν_{0-2} a 1.7 micron. [E, $h\nu$, HCl]
- 0 A. Levy, I. Rossi et C. Haeusler : J. Physiq. 27, 526-536 (1966)
Constantes de vibration-rotation de l'acide chlorhydrique gazeux etude des bandes ν_{0-2} et ν_{0-3} . [E, $h\nu$, HCl]
- 0 A. Levy, E. Mariel-Piollet, J. -P. Bouanich et C. Haeusler : J. Quant. Spectrosc. Radiat. Transf. 10, 203-216 (1970)
Spectre de vibration-rotation du gaz chlorhydrique comprime. Intensites et largeurs de raies dans la bande ν_{0-2} . [E, $h\nu$, HCl]
- 0 L. Marsigny et J. Ferran : Compt. Rend. Acad. Sci. 262C, 531-533 (1966)
Analyse rotationnelle des bandes (4, 0) et (5, 0) des systems ($^2\Sigma^+ - ^2\Pi_{1/2}$) et ($^2\Sigma^+ - ^2\Pi_{3/2}$) du radical libre HCl^+ . [E, $h\nu$, HCl]
- 0 D. Mathur and J. B. Hasted : Chem. Phys. Lett. 62, 86-88 (1979)
Low-lying resonant states in HCl and HBr . [E, HCl , HBr ; 0.25 - 1.15 eV]
- 0 O. A. Menzel, B. Langer, J. Viefhaus, S. B. Whitfield and U. Becker : Chem. Phys. Lett. 258, 265-270 (1996)
Competition between direct dissociation and resonant Auger decay : a quasi-classical model applied to the $2p^{-1} \sigma^*$ states of HCl , DCl and Cl_2 . [E, $h\nu$, HCl , DCl , Cl_2]
- 0 W. Meyer and P. Rosmus : J. Chem. Phys. 63, 2356-2375 (1975)
PNO-CI and CEPA studies of electron correlation effects. III. Spectroscopic constants and dipole moment functions for the ground states of the first row and second-row diatomic hydrides. [T, $h\nu$, HCl , HF , OH , NH , LiH , etc.]
- 0 H. M. Mould, W. C. Price and G. R. Wilkinson : Spectrochimica Acta 16, 479-492 (1960)
Infra-red emission from gases excited by a radio-frequency discharge. [E, $h\nu$, HCl , HBr , DBr , DCl , CO , etc.]
- 0 S. M. Naude and H. Verleger : Proc. Phys. Soc. London A63, 470-477 (1950)
The vibration/rotation bands of the hydrogen halides HF , H^{35}Cl , H^{37}Cl , H^{79}Br , H^{81}Br and H^{127}I . [E, $h\nu$, HF - HI]

- 0 P. Niay, C. Coquant, P. Bernage and H. Bocquet : *J. Mol. Spectrosc.* 65, 388-394 (1977)
High-resolution measurements on the infrared absorption $3 \leftarrow 0$ band of deuterium chloride. [E, $h\nu$, DCl]
- 0 J. F. Ogilvie and D. Koo : *J. Mol. Spectrosc.* 61, 332-336 (1976)
Dunham potential energy coefficients of the hydrogen halides and carbon monoxide. [T, HF - HI, CO]
- 0 E. K. Plyler and E. D. Tidwell : *Z. Elektrochemie* 64, 717-720 (1960)
The rotational constants of hydrogen chloride. [E, $h\nu$, HCl]
- 0 E. K. Plyler and R. J. Thibault : *J. Res. Natl. Bur. Stand.* A66, 435-438 (1962)
Foreign gas broadening of the lines of hydrogen chloride and carbon monoxide. [E, $h\nu$, HCl, CO]
- 0 W. C. Price : *Proc. Roy. Soc. London* A167, 216-227 (1938)
The absorption spectra of the halogen acids in the vacuum ultra-violet. [E, $h\nu$, HCl - HI]
- 0 R. Puttner, Y. F. Hu, G. M. Bancroft, H. Aksela, E. Nommiste, J. Karvonen, A. Kivimäki and S. Aksela : *Phys. Rev.* A59, 4438-4445 (1999)
Detailed analysis of the $3d^{-1} - 4p\pi^{-2}$ normal Auger spectra in HBr and DBr. [E and T, $h\nu$, HCl, DCl, HBr, DBr]
- 0 D. H. Rank, W. B. Birtley, D. P. Eastman, B. S. Rao and T. A. Wiggins : *J. Opt. Soc. Am.* 50, 1275-1279 (1960a)
Precise measurements of some infrared bands of hydrogen chloride. [E, $h\nu$, HCl]
- 0 D. H. Rank, D. P. Eastman, W. B. Birtley and T. A. Wiggins : *J. Chem. Phys.* 33, 323-326 (1960b)
Perturbation of molecular rotation-vibration energy levels by rare gases. [E, $h\nu$, HCl, C₂H₂; Kr and Xe]
- 0 D. H. Rank, D. P. Eastman, B. S. Rao and T. A. Wiggins : *J. Opt. Soc. Am.* 52, 1-7 (1962)
Rotational and vibrational constants of the HCl³⁵ and DCl³⁵ molecules. [E, $h\nu$, HCl, DCl]
- 0 D. H. Rank, B. S. Rao and T. A. Wiggins : *J. Mol. Spectrosc.* 17, 122-130 (1965)
Molecular constants of HCl³⁵. [E, $h\nu$, HCl]
- 0 N. H. Rich and H. L. Welsh : *Chem. Phys. Lett.* 11, 292-293 (1971)
Measurement of the pressure broadening of the rotational Raman lines of HCl. [E, $h\nu$, HCl]
- 0 M. B. Robin : *Chem. Phys. Lett.* 31, 140-144 (1975)
Rydberg excitations in X-ray absorption spectra. [E, $h\nu$, HCl, PH₃, BF₃, SiH₄, CH₄, etc.]

- 0 S. Rothenberg, R. H. Young and H. F. Schaefer III : J. Am. Chem. Soc. 92, 3243-3250 (1970)
Ground state self-consistent-field wave functions and molecular properties for the isoelectronic series SiH_4 , PH_3 , H_2S , and HCl .
[T, HCl , H_2S , PH_3 , SiH_4]
- 0 R. B. Sanderson : Appl. Opt. 6, 1527-1530 (1967)
Measurement of rotational line strengths in HCl by asymmetric Fourier transform techniques. [E, $h\nu$, HCl]
- 0 D. P. Santry and G. A. Segal : J. Chem. Phys. 47, 158-174 (1967)
Approximate self-consistent molecular orbital theory. IV. Calculations on molecules including the elements sodium through chlorine.
[T, HCl , PH_3 , H_2S , OCS , SO_2 , PF_3 , SF_6 , etc.]
- 0 F. G. Smith : J. Quant. Spectrosc. Radiat. Transf. 13, 717-739 (1973)
Dipole moment function and vibration-rotation matrix elements of HCl^{35} and DCl^{35} . [T, HCl , DCl ; see E. W. Kaiser (1974)]
- 0 J. G. Stamper and R. F. Barrow : J. Phys. Chem. 65, 250-251 (1961)
The $\text{V}(^1\Sigma^+) - \text{N}(^1\Sigma^+)$ transition of hydrogen bromide.
[E, $h\nu$, HBr , HF , HCl]
- 0 V. R. Stull and G. N. Plass : J. Opt. Soc. Am. 50, 1279-1285 (1960)
Spectral emissivity of hydrogen chloride from 1000 - 3400 cm^{-1} .
[T, $h\nu$, HCl ; 300 - 2400 K]
- 0 D. T. Terwilliger and A. L. Smith : J. Mol. Spectrosc. 45, 366-376 (1973)
Analysis of autoionizing Rydberg states in the vacuum ultraviolet absorption spectrum of HCl and DCl . [E, $h\nu$, HCl , DCl]
- 0 D. T. Terwilliger and A. L. Smith : J. Chem. Phys. 63, 1008-1020 (1975)
Autoionization in diatomics : Measured line shape parameters and predicted photoelectron spectra for some autoionizing states of the hydrogen halides. [E, $h\nu$, $\text{HCl} - \text{HI}$, DBr , DCl]
- 0 S. G. Tilford, M. L. Ginter and J. T. Vanderslice : J. Mol. Spectrosc. 33, 505-519 (1970)
Electronic spectra and structure of the hydrogen halides. The $b^3\Pi_1$ and $C^1\Pi$ states of HCl and DCl . [E, $h\nu$, HCl , DCl]
- 0 S. G. Tilford and M. L. Ginter : J. Mol. Spectrosc. 40, 568-579 (1971)
Electronic spectra and structure of the hydrogen halides : State associated with the $(\sigma^2\pi^3)c\pi$ and $(\sigma^2\pi^3)c\sigma$ configurations of HCl and DCl . [E, $h\nu$, HCl , DCl]
- 0 T. Tokuhiro : J. Chem. Phys. 47, 109-113 (1967)
Vibrational and rotational effects on the nuclear quadrupole coupling constants in hydrogen, deuterium, and tritium halides.
[T, $\text{HCl} - \text{HI}$, $\text{DCl} - \text{DI}$, etc.]

- 0 R. A. Toth, R. H. Hunt and E. K. Plyler : J. Mol. Spectrosc. 35, 110-126 (1970)
Line strengths, line widths, and dipole moment function for HCl.
[E, $h\nu$, HCl]
- 0 K. Watanabe, T. Nakayama and J. Mottl : J. Quant. Spectrosc. Radiat. Transf. 2,
369-382 (1962)
Ionization potentials of some molecules. [E, HF - HI, F₂ - I₂, etc.]
- 0 J. K. G. Watson : J. Mol. Spectrosc. 45, 99-113 (1973)
The isotope dependence of the equilibrium rotational constants in ¹Σ
states of diatomic molecules. [T, HCl, CO, LiCl]
- 0 D. U. Webb and K. Narahari Rao : J. Mol. Spectrosc. 28, 121-124 (1968)
Vibration rotation bands of heated hydrogen halides.
[E, $h\nu$, HCl, DCl, HF; 773 K for HCl and DCl]
- 0 S. Weiss and R. H. Cole : J. Chem. Phys. 46, 644-649 (1967)
Pressure-induced rotational quadrupole spectra of HCl and HBr.
[E, $h\nu$, HCl, HCl + SF₆, HBr, HBr + SF₆, HBr + CF₄]
- 0 H. J. Werner and P. Rosmus : J. Chem. Phys. 73, 2319-2328 (1980)
Theoretical dipole moment function of the HF, HCl, and HBr molecules.
[T, HF - HBr]

Author Index for HCl References

- R. Abouaf 1
V. A. Adamovich 1
N. G. Adams 1
R. Ahlrichs 29
D. Aiping 27
H. Aksela 10, 15, 16, 28, 34
S. Aksela 15, 16, 28, 34
C. Alamichel 29
M. H. Alexander 1, 17
Y. Alhassid 1
M. Allan 2, 28
F. Allario 3
M. Allen 23
M. Alsherhi 16
G. Ameer
P. W. Anderson 29
D. A. Armstrong 2, 20, 27
D. Ascenzi 2
A. Asgharian 31
M. N. R. Ashfold 2
O. Ashihara 14
P. O. Astrand 29
D. E. Atems 2
M. R. Atwood 29
A. Ausmees 16
L. Avaldi 18
R. Azria 2, 26

H. Babrov 29
M. Bacal 12
R. F. W. Bader 30
V. A. Bailey 2
C. H. Bair 3
M. R. Baker 33
D. I. Balashov 9
G. G. Balint-Kurti 12
K. L. Baluja 14
G. M. Bancroft 34
J. N. Bardsley 3, 22
R. F. Barrow 32, 35
E. C. Beaty 10
K. Becker 8
K. H. Becker 3
U. Becker 33
N. S. Belokrinitskii 3

W. S. Benedict 3, 29, 30
W. Benesch 29, 31
A. Ben-Reuven 23, 30, 32
P. Bernage 34
H. J. Bernstein 20
N. Berrah 16
K. K. Bhutani 18
G. A. Bickel 12
F. Biggs 22
D. M. Bishop 3
K. Blum 29
H. Bocquet 34
J. -P. Bouanich 33
E. Boursey 30
C. Boyle 10
J. D. Bozek 16
N. E. Bradbury 3
C. A. Brau 25
E. R. Bressel 24
J. Bretagne 12
B. A. Brice 3
N. J. Bridge 3
C. E. Brion 3, 4, 7, 10, 24
F. C. Brown 13
R. T. Brown 21
E. Bruche 4
P. Brumer 4
R. S. Brusa 28
I. S. Buchel'nikova 4
A. D. Buckingham 3
W. J. Buma 7
P. R. Bunker 30
N. A. Burdett 4
P. Burke 4
P. G. Burke 18, 19, 23
P. D. Burrow 4
Y. Bychkov 17

M. Cacciatore 4, 5
P. E. Cade 4, 30
G. E. Caledonia 5
A. Canosa 29
M. Capitelli 4, 5, 12, 16, 17
F. Carnovale 7
J. G. Carter 6

H. E. Cartland 14
 L. S. Cederbaum 8, 26
 R. Celiberto 5
 R. E. Center 5
 V. Cermak 5
 J. E. Chamberlain 30
 P. J. Chantry 5, 7
 H. -L. Chen 5
 J. M. Cherlow 30
 A. I. Chichini 5
 A. A. Christodoulides 5
 L. G. Christophorou 6
 A. Chutjian 25
 M. Cizek 6, 28
 R. F. Code 30
 A. Coehn 30
 R. H. Cole 36
 L. A. Collins 6, 19, 21
 J. Comer 27
 K. T. Compton 6
 R. N. Compton 6
 C. Coquant 34
 B. J. Costa Cabral 28
 J. D. Craggs 6
 M. F. Crawford 24
 D. Cubaynes 16
 D. Cubric 14
 D. M. Curtis 7
 D. Cvejanovic 14, 24
 S. Cvejanovic 7, 14

 P. Dagdigian 17
 A. Dalgarno 26
 M. Dapor 7
 P. K. Das 18
 V. V. Datsynk 7
 E. R. Davidson 10
 S. Daviel 7
 D. K. Davies 7
 G. Dawber 18
 E. de Beer 7
 S. De Benedictis 4
 F. J. de Heer 18, 19, 26
 C. A. de Lange 7
 F. H. de Leeuw 7, 30
 L. A. Demekhina 27
 A. V. Dem'yanov 1, 8, 16
 H. Deutsch 8
 V. H. Dibeler 16

A. S. Dickinson 8
 H. W. Dickson 6
 G. H. F. Diercksen 26
 J. D. Dillard 8
 M. A. Dillon 26
 M. Dilonardo 4, 5
 P. C. do Couto 28
 W. Domcke 6, 8, 9, 11, 26, 28
 R. J. Donovan 27
 A. E. Douglas 8
 J. M. Dowling 13
 L. Dube 8, 9
 T. Duhoo 1, 9
 M. Dulligan 27
 W. E. Duncanson 2
 J. Dutton 9, 10
 N. A. Dyatko 1
 A. Dymanus 7, 30

 D. P. Eastman 34
 A. M. Efremov 9
 H. Ehrhardt 9, 12, 16, 22
 M. Ehrhardt 16
 J. H. D. Eland 7
 A. Ernesti 9
 H. Estrade 9
 J. J. Ewing 14

 I. I. Fabrikant 9, 10, 15
 A. Farhat 16
 D. Feller 10
 J. Ferran 33
 D. Field 27
 F. H. Field 17
 R. W. Field 17
 R. F. Fink 10, 28
 F. Fiquet-Fayard 10
 G. W. Flynn 21
 R. E. Fox 10
 J. L. Franklin 17
 H. Friedmann 32
 D. C. Frost 10, 30
 L. Frost 9

 J. W. Gallagher 10
 G. Garcia 31
 B. C. Garrett 11
 W. R. Garrett 11
 J. P. Gauyacq 11, 25
 H. A. Gebbie 30, 31

F. Gemperle 11
 T. C. Genoni 14
 P. L. Gertitschke 11
 F. A. Gianturco 11, 25
 C. G. Gillan 19
 C. J. Gillan 4, 18
 M. L. Ginter 35
 J. C. Giordan 25
 S. C. Givertz 12
 Th. Glenewinkel-Meyer 12
 H. Goldring 31
 E. Goldstein 12, 25
 R. J. Gordon 17
 W. Gordy 32
 C. Gorse 4, 5, 12, 16, 17
 V. N. Gorshkov 3
 Z. W. Gortel 12
 M. Gote 9, 12, 16
 R. K. Gould 18
 D. S. Green 12
 A. E. Greene 24, 25
 F. R. Greening 8
 L. A. Gribov 12
 R. C. Guedes 28
 G. Guelachvili 31
 H. Gutbier 12

 C. Haeusler 31, 33
 R. I. Hall 18
 R. T. Hall 13
 A. Hamada 13
 R. L. Hansler 31
 E. E. Hanson 13, 20
 S. Hashimoto 17
 J. B. Hasted 33
 M. Hayashi 13
 W. Hayes 13
 A. N. Hayhurst 4
 W. J. Hehre 31
 M. J. Henchman 1
 A. Henglein 13
 W. H. Henneker 30
 R. J. W. Henry 6, 13
 R. Herman 3, 29, 30
 A. Herzenberg 8, 9, 11, 13
 A. J. Higgs 2
 M. Higo 13
 M. A. Hirshfeld 30, 32
 A. P. Hitchcock 7
 W. Holzer 20

A. Hopkirk 27
 J. Horacek 6, 11, 13, 28
 J. -P. Houdeau 31
 K. Houfek 28
 K. C. Hsieh 15
 Y. F. Hu 34
 K. P. Huber 13
 R. H. Huebner 6
 R. H. Hunt 36
 A. M. Hunter 14
 S. R. Hunter 6
 W. M. Huo 4
 H. A. Hyatt 30

 Y. Iida 7
 E. S. Imes 31
 M. Inokuti 14
 Y. Itikawa 14, 24
 I. A. Izmailov 7

 J. H. Jacob 5
 N. Jacobi 31
 J. K. Jacques 32
 J. H. Jaffe 30, 32
 A. Jain 14
 H. Janicka 24
 F. A. Jenkins 3
 C. Joffrin 33
 G. R. A. Johnson 14
 J. H. Johnson 14
 G. Jones 32
 K. N. Joshipura 18
 K. Jung 16, 22
 M. Juransuu 28
 J. Jureta 14

 E. W. Kaiser 32, 35
 S. A. Kalin 9, 14
 F. Kannari 14
 N. V. Karelov 15
 G. Karlstrom 29
 J. Karvonen 34
 G. P. Karwasz 28
 B. Katz 32
 D. Kaur 27
 M. Kawasaki 18
 A. K. Kazanskii 15
 A. K. Kazansky 9, 14, 15
 I. Keaveny 30
 F. Keil 29

F. Keller 27
 P. Khatibi 32
 V. K. Khersonskii 15
 A. Khosla 30
 S. Kimel 30, 32
 W. D. Kimura 14
 G. C. King 18, 24
 B. K. Kittams 15
 B. Kivel 24
 M. Kivilompolo 10, 28
 A. Kivimaki 15, 28, 34
 D. Kligler 15
 L. E. Kline 15
 G. Knoth 16, 22
 V. A. Kochelap 7
 I. V. Kochetov 1, 8, 16
 D. Koo 34
 H. J. Korsch 9
 M. Kovacic 28
 M. Krauss 16
 V. Krumbach 22
 E. Kukk 16
 K. C. Kulander 19
 M. Kulp 16
 M. Kurepa 14
 S. M. Kurkin 8
 M. J. Kushner 15
 W. Kutzelnigg 29
 A. Kvaran 27

 P. Laborie 16
 H. M. Lambert 17
 F. W. Lampe 17
 N. F. Lane 17
 B. Langer 16, 33
 P. W. Langhoff 10
 F. P. Larkins 17
 M. Larvor 31
 W. A. Lathan 31
 G. M. Lawrence 26
 J. A. Leavitt 33
 F. Leber 16
 Y. Le Coat 2, 26
 M. Le Dourneuf 17, 23
 L. C. Lee 22, 26
 Y. Lee 21
 H. Lefebvre-Brion 27
 J. -L. Le Garrec 29
 F. Legay 29, 33
 H. J. Lempka 17

S. R. Leone 17
 S. Le Picard 29
 A. Levy 33
 A. Lightman 23
 F. Linder 17, 22, 23
 H. Lischka 29
 Y. Liu 17
 R. Liyanage 17
 S. Longo 16, 17
 S. -P. Lu 17
 C. K. Lutrus 24

 C. J. MacCallum 22
 M. A. MacDonald 18
 V. Zh. Madirbaev 15
 F. Magnotta 17
 M. Makarov 17
 L. Malegat 17
 F. Manero 31
 E. Mariel-Piollet 33
 T. D. Mark 8
 P. Marmet 20
 G. Maroulis 18
 L. Marsigny 33
 H. S. W. Massey 6
 C. W. Mathews 23, 24
 D. Mathur 33
 Y. Matsumi 18
 M. McCartney 18
 A. G. McConkey 18
 C. A. McDowell 10, 30
 L. C. McIntyre 15
 A. D. McLean 18
 A. Mengoni 18
 A. Menzel 33
 D. Menzel 12
 W. Meyer 33
 W. J. Miller 18
 J. B. A. Mitchell 28, 29
 R. Mocca 18
 S. Mohanan 18
 G. R. Mohlmann 18, 19, 26
 G. E. Moore 3, 29, 30
 J. H. Moore 25
 L. A. Morgan 4, 18, 19
 W. L. Morgan 19
 J. D. Morrison 19
 M. A. Morrison 19, 20
 J. Mottl 36
 H. M. Mould 33

G. A. Muccini 13
R. S. Mulliken 20
C. Mundel 8
W. F. Murphy 20
J. A. Myer 20

S. S. Nagra 2, 20
Y. Nakamura 13
K. Nakashima 21
T. Nakayama 36
A. P. Napartovich 1, 16
K. Narahari Rao 36
Zs. Naray 20
H. K. Nasrallah 20
S. M. Naude 33
O. Nayadin 16
H. M. Nelson 33
I. Nenner 27
D. J. Nesbet 17
R. K. Nesbet 20
B. Nestmann 23
B. M. Nestmann 22
H. Neuert 12
P. Niay 34
A. J. C. Nicholson 20
A. O. Nier 20
W. V. Niessen
W. L. Nighan 21
T. Noguchi 24
E. Nommiste 16, 34
D. W. Norcross 6, 21
F. Norling 21

R. A. Oetjen 31
T. Ogawa 13, 21
J. F. Ogilvie 34
O. J. Orient 21
A. J. Orr-Ewing 2
S. J. Osborne 16
Ch. Ottinger 12
J. W. Otvos 21
I. Ozier 30

N. T. Padial 21
R. Paineau 2
A. Palma 11
L. Pantano 11
J. Park 21
S. M. Park 17

T. R. Passmore 17
L. Pauling 21
J. F. Paulson 1
B. M. Penetrante 22
S. S. Penner 22
Z. Lj. Petrovic 22
V. G. Pevgov 8
S. D. Peyerimhoff 22, 23
K. Pfingst 22
L. C. Pitchford 10
G. N. Plass 35
V. Pless 22
E. K. Plyler 34, 36
V. A. Popov 27
S. P. S. Porto 30
B. Pouilly 1, 9
M. J. Pound 19
S. Pozdneev 22
S. A. Pozdneev 22, 29
W. C. Price 17, 33, 34
J. D. Prince 2
R. Puttner 34

M. Radle 16, 22
A. A. Radzic 22
N. K. Rahman 11
N. F. Ramsey 30, 33
D. H. Rank 34
B. S. Rao 34
F. H. Read 24
L. T. Redmon 11
M. J. Redmon 11
J. L. Redpath 14
J. A. Rees 16
P. M. Regan 2
D. F. Register 25
P. W. Reinhardt 6
N. H. Rich 34
D. Richards 8
M. E. Riley 22
J. S. Risley 26
M. B. Robin 34
J. P. Rocard 16
K. Rohr 22, 23
M. Rokni 5, 15
J. Romand 23
A. Ron 32
A. Rosenberg 23

P. Rosmus 33, 36
 I. Rossi 33
 S. Rothenberg 35
 L. Roussier 2
 B. R. Rowe 29
 Z. Rozenberg 5, 15

 K. L. Saenger 23
 O. -P. Sairanen 16
 J. A. R. Samson 10, 20
 R. B. Sanderson 35
 D. P. Santry 35
 H. F. Schaefer 35
 O. Schafer 23
 B. Schimmelpfennig 23
 R. N. Schindler 5
 B. I. Schneider 23
 G. J. Schulz 27
 R. Schumacher 5
 W. H. E. Schwarz 23, 24
 A. Schweig 25
 G. A. Segal 12, 25, 35
 B. Shao 1
 M. Shapiro 4
 R. G. Sharafutdinov 15
 V. M. Shashkov 8
 D. A. Shaw 24
 A. I. Shchedrin 3
 V. Shcheglov 22
 W. D. Sheasley 24
 E. Shigemasa 15
 K. H. Shima 19
 M. Shimoi 24
 T. Shirai 18
 V. H. Shui 24
 S. Silverman 3, 29, 30
 D. Simon 2, 26
 P. I. Singh 24
 P. A. Skovorodko 15
 B. M. Smirnov 22
 V. N. Smirnov 12
 A. L. Smith 35
 D. Smith 1
 F. G. Smith 32, 35
 H. D. Smyth 24
 T. Speck 29
 D. Spence 24, 26
 S. M. Spyrou 6
 S. K. Srivastava 21

V. Staemmler 29
 J. G. Stamper 35
 E. J. Stansbury 24
 W. J. Stevens 16
 D. P. Stevenson 21
 J. A. D. Stockdale 6
 N. W. B. Stone 31
 A. P. Strel'tsov 1
 K. Stuckardt 30
 V. R. Stull 35
 S. H. Suck Salk 24
 O. Sueoka 13
 G. I. Sukhinin 15
 J. Sun 17
 I. H. Suzuki 24
 S. Svensson 16
 V. I. Svetsov 9
 I. Szamrej 24
 R. C. Sze 24, 25

 K. Takayanagi 14
 H. S. Tayler 25
 D. Teillet-Billy 1, 25
 D. T. Terwilliger 35
 R. Teshima 12
 R. J. Thibault 34
 W. Thiel 25
 D. G. Thompson 11, 25, 29
 J. P. Thomson 3, 4
 R. Thorburn 25
 H. T. Thummel 22
 E. D. Tidwell 34
 S. G. Tilford 35
 T. Tokuhiro 35
 P. Tomasello 26
 K. Tonokura 18
 J. A. Tossell 25
 R. A. Toth 36
 J. S. Townsend 1, 25
 S. Trajmar 25
 M. Tronc 2, 26
 T. Tsuboi 21
 S. Tsurubuchi 18, 26
 D. W. Turner 26
 J. E. Turner 14

 R. J. M. van der Burgt 26
 J. T. Vanderslice 35
 E. F. van Dishoeck 26

M. C. van Hemert 26
C. C. van Voorhis 6
H. Verleger 33
L. M. Vheung 3
J. Viefhaus 33
A. A. Viggiano 1
B. Vodar 23, 29
W. von Niessen 26
D. Vrabec 13
D. A. Vroom 26, 30
H. Vu 29, 32

J. M. Wadehra 2, 26
J. A. Walker 16
S. C. Wallance 12
R. G. Wang 26
W. C. Wang 22, 26
K. Watanabe 36
J. K. G. Watson 36
D. U. Webb 36
D. Weber 22
E. Weigold 24
M. J. Weiss 26
S. Weiss 36
H. L. Welsh 24, 34
H. J. Werner 36
W. B. Westerveld 26
R. W. Wetmore 12
S. B. Whitfield 33
T. A. Wiggins 34
G. R. Wilkinson 33
G. R. J. Williams 24
A. Wills 16
D. E. Wilson 27
N. W. Winter 19
C. Wittig 27
S. F. Wong 2

Li Xi 27
Y. Xie 17

A. Yagishita 15
Y. Yang 17
S. A. Yavna 27
V. A. Yavna 27
A. J. Yenchu 27
P. N. Yi 30
T. A. York 27
M. Yoshimine 18
R. A. Young 26

R. H. Young 35

R. N. Zare 23
A. Zecca 28
J. Zhang 27
J. P. Ziesel 27

Hydrogen Bromide HBr

References for HBr, DBr (1900 - 1999)

(Hydrogen bromide)

[Hydrogen halide, Halogen acid]

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 information,
	E : Exp., T : Theory.

The oldest paper in this list is given by C. Cuthbertson (1913).

- A R. Abouaf and D. Teillet-Billy : 10th ICPEAC, Paris 2, 792-793 (1977) .
Electron attachment to polar molecules : Structure in the dissociative attachment cross sections for HCl, HBr, HF. [E, HBr, HCl, HF]
- A R. Abouaf and D. Teillet-Billy : Chem. Phys. Lett. 73, 106-109 (1980) K
Fine structure in the dissociative attachment cross sections for HBr and HF. [E, HBr, HF; 0.05 - 2 eV for HBr]
- O M. Y. Adam, M. P. Keane, A. Naves de Brito, N. Correia, P. Baltzer, B. Wannberg.
L. Karlsson and S. Svensson : J. Elect. Spectrosc. Relat. Phenom. 58, 185-197 (1992)
High resolution X-ray excited inner valence photoelectron spectra of HBr and DBr. [E, $h\nu$, HBr, DBr]
- A N. G. Adams, D. Smith, A. A. Viggiano, J. F. Paulson and M. J. Henchman : J. Chem. Phys. 84, 6728-6731 (1986)
Dissociative attachment reactors of electrons with strong acid molecules. [E, HBr, HI, HCl, HF, HNO₃, H₂SO₄, etc.]
- O M. R. Atwood, H. Vu et B. Vodar : Spectrochimica Acta 23A, 553-563 (1967)
Forme et structures fines de la bande induite par la pression dans la bande fondamentale de vibration-rotation des molecules HF, HCl et HBr. [E, $h\nu$, HF - HBr]
- V R. Azria, Y. Le Coat and J. P. Guillotin : J. Phys. B13, L505-L509 (1980)
Negative-ion contribution to threshold peaks observed in vibrational excitation spectra of molecules by electron impact. [E, HBr, SF₆]
- A R. Azria : 11th SPIG, Dubrovnik 95-109 (1982) .
Angular distribution of negative ions from dissociative electron attachment processes. [E, HBr,

R. Azria : in Physics of Electronic and Atomic Collisions, 12th ICPEAC, Gatlinburg 557-567 (1982)

Electronic molecule collision at low energy resonance and threshold phenomena. [review, HBr, HF, HCl, HI]

- O H. J. Babrov : J. Chem. Phys. 40, 831-837 (1964)
Strengths and self-broadened widths of the lines of the hydrogen bromide fundamental band. [E, $h\nu$, HBr]
- O H. J. Babrov, A. L. Shabott and B. S. Rao : J. Chem. Phys. 42, 4124-4131 (1965)
Matrix elements for vibration-rotation transitions in the HBr overtone and hot bands. [E, $h\nu$, HBr; 1200 K]
- O A. Banichevich, S. D. Peyerimhoff, B. A. Hess and M. C. van Hemert : Chem. Phys. 154, 199-209 (1991)
Potential curves and predissociation rates for the heavy species HBr^{2+} and DBr^{2+} . [T, HBr, DBr]
- O R. F. Barrow and A. D. Caunt : Proc. Phys. Soc. London 66A, 617-622 (1953)
The $2\Sigma^+-2\Pi_1$ band system of HBr^+ .
[E, HBr; rotational analysis of the 1.1 and 0.1 bands]
- O R. F. Barrow and J. G. Stamper : Proc. Roy. Soc. London A263, 259-276 (1961a)
The absorption spectrum of gaseous hydrogen bromide in the Schumann region. I. Rotational analysis. [E, $h\nu$, HBr; 1180 - 1500 Å]
- O R. F. Barrow and J. G. Stamper : Proc. Roy. Soc. London A263, 277-288 (1961b)
The absorption spectrum of gaseous hydrogen bromide in the Schumann region. II. Electronic states. [E, $h\nu$, HBr; 8.2 - 10.4 eV]
- O A. Bartana and R. Kosloff : J. Chem. Phys. 99, 196-210 (1993)
Laser cooling of molecular internal degrees of freedom by a series of shaped pulses. [T, HBr]
- O J. R. Bates, J. O. Halford and L. C. Anderson : J. Chem. Phys. 3, 531-534 (1935)
A comparison of some physical properties of hydrogen and deuterium bromides. [E, $h\nu$, HBr, DBr; absorption spectra]
- D R. Baumfaulk, U. Buck, C. Frischkorn, S. R. Gandhi and C. Lauenstein : Ber. Bunsenges. Phys. Chem. 101, 606-613 (1997)
Photodissociation and size analysis of $(\text{HBr})_n$ cluster.
[E, e and $h\nu$, $(\text{HBr})_n$; 70 eV for $n = 3, 5, 7, 10, 15$]
- EX K. H. Becker : Comments At. Mol. Phys. 30, 261-284 (1994) .
I Electron-impact ionization and dissociative excitation of halogen-containing molecules.
[comments, HBr, HCl, HF, SF_6 , CF_2Cl_2 , CF_4 , CF_3H , CF_3Cl , etc.]
- O P. Bernage, P. Niay, H. Bocquet et R. Houdart : Rev. Physiq. Appl. 8, 333-335 (1973)
Etude des bandes d'absorption infrarouges ν_{0-3} , ν_{0-4} , ν_{0-5} de l'acide bromhydrique gazeux a l'aide d'un spectrometre SISAM. [E, $h\nu$, HBr]

- 0 P. Bernage, P. Niay et R. Houdart : Compt. Rend. Acad. Sci. B278, 235-238 (1974)
Bandes d'absorption infrarouges ν_{0-5} et ν_{0-6} de l'acide iodhydrique gazeux et ν_{0-6} de l'acide bromhydrique gazeux. [E, $h\nu$, HBr, HI]
- 0 P. Bernage and P. Niay : J. Mol. Spectrosc. 63, 317-321 (1976)
High-resolution measurements on the infrared absorption 5-0 band of deuterium bromide. [E, $h\nu$, DBr]
- 0 P. Bernage and P. Niay : Can. J. Phys. 55, 1016-1024 (1977a)
Comparative study of molecular constants of HBr and of DBr : application to the determination of molecular constants of TBr. [T, HBr, DBr, TBr; in French]
- 0 P. Bernage and P. Niay : J. Quant. Spectrosc. Radiat. Transf. 18, 315-325 (1977b)
Absorption intensities for vibration-rotation bands and the dipole-moment expansion of HBr. [E, $h\nu$, HBr; 0-2, 0-3, 0-4, 0-5 bands]
- 0 D. M. Bishop and L. M. Cheung : J. Phys. Chem. Ref. Data 11, 119-133 (1982) ·
Vibrational contributions to molecular dipole polarizabilities. [compilation, HBr, etc. many molecules]
- 0 P. Botschwina and W. Meyer : J. Chem. Phys. 67, 2390-2391 (1977)
A PNO-CEPA calculation of the barrier height for the collinear atom exchange reaction $H' + BrH \rightarrow H'Br + H$. [T, HBr]
- 0 V. Braun and P. F. Bernath : J. Mol. Spectrosc. 167, 282-287 (1994)
Infrared emission spectroscopy of HBr.
[E, $h\nu$, HBr; $H'^{79}Br$ 2558.91338, $H'^{81}Br$ 2558.52908 cm^{-1} for $v = 0 \rightarrow 1$]
- 0 C. E. Brion and P. Crowley : J. Elect. Spectrosc. Relat. Phenom. 11, 399-416 (1977)
Electron spectroscopy using excited atoms and photons ; VIII. Penning ionization of the hydrogen halides. [E, HF - HI]
- 0 C. E. Brion, I. E. McCarthy, I. H. Suzuki, E. Weigold, G. R. J. Williams, K. L. Bedford, A. B. Kunz and R. Weidman : J. Elect. Spectrosc. Relat. Phenom. 27, 83-107 (1982)
Electron momentum distributions and binding energies for the valance orbitals of hydrogen bromide and hydrogen iodide. [E, HBr, HI]
- 0 C. E. Brion and J. P. Thomson : J. Elect. Spectrosc. Relat. Phenom. 33, 287-300 (1984a) ·
Compilation of valence shell molecular photoelectron branching ratios as a function of energy. [compilation, $h\nu$, HBr, HCl, HF, O_2 , NO, CO, N_2 , H_2O , NH_3 , CH_4 , CO_2 , COS, CS_2 , N_2O]
- 0 C. E. Brion and J. P. Thomson : J. Elect. Spectrosc. Relat. Phenom. 33, 301-331 (1984b) ·
Compilation of dipole oscillator strengths (cross sections) for the photoabsorption, photoionization and ionic fragmentation of molecules. [compilation, $h\nu$, HBr, HCl, HF, H_2 , CO, N_2 , O_2 , NO, H_2O , NH_3 , CH_4 , N_2O , CO_2 , COS, CS_2 , SF_6]

- O C. E. Brion : Comments At. Mol. Phys. 16, 249-270 (1985) .
Absolute oscillator strengths for photoabsorption and photoionization processes by fast electron impact.
[comments, $h\nu$, HBr, HF, N₂, NO, CO₂, SO₂]
- A I. S. Buchelnikova : Sov. Phys. JETP 8, 783-791 (1959) .
Cross sections for the capture of slow electrons by O₂ and H₂O molecules and molecules of halogen compounds.
[E, HBr, HCl, SF₆, CCl₄, CF₃I, CCl₂F₂, BCl₃, O₂, H₂O]
- O P. R. Bunker : J. Mol. Spectrosc. 42, 478-494 (1972)
On the breakdown of the Born-Oppenheimer approximation for a diatomic molecule. [T, HCl - HI, CO, H₂, D₂]
- A N. A. Burdett and A. N. Hayhurst : Proc. Roy. Soc. London A355, 377-405 (1977)
Kinetics of formation and removal of atomic halogen ions X⁻ by $HX + e^- \rightarrow H + X^-$ in atmospheric pressure flames for chlorine, bromine and iodine.
[E, HBr, HCl, HI]
- O V. Cermak : J. Elect. Spectrosc. Relat. Phenom. 9, 419-439 (1976)
Penning ionization electron spectroscopy of CO, HCl, HBr and triatomic molecules N₂O, NO₂, CO₂, COS and CS₂.
[E, HBr, CO₂, N₂O, NO₂, COS, CS₂, CO, HCl]
- O J. E. Chamberlain and H. A. Gebbie : Nature 208, 480-481 (1965)
Sub-millimetre dispersion and rotational line strengths of the hydrogen halides. [E, $h\nu$, HCl - HI]
- O D. A. Chapman, K. Balasubramanian and S. H. Lin : Chem. Phys. 118, 333-343 (1987)
A theoretical study of spectroscopic properties and transition moments of HBr. [T, $h\nu$, HBr]
- O D. A. Chapman, K. Balasubramanian and S. H. Lin : Phys. Rev. A38, 6098-6106 (1988)
Theoretical study of the negative ions of HBr and HI. [T, HBr, HI]
- O J. M. Cherlow, H. A. Hyatt and S. P. S. Porto : J. Chem. Phys. 63, 3996-4000 (1975)
Raman scattering in hydrogen halide gases. [E, $h\nu$, HCl - HI]
- A A. A. Christodoulides, E. Schites, R. Schumacher and R. N. Schindler : Z. Naturforsch. 29a, 389-399 (1974)
An investigation of the molecules O₂, CHCl₃, c-C₄F₈, C₇F₁₄ and HBr by electron cyclotron resonance (ECR) technique at energies ≤ 0.4 eV.
[E, HBr, O₂, CHCl₃, c-C₄F₈, C₇F₁₄]
- A L. G. Christophorou, R. N. Compton and H. W. Dickson : J. Chem. Phys. 48, 1949-1955 (1968a) OK
Dissociative electron attachment to hydrogen halides and their deuterated analogs. [E, HBr, DBr, HCl, HI]

- A L. G. Christophorou and J. A. D. Stockdale : J. Chem. Phys. 48, 1956-1960 (1968b)
Dissociation electron attachment to molecules.
[compilation, HBr, HCl, HI; about 40 molecules]
- O L. G. Christophorou : Atomic and Molecular Radiation Physics, Wiley (1971)
- O M. Cini, F. Maracci and R. Platania : J. Elect. Spectrosc. Relat. Phenom. 41, 37-58 (1986) -
Auger electron spectra of gaseous halogen compounds.
[E, HBr, BF₃, BCl₃, BBr₃; 2 keV]
- O A. Coehn und K. Stuckardt : Z. phys. Chem. 91, 722-744 (1916)
Die Einwirkung des Lichtes auf die Bildung und Zersetzung der Halogenwasserstoffe. [E, $h\nu$, HCl - HI, Cl₂ - I₂]
- O J. A. Coxon and P. G. Hajigeorgiou : J. Mol. Spectrosc. 150, 1-27 (1991)
Isotope dependence of Born-Oppenheimer breakdown effects in diatomic hydrides : The $X^1\Sigma^+$ states of HI/DI and HBr/DBr.
[E and T, $h\nu$, HF - HI]
- A O. H. Crawford and B. J. D. Koch : J. Chem. Phys. 60, 4512-4519 (1974) -
Diabatic capture in dissociative attachment. [T, HF - HI]
- EX D. Cubric, J. J. Jureta, S. Cvejanovic and D. Cvejanovic : J. Phys. B27, 3231-3239 (1994) K
Feshbach resonances in electron excitation functions of HBr. [E, HBr]
- O C. Cuthbertson and M. Cuthbertson : Phil. Trans. Roy. Soc. London 212, 1-26 (1913)
Refraction and dispersion of the halogens, halogen acids, ozone steam, oxide of nitrogen, and ammonia. [E, HCl - HI, Cl₂ - I₂, O₃, NO, NH₃]
- EX S. Cvejanovic, D. Cubric, D. Cvejanovic and J. Jureta : J. Phys. B20, 2589-2596 (1987)
Threshold electron impact excitation of HBr. [E, HBr]
- V S. Cvejanovic : AIP Conf. Proc. 295, 18th ICPEAC, Aarhus 390-401 (1993)
Threshold and resonant feature in the vibrational excitation functions of hydrogen halides. [E, HBr, HCl, HF]
- O O. B. Dabbousi, W. L. Meerts, F. H. de Leeuw and A. Dymanus : Chem. Phys. 2, 473-477 (1973)
Stark-Zeeman hyperfine structure of $H^{79}Br$ and $H^{81}Br$ by molecular-beam electric-resonance spectroscopy. [E, $h\nu$, HBr]
- O J. Delwiche, P. Natalis, J. Momigny and J. E. Collin : J. Elect. Spectrosc. Relat. Phenom. 1, 219-225 (1972)
On the photoelectron spectra of HBr and DBr.
[E, $h\nu$, HBr, DBr; with He I (584 Å)]

- I H. Deutsch, K. Becker and T. D. Mark : Int. J. Mass Spectrom. Ion Process. 167/168, 503-517 (1997)
A modified additivity rule for the calculation of electron impact ionization cross-section of molecules AB_n .
[T, HBr, HCl, HF, SF_6 , CF_4 , CCl_4 , etc.]
- EX K. England, T. Reddish and J. Comer : 15th ICPEAC, Brighton 318-318 (1987) -
Electron energy loss studies of HBr and DBr using a position sensitive multidetector. [E, HBr, DBr; 0.5 - 50 eV]
- EX K. England, T. Reddish and J. Comer : J. Phys. B23, 2151-2162 (1990) ○
Electron energy-loss studies of HBr and DBr in the energy range 8 - 15.5 eV. [E, HBr, DBr]
- E H. Estrada and W. Domcke : J. Phys. B17, 279-297 (1984)
V Analytic properties of the S matrix for a simple model of fixed-nuclei electron-polar-molecule scattering.
[T, general theory for polar molecule, HBr, etc.]
- E R. Fandreyer, P. G. Burke, L. A. Morgan and C. J. Gillan : J. Phys. B26, 3625-3637
V (1993) ○
Low-energy electron scattering by HBr.
[T, HBr; R-matrix, 0.1 - 11 eV for q_t , th. - 4.5 eV for q_v]
- O R. Fandreyer and P. G. Burke : J. Phys. B29, 339-343 (1996) K
Resonance effect in low-energy electron scattering by HBr. [T, HBr]
- O A. Fayt, D. Van Lerberghe, G. Guelachvili, C. Amiot, P. Bernage and P. Niay :
Mol. Phys. 32, 955-962 (1976)
Infra-red absorption bands 1-0, 2-0, 3-0 and 4-0 of the two isotopic species $D^{79}Br$ and $D^{81}Br$ of deuterium bromide. [T, $h\nu$, DBr]
- O G. Fronzoni, G. De Alti, P. Decleva and A. Lisini : J. Elect. Spectrosc. Relat. Phenom. 58, 375-392 (1992)
CI calculations of the inner and outer valence photoelectron spectra of the fourth row hydrides. [T, $h\nu$, HBr, H_2Se , AsH_3 , GeH_4]
- A D. C. Frost and C. A. McDowell : J. Chem. Phys. 29, 503-506 (1958)
Electron capture processes in the hydrogen halides.
[E, HBr, HCl, HF, HI, SF_6 , O_2]
- O D. C. Frost, C. A. McDowell and D. A. Vroom : J. Chem. Phys. 46, 4255-4259 (1967)
Photoelectron spectra of the halogens and the halogen halides.
[E, $h\nu$, HF - HI, F_2 - I_2]
- S J. W. Gallagher, E. C. Beaty, J. Dutton and L. C. Pitchford : JILA Information Center Report No. 22, 1-258 (1982) -
A compilation of electron swarm data in electron-negative gases.
[compilation, HBr, F_2 - I_2 , NF_3 , SF_6 , etc.]

- S J. W. Gallagher, E. C. Beaty, J. Dutton and L. C. Pitchford : J. Phys. Chem. Ref. Data 12, 109-152 (1983)
An annotated compilation and appraisal of electron swarm data in electronegative gases.
[compilation, HBr, Cl₂, CF₄, SF₆, NH₃, etc.; 19 molecules]
- V F. A. Gianturco and N. K. Rahman : Chem. Phys. Lett. 48, 380-384 (1977)
Threshold behaviour of polar molecule vibrational excitations by electron impact. [T, HF - HI]
- O F. A. Gianturco and U. T. Lamanna : J. Phys. B12, 2789-2795 (1979) ·
Internuclear dependence of static polarisability in hydrogen halides.
[T, HBr, HF, HCl]
- O D. A. Ginter, M. L. Ginter and S. G. Tilford : J. Mol. Spectrosc. 90, 152-176 (1981)
Electronic spectra and structure of the hydrogen halides :
Characterization of the electronic structure of HBr and DBr lying between 79500 and 83900 cm⁻¹ above X¹Σ⁺. [E, hν, HBr, DBr; absorption spectra]
- O M. L. Ginter and S. G. Tilford : J. Mol. Spectrosc. 34, 206-221 (1970)
Electronic spectra and structure of the hydrogen halides. The b³Π₁ and C¹Π states of HBr and DBr. [E, hν, HBr, DBr]
- O M. L. Ginter and S. G. Tilford : J. Mol. Spectrosc. 37, 159-178 (1971)
Electronic spectra and structure of the hydrogen halides. State associated with the (σ²π³)cπ and (σ²π³)cσ configurations of HBr and DBr. [E, hν, HBr, DBr; < 79500 cm⁻¹]
- O C. F. Goodeve and A. W. C. Taylor : Proc. Roy. Soc. London A152, 221-230 (1935)
The continuous absorption spectrum of hydrogen bromide. [E, hν, HBr]
- O L. A. Gribov and V. N. Smirnov : Sov. Phys. Usp. 4, 919-946 (1962) ·
Intensities in the infra-red absorption spectra of polyatomic molecules.
[compilation, hν, HBr, HCl, CF₄, CO, NO, etc., many molecules]
- O B. P. Gustafson and B. S. Rao : Can. J. Phys. 48, 330-334 (1970)
Dipole matrix elements for vibration-rotation lines in the hydrogen bromide molecule. [E, hν, HBr]
- A H. Gutbier und H. Neuert : Z. Naturforsch. 9a, 335-337 (1954)
Negative Ionen bei Dissoziation von HCl und HBr durch Elektronenstoss.
[E, HBr, HCl]
- O R. L. Hansler and R. A. Oetjen : J. Chem. Phys. 21, 1340-1343 (1953)
The infrared spectra of HCl, DCl, HBr, and NH₃ in the region from 40 to 140 microns. [E, hν, HBr, HCl, DCl, NH₃]
- O M. J. Haugh and K. D. Bayes : J. Phys. Chem. 75, 1472-1476 (1971)
Predissociation and dissociation energy of HBr⁺. [E, hν, HBr]

- A A. U. Hazi : J. Phys. B16, L29-L34 (1983)
Effects of resonance-resonance coupling on dissociative electron attachment. [T. HBr; new interpretation, see Y. Le Coat (1982)]
- O G. Herzberg : Molecular Spectra and Molecular Structure. I. Spectra of Diatomic Molecules. 2nd ed., van Nostrand-Reinhold (1979)
- V J. Horacek and W. Domcke : Chem. Phys. Lett. 234, 304-308 (1995)
- A Calculation of dissociative electron attachment and vibrational excitation cross-section of HBr. [T. HBr]
- V J. Horacek and W. Domcke : Phys. Rev. A53, 2262-2271 (1996) -K
- A Calculation of cross sections for vibrational excitation and dissociative attachment in collisions with HBr and DBr. [T. HBr, DBr]
- A J. Horacek, F. Gemperle and H. -D. Meyer : J. Chem. Phys. 104, 8433-8441 (1996b)
Calculation of dissociation attachment of electrons to diatomic molecules by the Schwinger-Lanczos approach. [T. HBr; 0 - 1 eV]
- O K. P. Huber and G. Herzberg : Molecular Spectra and Molecule Structure, IV. Constants of Diatomic Molecules. van Nostrand-Reinhold 276-282 (1979)
- O B. J. Huebert and R. M. Martin : J. Phys. Chem. 72, 3046-3048 (1968)
Gas-phase far-ultraviolet absorption spectrum of hydrogen bromide and hydrogen iodide. [E. $h\nu$, HBr, HI; 1700 - 2300 Å for HBr]
- O M. Inokuti : Rev. Mod. Phys. 43, 297-347 (1971) -
Inelastic collisions of fast charged particles with atoms and molecules - The Bethe theory revisited. [T. 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)]. [T. general theory]
- E Y. Itikawa : Phys. Rep. 46, 117-164 (1978) -
- O Electron scattering by polar molecules.
[review, HBr, HF, HCl, CO, NO, LiF, CsCl, etc.]
- O N. Jacobi : J. Mol. Spectrosc. 22, 76-79 (1967)
Electrical anharmonicities of diatomic molecules. [T. HCl - HI, CO]
- O T. C. James and R. J. Thibault : J. Chem. Phys. 42, 1450-1457 (1965)
Infrared-emission spectrum of HBr excited in an electric discharge. Determination of molecular constants. [E. $h\nu$, HBr(ν)]
- O D. W. Johnson and N. F. Ramsey : J. Chem. Phys. 67, 941-947 (1977)
Stark hyperfine structure of hydrogen bromide. [E. $h\nu$, HBr]

- 0 G. Jones and W. Gordy : Phys. Rev. 136, A1229-A1232 (1964)
Submillimeter-wave spectra of HCl and HBr.
[E, $h\nu$, HBr, HCl, HI; 0.48 - 0.59 mm]
- 0 P. Khatibi et H. Vu : J. Chim. Phys. 69, 654-661 (1972a)
Spectres d'absorption infrarouge de HCl et de HBr en phases denses. I. -
Spectres dans le fondamental de vibration-rotation. [E, $h\nu$, HBr, HCl]
- 0 P. Khatibi et H. Vu : J. Chim. Phys. 69, 662-673 (1972b)
Spectres d'absorption infrarouge de HCl et de HBr en phases denses. II. -
Spectres dans le premier harmonique de vibration-rotation ($0 \rightarrow 2$).
[E, $h\nu$, HBr, HCl]
- 0 P. Khatibi et H. Vu : J. Chim. Phys. 69, 674-680 (1972c)
Spectres d'absorption infrarouge de HCl et de HBr en phases denses. III. -
Spectres dans le deuxième harmonique de vibration-rotation ($0 \rightarrow 3$).
[E, $h\nu$, HBr, HCl]
- 0 T. Kinugawa and T. Arikawa : J. Chem. Phys. 96, 4801-4804 (1992)
Three-dimensional velocity analysis combining ion imaging with Doppler
spectroscopy : Application to photodissociation of HBr at 243 nm.
[E, $h\nu$, HBr]
- 0 T. Kinugawa and T. Arikawa : Jpn. J. Appl. Phys. Part 2, 32, L550-L552 (1993)
Diffraction scattering experiment of H atoms using laser and ion imaging
techniques. [E, $h\nu$, HBr]
- A Y. Le Coat, R. Azria and M. Tronc : J. Phys. B15, 1569-1579 (1982) ○
Non-adiabatic transitions observed in H^- formation by dissociative
electron attachment on HBr. [E, HBr]
- 0 H. Lefebvre-Brion : Chem. Phys. Lett. 171, 377-380 (1990)
Rotational-state distribution in HBr^+ from Rydberg-state photoionization.
[T, $h\nu$, HBr]
- 0 H. J. Lempka, T. R. Passmore and W. C. Price : Proc. Roy. Soc. London A304, 53-64 (1968)
The photoelectron spectra and ionized states of the halogen acids.
[E, $h\nu$, HF - HI]
- F. Linder : 10th ICPEAC, Invited Paper, Paris 51-69 (1977) .
Electron scattering by polar molecules. [review, HBr, HF, HCl, H_2O]
- 0 Z. F. Liu, G. M. Bancroft, K. H. Tan and M. Schachter : J. Elect. Spectrosc. Relat.
Phenom. 67, 299-308 (1994)
The importance of ligand-field splitting in the interpretation of the HBr
Br3d pre-edge photoabsorption (EELS) spectrum, the Br3d photoelectron
spectrum, and the MVV Auger spectrum. [E and T, $h\nu$, HBr, DBr]
- 0 F. Magnotta, D. J. Nesbit and S. R. Leone : Chem. Phys. Lett. 83, 21-25 (1981)
Excimer laser photolysis studies of translational-to-vibrational energy
transfer. [E, $h\nu$, HBr, HCl, H_2S]

- E L. Malegat and M. Le Dourneuf : J. Phys. B23, 527-547 (1990) K
e - HCl and e - HBr scattering calculations in the valence space.
[T, HBr, HCl]
- O L. Marsigny, J. Lebreton et Y. Petit : Compt. Rend. Acad. Sci. 270C, 1632-1634 (1970)
Analyse rotationnelle des bandes : 0-0; 0-1; 0-2; 0-3 des molecules
 $D^{81}Br^+$ et $D'^{9}Br^+$ (Transition $^2\Sigma^+ \rightarrow ^2\Pi_1$). [E, h ν , HBr, DBr]
- A H. S. W. Massey : Negative Ions, 3rd ed., Cambridge University Press (1976)
- O G. Mathieu, H. Wankenne and J. Momigny : Chem. Phys. Lett. 17, 260-263 (1972) .
Monomolecular and collision-induced predissociation in the mass spectra
of DBr. [E, h ν , DBr]
- O Y. Matsumi, K. Tonokura and M. Kawasaki : J. Chem. Phys. 93, 7981-7985 (1990) .
Photodissociation of hydrogen chloride and hydrogen bromide.
[E, h ν , HBr, HCl]
- O G. R. Mohlmann and F. J. de Heer : Chem. Phys. 17, 147- (1976)
Lifetimes of the vibrational $HBr^+(A^2\Sigma^+)$ and $DBr^+(A^2\Sigma^+)$ states and
emission cross sections for the corresponding ($A^2\Sigma^+, v' \rightarrow X^2\Pi_1, v''$)
transitions. [E, HBr, DBr]
- 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, HBr, HCl, H₂, H₂O, H₂S, NH₃, CH₄; 20 - 2000 eV]
- 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, HBr, HCl, CH₄, etc.]
- A K. G. Mothes, E. Schultes and R. N. Schindler : J. Phys. Chem. 76, 3758-3764 (1972) .
Application of electron cyclotron resonance technique in studies of
electron capture processes in the thermal energy range.
[E, HBr, NF₃, CCl₄, SF₆, C₄F₈, CCl₂F₂, etc.]
- O H. M. Mould, W. C. Price and G. R. Wilkinson : Spectrochimica Acta 16, 479-492
(1960)
Infra-red emission from gases excited by a radio-frequency discharge.
[E, h ν , HBr, DBr, HCl, DCl, CO, etc.]
- O R. S. Mulliken : Phys. Rev. 46, 549-571 (1934)
The halogen molecules and their spectra. J-J-like coupling. molecular
ionization potentials. [T, HF - HI, F₂ - I₂, N₂, CO, etc.]
- O R. S. Mulliken : Phys. Rev. 50, 1017-10 (1936)
The low electronic states of simple heteropolar diatomic molecules.
[T, HF - HI, I₂, H₂, Li₂, etc.]

- O R. S. Mulliken : Phys. Rev. 51, 310-332 (1937)
Low electronic states of simple heteropolar diatomic molecules : III.
Hydrogen and univalent metal halides. [T, HF - HI, etc.]
- O R. S. Mulliken : J. Chem. Phys. 8, 382-395 (1940)
Intensities in molecular electronic spectra. X. Calculations on mixed-
halogen, hydrogen halide, alkyl halide, and hydroxyl spectra.
[T, HF - HI, F₂ - Br₂, OH, CH₃Cl - CH₃I, etc.]
- A S. S. Nagra and D. A. Armstrong : Can. J. Chem. 53, 3305-3312 (1975)
Mechanisms of electron capture and hydrogen formation by HBr irradiated
in mixtures with C₂F₆, CO₂, and Xe. [E, HBr + (C₂F₆, CO₂, Xe)]
- O S. M. Naude and H. Verleger : Proc. Phys. Soc. London A63, 470-477 (1950)
The vibration/rotation bands of the hydrogen halides HF, H³⁵Cl, H³⁷Cl,
H⁷⁹Br, H⁸¹Br and H¹²⁷I. [E, hν, HF - HI]
- O P. Niay, P. Bernage, C. Coquant et A. Fayt : Can. J. Phys. 55, 1829-1834 (1977)
Determination directe des coefficients du potentiel de potentiel de
Dunham par une methode de moindres carres non lineaire appliquee aux
nombres d'ondes des raies. Application au cas de la molecule HBr.
[T, HBr]
- W. V. Niessen → W. von Niessen
- O F. Nordling : Z. Phys. 95, 179-188 (1935)
Über die Bandenspektren der ionisierten Halogenwasserstoffe. I.
Bromwasserstoffbanden. [E, hν, HBr]
- O J. F. Ogilvie and D. Koo : J. Mol. Spectrosc. 61, 332-336 (1976)
Dunham potential energy coefficients of the hydrogen halides and carbon
monoxide. [T, HF - HI, CO]
- O J. F. Ogilvie, W. R. Rodwell and R. H. Tipping : J. Chem. Phys. 73, 5221-5229 (1980)
Dipole moment functions of the hydrogen halides. [T, HF - HI]
- O L. Pauling : J. Am. Chem. Soc. 54, 988-1003 (1932)
The nature of the chemical bond. III. The transition from one extreme
bond type to another. [T, HF - HI, etc.; potential energy curve]
- O S. J. Pearton, U. K. Chakrabarti, E. Lane, A. P. Perley, C. R. Abernathy, W. S. Hobson
and K. S. Jones : J. Electrochem. Soc. 139, 856-864 (1992)
Characteristics of III-V dry etching in HBr-based discharge. [E, HBr]
- O S. S. Penner and D. Weber : J. Chem. Phys. 21, 649-654 (1953)
Infrared intensity measurements on nitric oxide, hydrogen chloride, and
hydrogen bromide. [E, hν, HBr, NO, HCl]
- O G. Peoux, M. Monnerville, T. Duhoo and B. Pouilly : J. Chem. Phys. 107, 70-82 (1997)
Spin-orbit branching in the photodissociation of HBr : Time-independent,
time-dependent, and semiclassical calculations. [T, hν, HBr]

- 0 L. G. M. Pettersson and S. R. Langhoff : J. Chem. Phys. 85, 3130-3131 (1986)
Theoretical electric dipole moments and dissociation energies for the
ground states of GaH - BrH. [T, HBr, HSe, etc.]
- 0 E. K. Plyler and E. F. Barker : Phys. Rev. 44, 984-985 (1933)
The infrared bands and molecular constants of HBr.
[E, $h\nu$, HBr; $\nu_0 = 2649.74 \text{ cm}^{-1}$]
- 0 E. K. Plyler : J. Res. Natl. Bur. Stand. A64, 377-379 (1960)
Infrared spectrum of hydrobromic acid. [E, $h\nu$, HBr]
- 0 B. Pouilly and M. Monnerville : Chem. Phys. 238, 437-444 (1998) .
New investigation of the photodissociation of the HBr molecule :
total cross-section, anisotropy parameter and dependence of the spin-
orbit branching on the ground state vibrational level. [T, $h\nu$, HBr]
- 0 J. Pourcin, G. Bachet et R. Coulon : Compt. Rend. Acad. Sci. B264, 975-978 (1967)
Possibilite d'une absorption non resonnante induite dans le spectre de
rotation pure de HBr gazeux perturbe par des gaz comprimes.
[E, $h\nu$, HBr + He, HBr + N₂]
- A S. A. Pozdneev : Sov. Phys. Tech. Phys. 27, 919-923 (1982) .
Use of quantum three-body theory to calculate the cross sections for
the dissociative attachment of electrons to hydrogen halide molecules.
[T, HBr, HCl, HI]
- E S. Pozdneev and V. Shcheglov : Chem. Phys. 123, 27-41 (1988) .
V Application of the quantum theory of scattering to the calculation of the
A simplest chemical reactions. [T, HBr, HCl, H₂, HD, D₂, N₂, Cl₂, Br₂, I₂]
- 0 S. T. Pratt : Rep. Prog. Phys. 58, 821-883 (1995) .
Excited-state molecular photoionization dynamics.
[review, $h\nu$, HBr, H₂, N₂, NO, CO]
- 0 W. C. Price : Proc. Roy. Soc. London A167, 216-227 (1938)
The absorption spectra of the halogen acids in the vacuum ultra-violet.
[E, $h\nu$, HCl - HI]
- 0 A. A. Radzig and B. M. Smirnov : Reference Data on Atoms, Molecules and Ions.
Springer-Verlag (1985)
- 0 D. H. Rank, U. Fink and T. A. Wiggins : J. Mol. Spectrosc. 18, 170-183 (1965)
High resolution measurements on the infrared absorption spectrum of HBr.
[E, $h\nu$, HBr; 70 lines]
- 0 B. S. Rao and L. V. H. Lindquist : Can. J. Phys. 46, 2739-2743 (1968)
Dipole matrix elements for vibration-rotation lines in the 2-0 band of
the hydrogen bromide molecule. [E, $h\nu$, HBr]

- O R. S. Rao : J. Phys. B4, 791-796 (1971)
Vibration-rotation band strengths and dipole moment function of the $H^{79}Br$ molecules. [T, $h\nu$, HBr]
- O G. Raseev, F. Keller and H. Lefebvre-Brion : Phys. Rev. A36, 4759-4774 (1987)
Theoretical spin-polarization parameters of molecular photoelectrons : Application to hydrogen halides. [T, $h\nu$, HBr, HI]
- O T. N. Rescigno and C. W. McCurdy : J. Chem. Phys. 104, 120-124 (1996a)
Effective potential methods in variational treatments of electron-molecule collisions. I. Theoretical formulation. [T, general theory]
- E T. N. Rescigno : J. Chem. Phys. 104, 125-129 (1996b) ○
- D Effective potential methods in variational treatments of electron-molecule collisions. II. Application to HBr.
[T, HBr; 0 - 10 eV for elastic, th. - 25 eV for excitation]
- E M. E. Riley, C. J. MacCallum and F. Biggs : Atomic Data Nucl. Data Tables 15, 443-475 (1975); Erratum 28, 379-379 (1983)
Theoretical electron-atom elastic scattering cross sections. Selected elements, 1 keV to 256 keV. [T, Br, etc.]
- V K. Rohr : J. Phys. B10, L399-L402 (1977a) ○
Threshold resonances in vibrational excitation of HBr molecules by electron impact. [E, HBr; DCS at 100° for th. - 2 eV, DCS at 0.41 eV]
- V K. Rohr : 10th ICPEAC, Paris 1, 136-137 (1977b)
Threshold resonances in polar molecules : HBr. [E, HBr]
- V K. Rohr : J. Phys. B11, 1849-1860 (1978) ○
Interaction mechanisms and cross sections for the scattering of low-energy electrons from HBr. [E, HBr; th. - 7 eV for $v = 0 \rightarrow 1$]
- V K. Rohr : Sympo. Electron-Molecule Collisions, Tokyo 67-76 (1979)
Threshold resonances in vibrational excitation of molecules by electron impact. [review,]
- O J. Romand et B. Vodar : Compt. Rend. Acad. Sci. 226, 890-892 (1948a)
Absorption spectra of HBr and HI in the Schumann region.
[E, $h\nu$, HBr, HI; in French]
- O J. Romand : Compt. Rend. Acad. Sci. 227, 117-119 (1948b)
Determination of the potential energy curves for the excited states of HBr and HI : Comparison of calculated and experimental extinction coefficients. [E and T, $h\nu$, HBr, HI; in French]
- O J. Romand : Ann. Physiq. 4, 527-592 (1949)
Absorption ultraviolette dans la region de Schumann etude de ClH, BrH, et IH gazeux. [E, $h\nu$, HBr, HCl, HI]

- O B. Schurin and R. Rollefson : J. Chem. Phys. 26, 1089-1091 (1957)
Infrared dispersion of hydrogen bromide. [E. $h\nu$, HBr; 1 - 10 μ m]
- O P. Schwerdtfeger, L. v. Szentpaly, H. Stoll and H. Preuss : J. Chem. Phys. 87, 510-513 (1987) -
Relativistic pseudopotential calculations for HBr⁺, HBr, HBr⁻, HI⁺, HI, and HI⁻. [T, HBr, HI, etc.]
- V A. -C. Sergenton, M. Allan and D. B. Popovic : EMS-99, Tokyo 95-95 (1999a) -
Vibrational excitation of HBr by electron impact near threshold.
[E, HBr; 0.3 - 2.7 eV]
- V A. -C. Sergenton, M. Allan and D. B. Popovic : 21st ICPEAC, Sendai 306 (1999b) -
Vibrational excitation of HBr by electron impact near threshold.
[E, HBr; 0.3 - 2.7 eV]
- EX D. A. Shaw, D. Cvejancovic, G. C. King and F. H. Read : J. Phys. B17, 1173-1187 (1984)
Inner-shell and outer-shell excitation of HCl, HBr and Br₂ by electron impact with high resolution. [E, HBr, HCl, Br₂; 1.5 keV]
- A D. Smith and N. G. Adams : J. Phys. B20, 4903-4913 (1987)
Studies of the reactions HBr(HI) + e → Br⁻(I⁻) + H using the FALP and SIFT techniques. [E, HBr, HI; 300 and 515 K]
- A D. Smith and P. Spaniel : in Advances in Atomic, Molecular and Optical Physics, Vol. 32, Academic Press 307-343 (1994)
Studies of electron attachment at thermal energies using the flowing afterglow-Langmuir probe technique.
[review, HBr, HI, CCl₄, CCl₃, CCl₂F₂, SF₆, Cl₂, C₂F₆, C₆F₆, etc.]
- E I. M. Smith, D. G. Thompson and K. Blum : J. Phys. B31, 4029-4058 (1998)
Chiral effects in electron scattering by molecules using a continuum multiple scattering method. [T, HBr, HCl, Br₂, etc.]
- O D. Spence and T. Noguchi : J. Chem. Phys. 63, 505-514 (1975) K
Feshbach resonances associated with Rydberg states of the hydrogen halides. [E, HBr, HF, HCl, HI]
- O J. G. Stamper and R. F. Barrow : J. Phys. Chem. 65, 250-251 (1961)
The V(¹Σ⁺) - N(¹Σ⁺) transition of hydrogen bromide.
[E. $h\nu$, HBr, HF, HCl]
- O J. G. Stamper : Can. J. Phys. 40, 1279-1289 (1962)
The absorption spectrum of DBr in the vacuum ultraviolet region.
[E, $h\nu$, DBr]
- O E. J. Stansbury, M. F. Crawford and H. L. Welsh : Can. J. Phys. 31, 954-961 (1953)
Determination of rates of change of polarizability from Raman and Rayleigh intensities. [E, HBr, HCl, CH₄, H₂, D₂, N₂, O₂, CO₂]

- 0 R. N. Stocker and A. Goldman : J. Quant. Spectrosc. Radiat. Transf. 16, 335-346 (1976)
Infrared spectral line parameters of HBr and DBr at elevated temperatures.
[T and E, $h\nu$, HBr, DBr; 300 - 3000 K]
- 0 P. A. Straub and A. D. McLean : Theor. Chim. Acta 32, 227-242 (1974)
Electronic structure of linear halogen compounds. I. The diatomic halides, interhalogens and halogen hydrides.
[T, HF - HI, F₂ - I₂, FCl, etc.]
- 0 M. Takabatake, Y. Wakui and N. Konishi : J. Electrochem. Soc. 142, 2470-2473 (1995)
Indium tin oxide dry etching using HBr gas for thin-film transistor liquid crystal displays. [E, HBr]
- 0 D. T. Terwilliger and A. L. Smith : J. Mol. Spectrosc. 50, 30-37 (1974)
Analysis of autoionizing Rydberg states in the vacuum ultraviolet absorption spectrum of HBr and DBr. [E, $h\nu$, HBr, DBr]
- 0 D. T. Terwilliger and A. L. Smith : J. Chem. Phys. 63, 1008-1020 (1975)
Autoionization in diatomics : Measured line shape parameters and predicted photoelectron spectra for some autoionizing states of the hydrogen halides. [E, $h\nu$, HCl - HI, DBr, DCl]
- 0 H. W. Thompson, R. L. Williams and H. J. Callomon : Spectrochimica Acta 5, 313-318 (1952)
The fundamental vibration band of hydrogen bromide. [E, $h\nu$, HBr]
- 0 R. H. Tipping and R. M. Herman : J. Mol. Spectrosc. 36, 404-413 (1970)
Line intensities in HBr vibration-rotation spectra.
[T, $h\nu$, HBr; see H. J. Babrov (1965) and B. S. Rao (1968)]
- 0 T. Tokuhiro : J. Chem. Phys. 47, 109-113 (1967)
Vibrational and rotational effects on the nuclear quadrupole coupling constants in hydrogen, deuterium, and tritium halides.
[T, HCl - HI, DCl - DI, TCl - TI]
- A D. W. Trainor and M. J. W. Boness : Appl. Phys. Lett. 32, 604-606 (1978)
Dissociative attachment of electrons to Br₂ and HBr. [E, HBr, Br₂]
- 0 L. Y. Tsou : J. Electrochem. Soc. 140, 2965-2969 (1993)
Reactive ion etching of indium tin oxide with hydrogen bromide.
[E, HBr]
- 0 D. W. Turner, C. Baker, A. D. Baker and C. R. Brundle : Molecular Photoelectron Spectroscopy, Wiley-Interscience (1970)
- 0 D. N. Urquhart, T. D. Clark and B. S. Rao : Z. Naturforsch. 27a, 1563-1565 (1972)
The dipole moment function of H⁷⁹Br molecules. [T, HBr]

- 0 F. A. van Dijk and A. Dymanus : Chem. Phys. Lett. 4, 170-172 (1969)
Hyperfine structure of the rotational spectrum of HBr and in the sub-millimeter wave region. [E, $h\nu$, HBr]
- 0 F. A. van Dijk and A. Dymanus : Chem. Phys. Lett. 5, 387-389 (1970)
The electric dipole moment of HI and HBr. [E, HBr, HI]
- 0 F. A. van Dijk and A. Dymanus : Chem. Phys. 6, 474-478 (1974)
Hyperfine and Stark spectrum of DBr in the millimeter-wave region.
[E, $h\nu$, DBr; $J = 1 \leftarrow 0$ rotational transition]]
- 0 W. von Niessen, L. S. Cederbaum, W. Domcke and G. H. F. Diercksen : Chem. Phys. 56, 43-52 (1981)
Green's function calculations on the complete valence ionization spectra of HF, HCl, HBr, and HI. [T, HF - HI]
- 0 D. A. Vroom : Thesis, University of British Columbia 1-202 (1965)
Photoelectron spectroscopy of gases.
[E, $h\nu$, HBr, HF, HCl, $F_2 - I_2$, N_2 , O_2 , NO, CO, etc.]
- 0 N. P. L. Wales, W. J. Buma, C. A. de Lange, H. Lefebvre-Brion, K. Wang and V. McKoy : J. Chem. Phys. 104, 4911-4919 (1996)
Zero kinetic energy-pulsed field ionization and resonance enhanced multiphoton ionization photoelectron spectroscopy : Ionization dynamics of Rydberg states in HBr. [T, $h\nu$, HBr]
- A W. C. Wang and L. C. Lee : J. Appl. Phys. 63, 4905-4910 (1988a)
Electron attachment rate constants of HBr, CH_3Br , and C_2H_5Br in N_2 and Ar.
[E, HBr, CH_3Br , C_2H_5Br]
- 0 W. C. Wang and L. C. Lee : J. Phys. D21, 675-682 (1988b)
Photodetachment cross sections of negative halogen ions in discharge media.
[E, $h\nu$, HBr, HF, HCl, F_2 , Cl_2 , CH_3Br , CH_3I , CH_2I_2]
- 0 K. Watanabe : J. Chem. Phys. 26, 542-547 (1957)
Ionization potentials of some molecules.
[E, HBr, etc. ; 89 molecules]
- 0 S. Weiss and R. H. Cole : J. Chem. Phys. 46, 644-649 (1967)
Pressure-induced rotational quadrupole spectra of HCl and HBr.
[E, $h\nu$, HBr, HBr + SF_6 , HBr + CF_4 , $310 - 470\text{ cm}^{-1}$, and HCl]
- 0 W. Weizel, H. W. Wolff und H. E. Binkele : Z. phys. Chem. B10, 459-466 (1930)
Über ein Spektrum des Bromwasserstoffs. [E, $h\nu$, HBr]
- 0 H. J. Werner and P. Rosmus : J. Chem. Phys. 73, 2319-2328 (1980)
Theoretical dipole moment functions of the HF, HCl, and HBr molecules.
[T, HF - HBr]

- 0 Z. Xu, B. Koplitz and C. Wittig : J. Chem. Phys. 87, 1062-1069 (1987)
Kinetic and internal energy distributions via velocity-aligned Doppler spectroscopy : The 193 nm photodissociation of H₂S and HBr.
[E, $h\nu$, HBr, H₂S]
- 0 Z. Xu, B. Koplitz and C. Wittig : J. Phys. Chem. 92, 5518-5523 (1988)
Determining reactive pathways and spin-orbit populations in the photodissociation of HBr and HI using velocity-aligned Doppler spectroscopy.
[E, $h\nu$, HBr, HI]
- 0 V. Yavna, V. A. Popov, S. A. Yavna and L. A. Demekhina : Opt. Spectrosc. 75, 171-176 (1993)
Multielectron effects near the photoabsorption thresholds of the outer shells of diatomic hydride molecules. [T, $h\nu$, HBr, HF, HCl]
- 0 A. J. Yencha, M. -W. Ruf and H. Hotop : Z. Phys. D21, 113-130 (1991a)
Penning ionization and photoionization electron spectrometry of hydrogen bromide. [E, $h\nu$, HBr]
- 0 A. J. Yencha, D. K. Kela, A. Hopkirk, A. Kvaran and R. J. Donovan : 17th ICPEAC, Brisbane 62-62 (1991b)
Photoionization of HCl, HBr and HI and ion-pair formation in HCl.
[E, $h\nu$, HBr, HCl, HI]
- V J. P. Ziesel, I. Nenner and G. J. Schulz : J. Chem. Phys. 63, 1943-1949 (1975) ○K
A Negative ion formation, vibrational excitation, and transmission spectroscopy in hydrogen halides.
[E, HBr, DBr, HCl, DCl; Br⁻ formation, 0 - 1.9 eV]
- 0 P. F. Zittel and D. D. Little : J. Chem. Phys. 71, 713-722 (1979)
Photodissociation of vibrationally excited hydrogen bromide.
[E, $h\nu$, HBr]

Addenda of References for HBr

(published in 2000, plus some old papers)

2000 (2 pages)

- V M. Cizek, J. Horacek, A. -Ch. Sergenton, D. B. Popovic, M. Allan, W. Domcke, T. Leininger,
A and F. X. Gadea : Phys. Rev. A63, 062710/1-14 (2001) ○
Inelastic low-energy electron collisions with the HBr and DBr molecules :
Experiment and theory. [E and T, HBr, DBr; 0 - 4 eV]
- V M. Cizek, M. Horacek, M. Allan and W. Domcke : Czech. J. Phys. 52, 1057-1070 (2002)
A Resonances and threshold phenomena in low-energy electron collisions with
hydrogen halides : new experimental and theoretical results.
[E and T, HBr, DBr, HCl, DCl]
- V J. Horacek : in AIP Conf. Proc. No. 500, 21th ICPEAC, Sendai 329-338 (2000) ○
Inelastic low-energy electron collisions with hydrogen-halides.
[T, HBr, DBr, HCl, HI]
- A K. Houfek, M. Cizek, M. Kovacic and J. Horacek : EMS-2001, Lincoln 178-179 (2001)
Temperature-averaged cross-sections and rate constants for dissociative
electron attachment to HBr and HCl. [T, HBr, HCl]
- A K. Houfek, M. Cizek and J. Horacek : Phys. Rev. A66, 062702/1-9 (2002)
Calculation of rate constants for dissociative attachment of low-energy
electrons to hydrogen halides HCl, HBr, and HI and their deuterated
analogs. [T, HBr, DBr, HCl, DCl, HI, DI, etc.]
- E G. P. Karwasz, R. S. Brusa and A. Zecca : Rivista Nuovo Cimento 24, No. 1, 1-118
V (2001) ○
- EX One century of experiments on electron-atom and molecule scattering :
I A critical review of integral cross-sections. II. - Polyatomic molecules.
A [compilation, HBr, HF, HCl, CH₄, CO₂, O₃, etc.]
- O T. Matila, K. Ellingsen, T. Saue, H. Aksela and O. Groen : Phys. Rev. A61, 032712/
1-8 (2000)
Vibrational and electronic structure of the $3d^{-1} \rightarrow 4p(\pi, \sigma)^{-2}$ normal
Auger spectrum of HBr studied by fully relativistic configuration-
interaction calculations. [T, HBr, HBr⁺, HBr²⁺]
- A J. B. A. Mitchell : EMS-2001, Lincoln 15-16 (2001)
CRESU studies of low energy electron-molecule collisions.
[E, HBr, HCl, C₃F₆; 48 - 170 K]
- V S. A. Pozdnev : J. Exp. Theor. Phys. 90, 30-44 (2000) .
D Collisions of electrons with molecules in excited vibrational-rotational
A states. [T, HF - HBr, H₂, HD, D₂, N₂, Li₂, Na₂]

- A T. Speck, J. -L. Le Garrec, S. Le Picard, A. Canosa, J. B. A. Mitchell and B. R. Rowe :
J. Chem. Phys. 114, 8303-8309 (2001)
Electron attachment in HBr and HCl. [E, HBr, HCl; 48 - 170 K]

Addenda (1901 - 1999)

- I F. H. Dorman and J. D. Morrison : J. Chem. Phys. 35, 575-581 (1961)
Double and triple ionization of molecules induced by electron impact.
[E, DBr, HCl, Ne, NO, N₂, CO, CO₂, NH₃, etc.]
- O C. F. Goodeve and A. W. C. Taylor : Proc. Roy. Soc. London A152, 221-230 (1935)
The continuous absorption spectrum of hydrogen bromide. [E, h ν , HBr]
- O E. S. Imes : Astrophys. J. 50, 251-276 (1919)
Absorption of some diatomic gases in the near infra-red.
[E, h ν , HBr, HF, HCl]
- O Z. F. Liu, G. M. Bancroft, K. H. Tan and M. Schachter : Phys. Rev. A48, R4019-R4022 (1993)
Competition between atomic and molecular Auger decays : Study of the resonant Auger decay of HBr after the Br 3d $\rightarrow$ σ^* transition.
[E, h ν , HBr, DBr; 70 eV]
- O P. Morin and I. Nenner : Phys. Rev. Lett. 56, 1913-1916 (1986)
Atomic autoionization following very fast dissociation of core-excited HBr. [E, h ν , HBr; 68 - 80 eV]
- O J. Nenner, M. J. Hubin-Franskin, J. Delwiche, P. Morin and S. Bodeur : J. Mol. Struct. 173, 269-284 (1988)
Molecular spectroscopy and dynamics of core and valence excited states by electron scattering and synchrotron radiation.
[review, HBr, CO₂, OCS, CS₂]
- O R. Puttner, Y. F. Hu, G. M. Bancroft, H. Aksela, E. Nommiste, J. Karvonen, A. Kivimäki and S. Aksela : Phys. Rev. A59, 4438-4445 (1999)
Detailed analysis of the 3d⁻¹ - 4p π ⁻² normal Auger spectra in HBr and DBr. [E and T, h ν , HBr, DBr, HCl, DCl]
- EX T. N. Rescigno : Comments At. Mol. Phys. 33, 315-324 (1997)
Dissociative excitation in electron-molecule collisions.
[T, HBr, F₂, Cl₂, H₂O, NF₃, CH₄, C₂H₄, SiH₄, CH₃Cl]

Quick Addenda of References for HBr

2000

- 0 J. H. D. Eland : Chem. Phys. 294, 171-186 (2003)
Complete double photoionisation spectra of small molecules from TOF-REPECO measurements.
[E, $h\nu$, HBr, N₂, CO, NO, O₂, H₂S, CO₂, OCS, CS₂, N₂O, SO₂]
- 0 A. Goldman, M. T. Coffey, J. W. Hannigan, W. G. Mankin, K. V. Chance and C. P. Rinsland :
J. Quant. Spectrosc. Radiat. Transf. 82, 313-317 (2003) .
HBr and HI line parameters update for atmospheric spectroscopy
databases. [E, review, $h\nu$, HBr, HI]
- 0 T. Matila, K. Ellingsen, T. Saue, H. Aksela and O. Groen : Phys. Rev. A61, 032712/
1-8 (2000)
Vibrational and electronic structure of the $3d^{-1} \rightarrow 4p(\pi, \sigma)^{-2}$ normal
Auger spectrum of HBr studied by fully relativistic configuration-
interaction calculations. [T, HBr]
- 0 R. Puttner, Y. F. Hu, E. Nommiste, G. M. Bancroft and S. Aksela : Phys. Rev. A65,
032513/1-6 (2002)
Angle-resolved photoabsorption spectra of core holes with strong spin-
orbit interaction : Below the Br 3d thresholds in HBr. [E, $h\nu$, HBr]
- 0 R. Puttner, Y. F. Hu, G. M. Bancroft, A. Kivimäki, M. Jurvansuu, H. Aksela and
S. Aksela : Phys. Rev. A68, 032705/1-11 (2003)
Relating the $4s\sigma^{-1}$ inner-valence photoelectron spectrum of HBr with
the Br $3d^{-1} 51\lambda$ resonant Auger spectra : An approach to the assign-
ments. [E, $h\nu$, HBr]
- 0 S. Zivanov, M. Allan, M. Cizek, J. Horacek, F. A. U. Thiel and H. Hotop : Phys. Rev.
Lett. 89, 073201/1-4 (2002)
Effects of interchannel coupling in associative detachment : Electron
spectra for H + Cl⁻ and H + Br⁻ collisions.
[E and T, HBr, HCl]

Addenda

- 0 P. Baltzer, M. Larsson, L. Karlsson, M. Lundqvist and B. Wannberg : Phys. Rev. A49,
737-744 (1994)
Vibrational and rotational structure in the He I - excited photoelectron
spectrum of $A^2\Sigma_{1/2}^+$ state of HBr⁺. [E, $h\nu$, HBr; 21.218 eV photon]

- 0 C. E. Brion, Y. Iida, F. Carnovale and J. P. Thomson : Chem. Phys. 98, 327-339 (1985)
Absolute dipole oscillator strengths for photoabsorption, photoionization and ionic photofragmentation processes in HBr.
[E, $h\nu$, HBr; 7 - 100 eV]
- 0 T. A. Carlson, A. Fahlman, M. O. Krause, T. A. Whitley and F. A. Grimm : J. Chem. Phys. 81, 5389-5394 (1984)
Systematic investigation of the Cooper minimum for the hydrogen halides.
[E, $h\nu$, HBr; 14 - 110 eV]
- 0 Y. F. Hu, G. M. Bancroft, J. Karvonen, E. Nommiste, A. Kivimäki, H. Aksela, S. Aksela and Z. F. Liu : Phys. Rev. A56, R3342-R3345 (1997)
Assignment of fine structure in the HBr absorption spectrum at the Br 3d $\rightarrow$ Rydberg resonances using the Auger resonant Raman effect.
[E, $h\nu$, HBr]
- 0 R. Irrgang, N. Bowering, M. Drescher, M. Spieweck and U. Heinzmann : J. Chem. Phys. 104, 8966-8972 (1996)
High resolution single-photon ionization of HBr in the spin-orbit autoionization region. [E, $h\nu$, HBr]
- 0 H. Lefebvre-Brion, P. M. Dehmer and W. A. Chupka : J. Chem. Phys. 85, 45-50 (1986)
Vibrational effects in the spin-orbit autoionization of HBr.
[E, $h\nu$, HBr; 1030 - 1070 Å]
- 0 H. Lefebvre-Brion, M. Salzmann, H.-W. Klausung, M. Müller, N. Bowering and U. Heinzmann : J. Phys. B22, 3891-3900 (1989)
Influence of autoionisation and predissociation on the photoelectron parameters in HBr. [E, $h\nu$, HBr; 85 - 100 nm]
- 0 H. Lefebvre-Brion : Chem. Phys. Lett. 171, 377 (1990) see p. 9
- 0 Z. F. Liu, G. M. Bancroft, K. H. Tan and M. Schachter : Phys. Rev. Lett. 72, 621-624 (1994a)
Molecular Auger resonance Raman effect : A high resolution study on the resonance Auger decay of HBr after the Br 3d $\rightarrow$ 5p π Rydberg transition.
[E, $h\nu$, HBr]
- 0 Z. F. Liu, et al. : J. Elect. Spectrosc. Relat. Phenom. 67, 299 (1994b) see p. 9
- 0 C. C. Martner, J. Pfaff, N. H. Rosenbaum, A. O'Keefe and R. J. Saykally : J. Chem. Phys. 78, 7073-7076 (1983)
Radiative lifetimes of trapped molecular ions : HCl⁺ and HBr⁺.
[E, $h\nu$, HBr, HCl]
- 0 H. Obase, M. Tsuji and Y. Nishimura : J. Chem. Phys. 87, 2695-2699 (1987)
Nascent rovibrational distributions of HCl⁺(A² Σ^+) and HBr⁺(A² Σ^+) produced from He(2³S) Penning ionization of HCl and HBr. [E, HBr, HCl]

- 0 R. Puttner, Y. F. Hu, G. M. Bancroft, H. Aksela, E. Nommiste, J. Karvonen, A. Kivimäki and S. Aksela : Phys. Rev. A59, 4438-4445 (1999)
Detailed analysis of the $3d^{-1} \rightarrow 4p \pi^{-2}$ normal Auger spectra in HBr and DBr. [E, $h\nu$, HBr, DBr]
- 0 W. C. Richardson, D. W. Setser, D. L. Albritton and A. L. Schmeltekopf : Chem. Phys. Lett. 12, 349-351 (1971)
Vibrational and rotational excitation in He(2^3S_1) Penning ionization : Examples of nonvertical processes. [E, HBr, HCl, O₂]
- 0 W. C. Richardson and D. W. Setser : J. Chem. Phys. 58, 1809-1825 (1973)
Penning ionization optical spectroscopy : Metastable helium (He 2^3S) atoms with nitrogen, carbon monoxide, oxygen, hydrogen chloride, hydrogen bromide, and chlorine. [E, HBr, HCl, N₂, CO, Cl₂]
- 0 B. Ruscic and J. Berkowitz : J. Chem. Phys. 93, 1747-1754 (1990)
Photoionization of HBr and DBr near threshold.
[E, $h\nu$, HBr, DBr; 300 K, 1054 - 1072 Å]
- 0 M. Salzmann, N. Bowering, H. -W. Klausing, R. Kuntze and U. Heinzmann : J. Phys. B27, 1981-1992 (1994)
Spin-resolved photoelectron spectroscopy of HBr in the resonance region of electron autoionization. [E, $h\nu$, HBr]
- 0 M. Salzmann, N. Bowering, H. -W. Klausing and U. Heinzmann : Z. Phys. D36, 137-146 (1996)
Angle- and spin-resolved photoelectron spectroscopy of the $p\pi$ outer valence shell of HBr molecules. [E, $h\nu$, HBr]
- 0 M. Tsuji, J. M. Maier, H. Obase and Y. Nishimura : Chem. Phys. 110, 17-26 (1986)
The HCl⁺(A $^2\Sigma^+ - X^2\Pi$) and HBr⁺(A $^2\Sigma^+ - X^2\Pi$) emissions produced by the He(2^3S), Ne($3P_{0,2}$) - HCl, HBr Penning ionization in low-pressure flowing afterglows. [E, HBr, HCl]
- 0 G. W. Tyndall, M. S. de Vries and R. M. Martin : Chem. Phys. Lett. 110, 400-404 (1984)
Half-collision dynamics in the Penning ionization of HBr.
[E, HBr + (He^m, Ne^m)]
- 0 N. P. L. Wales, W. J. Buma, C. A. de Lange, H. Lefebvre-Brion, K. Wang and V. McKoy : J. Chem. Phys. 104, 4911-4919 (1996a) see p. 16
- 0 N. P. L. Wales, W. J. Buma, C. A. de Lange and H. Lefebvre-Brion : J. Chem. Phys. 105, 2978-2991 (1996b)
Characterization of spin-orbit autoionizing Rydberg states excited via one-photon absorption from the F $^1\Delta_2$ Rydberg state of HBr. [E, $h\nu$, HBr]
- 0 J. Xie and R. N. Zare : Chem. Phys. Lett. 159, 399-405 (1989)
Rotationally state-selected HBr⁺ : Preparation and characterization.
[E, $h\nu$, HBr]

- 0 A. J. Yencha, et al. : Z. Phys. D21, 113 (1991a) see p. 17
- 0 A. J. Yencha, A. J. Cormack, R. J. Donovan, K. P. Lawley, A. Hopkirk and G. C. King :
Chem. Phys. 238, 133-151 (1998) ·
Threshold photoelectron spectroscopy of HBr and DBr.
[E. $h\nu$, HBr, DBr; 11.5 - 31.5 eV]

Author Index for HBr References

R. Abouaf 1	P. G. Burke 6
M. Y. Adam 1	
N. G. Adams 1, 14	H. J. Callomon 15
H. Aksela 18, 19	A. Canosa 19
S. Aksela 19	A. D. Caunt 2
M. Allan 14, 18	L. S. Cederbaum 16
L. C. Anderson 2	J. E. Chamberlain 4
T. Arikawa 9	D. A. Chapman 4
D. A. Armstrong 11	J. M. Cherlow 4
M. R. Atwood 1	L. M. Cheung 3
R. Azria 1, 2, 9	A. A. Christodoulides 4
	L. G. Christophorou 4, 5
H. J. Babrov 2, 15	M. Cini 5
G. Bachet 12	M. Cizek 18
A. D. Baker 15	T. D. Clark 15
C. Baker 15	A. Coehn 5
K. Balasubramanian 4	M. T. Coffey
P. Baltzer 1	R. H. Cole 16
G. M. Bancroft 9, 19	J. E. Collin 5
A. Banichevich 2	J. Comer 6
R. F. Barrow 2, 14	R. N. Compton 4
A. Bartana 2	C. Coquant 11
J. R. Bates 2	N. Correia 1
R. Baumfaulk 2	R. Coulon 12
K. D. Bayes 7	M. F. Crawford 14
E. C. Beaty 6, 7	O. H. Crawford 5
K. Becker 6	P. Crowley 3
K. H. Becker 2	D. Cubric 5
K. L. Bedford 3	C. Cuthbertson 1, 5
P. Bernage 2, 3, 6, 11	M. Cuthbertson 5
F. Biggs 13	D. Cvejanovic 5, 14
D. M. Bishop 3	S. Cvejanovic 5
K. Blum 14	
S. Bodeur 19	O. B. Dabbousi 5
M. J. W. Boness 15	G. De Alti 6
P. Botschwina 3	P. Decleva 6
H. Bocquet 2	F. J. de Heer 10
C. E. Brion 3, 4	C. A. de Lange 16
C. R. Brundle 15	F. H. de Leeuw 5
R. S. Brusa 18	J. Delwiche 5, 19
I. S. Buchelnikova 4	L. A. Demekhina 17
U. Buck 2	H. Deutsch 6
W. J. Buma 16	H. W. Dickson 4
P. R. Bunker 4	G. H. F. Diercksen 16
N. A. Burdett 4	W. Domcke 6, 8, 16, 18

R. J. Donovan 17
F. H. Dorman 19
T. Duhoo 11
J. Dutton 6, 7
A. Dymanus 5, 16

K. Ellingsen 18
K. England 6
H. Estrada 6

R. Fandreyer 6
A. Fayt 6, 11
U. Fink 12
C. Frischkorn 2
G. Fronzoni 6
D. C. Frost 6

F. X. Gadea 18
J. W. Gallagher 6, 7
S. R. Gandhi 2
H. A. Gebbie 4
F. A. Gianturco 7
C. J. Gillan 6
D. A. Ginter 7
M. L. Ginter 7
A. Goldman 15
C. F. Goodeve 19
W. Gordy 9
L. A. Gribov 7
O. Gropen 18
J. P. Guillotin 1
B. P. Gustafson 7
H. Gutbier 7

J. O. Halford 2
R. L. Hansler 7
M. J. Haugh 7
M. Hayashi 7
A. N. Hayhurst 4
A. U. Hazi 8
M. J. Henchman 1
R. M. Herman 15
G. Herzberg 8
B. A. Hess 2
A. Hopkirk 17
J. Horacek 8, 18
H. Hotop 17
R. Houdart 2, 3
K. Houfek 18
Y. F. Hu 19

K. P. Huber 8
M. J. Hubin-Franskin 19
B. J. Huebert 8
H. A. Hyatt 4

E. S. Imes 19
M. Inokuti 8
Y. Itikawa 8

N. Jacobi 8
T. C. James 8
D. W. Johnson 8
G. Jones 9
J. J. Jureta 5

L. Karlsson 1
J. Karvonen 19
G. P. Karwasz 18
M. Kawasaki 10
M. P. Keane 1
D. K. Kela 17
F. Keller 13
P. Khatibi 9
G. C. King 14
T. Kinugawa 9
A. Kivimaki 19
B. J. D. Koch 5
D. Koo 11
B. Kopplitz 17
R. Kosloff 2
M. Kovacic 18
A. B. Kunz 3
A. Kvaran 17

U. T. Lamanna 7
S. R. Langhoff 12
C. Lauenstein 2
J. Lebreton 10
Y. Le Coat 1, 8, 9
M. Le Dourneuf 10
L. C. Lee 16
H. Lefebvre-Brion 9, 13, 16
J. -L. Le Garrec 19
H. J. Lempka 9
S. R. Leone 9
S. Le Picard 19
S. H. Lin 4
F. Linder 9
L. V. H. Lindquist 12
A. Lisini 6

D. D. Little 17
Z. F. Liu 9, 19

C. J. MacCallum 13
F. Magnotta 9
L. Malegat 10
F. Maracci 5
T. D. Mark 6

L. Marsigny 10
R. M. Martin 8
H. S. W. Massey 10

G. Mathieu 10
T. Matila 18
Y. Matsumi 10
I. E. McCarthy 3
C. W. McCurdy 13
C. A. McDowell 6
V. McKoy 16

A. D. McLean 15
W. L. Meerts 5
W. Meyer 3
J. B. A. Mitchell 18, 19

G. R. Mohlmann 10
J. Momigny 5, 10
M. Monnerville 11, 12
L. A. Morgan 6

P. Morin 19
J. D. Morrison 19
M. A. Morrison 10
K. G. Mothes 10
H. M. Mould 10
R. S. Mulliken 10, 11

S. S. Nagra 11
Y. Nakamura 7
P. Natalis 5
S. M. Naude 11
A. Naves de Brito 1

I. Nenner 17, 19
D. J. Nesbit 9
H. Neuert 7
P. Niay 2, 3, 6, 11
T. Noguchi 14
E. Nommiste 19
F. Nordling 11

R. A. Oetjen 7
J. F. Ogilvie 11

T. R. Passmore 9

L. Pauling 11
J. F. Paulson 1
S. S. Penner 11
G. Peoux 11
Y. Petit 10

L. G. M. Pettersson 12
L. C. Pitchford 6, 7
R. Platanina 5

E. K. Plyler 12
V. A. Popov 17
D. B. Popovic 14, 18
S. P. S. Porto 4

B. Pouilly 11, 12
J. Pourcin 12
S. A. Pozdneev 12, 18

S. T. Pratt 12
H. Preuss 14
W. C. Price 9, 10, 12
R. Puttner 19

A. A. Radzig 12
N. K. Rahman 7
N. F. Ramsey 8
D. H. Rank 12
B. S. Rao 2, 7, 12, 15

G. Raseev 13
F. H. Read 14
T. Reddish 6
T. N. Rescigno 13, 19

M. E. Riley 13
W. R. Rodwell 11
K. Rohr 13
R. Rollefson 14

J. Romand 13
P. Rosmus 16
B. R. Rowe 19
M. -W. Ruf 17

T. Saue 18
M. Schachter 9, 19
R. N. Schindler 4, 10
E. Schultes 4, 10

G. J. Schulz 17
R. Schumacher 4
B. Schurin 14
P. Schwerdtfeger 14

A. -C. Sergeanton 14
A. -Ch. Sergeanton 18
A. L. Shabott 2
D. A. Shaw 14

V. Shcheglov 12
B. M. Smirnov 12
V. N. Smirnov 7
A. L. Smith 15
D. Smith 1, 14
I. M. Smith 14
P. Spanel 14
T. Speck 19
D. Spence 14
J. G. Stamper 2, 14
E. J. Stansbury 14
J. A. D. Stockdale 5
R. N. Stocker 15
H. Stoll 14
P. A. Straub 15
K. Stuckardt 5
I. H. Suzuki 3
S. Svensson 1
L. v. Szentpaly 14

K. H. Tan 9, 19
A. W. C. Taylor 19
D. Teillet-Billy 1
D. T. Terwilliger 15
R. J. Thibault 8
D. G. Thompson 14
H. W. Thompson 15
J. P. Thomson 3
S. G. Tilford 7
R. H. Tipping 11, 15
T. Tokuhiro 15
K. Tonokura 10
D. W. Trainor 15
M. Tronc 9
D. W. Turner 15
J. E. Turner 8

D. N. Urquhart 15

F. A. van Dijk 16
M. C. van Hemert 2
H. Verleger 11
A. A. Viggiano 1
B. Vodar 1, 13
W. von Niessen 11, 16
D. A. Vroom 6, 16
H. Vu 1, 9

N. P. L. Wales 16
K. Wang 16

W. C. Wang 16
H. Wankenne 10
B. Wannberg 1
K. Watanabe 16
D. Weber 11
R. Weidman 3
E. Weigold 3
S. Weiss 16
H. L. Welsh 14
H. J. Werner 16
T. A. Wiggins 12
G. R. Wilkinson 10
G. R. J. Williams 3
R. L. Williams 15
C. Wittig 17

Z. Xu 17

S. A. Yavna 17
V. Yavna 17
A. J. Yench 17

A. Zecca 18
J. P. Ziesel 17
P. F. Zittel 17

Hydrogen Iodide HI

References for HI, DI (1900 - 1999)

(Hydrogen iodide)

[Hydrogen halide, Halogen acid]

E : Elastic collision,	R : Rotatioal 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 information,
	E : Exp., T : Theory.

The oldest paper in this list is given by A. Coehn (1916).

- O M. Y. Adam, M. P. Keane, A. Naves de Brito, N. Correia, B. Wannberg, P. Baltzer, L. Karlsson and S. Svensson : Chem. Phys. 164, 123-129 (1992)
High resolution X-ray and He-II excited inner valence photoelectron spectra of HI. [E, $h\nu$, HI]
- A N. G. Adams, D. Smith, A. A. Viggiano, J. F. Paulson and M. J. Henschman : J. Chem. Phys. 84, 6728-6731 (1986)
Dissociative attachment reactors of electrons with strong acid molecules. [E, HI, HBr, HCl, HF, HNO₃, H₂SO₄, etc.]
- A S. H. Alajajian and A. Chutjian : Phys. Rev. A37, 3680-3684 (1988)○
Measurement of electron-attachment line shapes, cross sections, and rate constants in HI and DI at ultralow electron energies. [E, HI, DI]
- O G. Ameer and W. Benesch : J. Chem. Phys. 37, 2699-2702 (1962)
Line strengths and widths in hydrogen iodide. [E, $h\nu$, HI; 300 K]
- R. Azria : in Physics of Electronic and Atomic Collisions, 12th ICPEAC, Gatlinberg 557-567 (1982) .
Electronic molecule collision at low energy resonance and threshold phenomena. [review, HI, HF, HCl, HBr]
- O P. Baltzer, L. Karlsson, S. Svensson and B. Wannberg : J. Phys. B23, 1537-1544 (1990)
Observation of vibrational structure in the proton spectrum from dissociation of HI⁺. [E, $h\nu$ and e⁻, HI]
- O J. R. Bates, J. O. Halford and L. C. Anderson : J. Chem. Phys. 3, 415-420 (1935)
A comparison of some physical properties of hydrogen and deuterium iodides. [E, $h\nu$, HI, DI]

- O W. Benesch : J. Chem. Phys. 39, 1048-1052 (1963)
Simultaneous measurement of HI fundamental and overtone lines.
[E, $h\nu$, HI]
- O W. Benesch : J. Chem. Phys. 40, 422-426 (1964)
Morse oscillator matrix elements for HI vibration-rotation lines.
[T, $h\nu$, HI]
- O P. Bernage, P. Niay et R. Houdart : Compt. Rend. Acad. Sci. B278, 235-238 (1974)
Bandes d'absorption infrarouges ν_{0-5} et ν_{0-6} de l'acide iodhydrique gazeux et ν_{0-6} de l'acide bromhydrique gazeux. [E, $h\nu$, HI, HBr]
- E M. H. F. Bettega, M. A. P. Lima and L. G. Ferreira : J. Chem. Phys. 105, 1029-1035 (1996)
Cross sections for collisions of low-energy electrons with the hydrides PH_3 , AsH_3 , SbH_3 , SnH_4 , TeH_2 and HI. [T, HI, etc.; DCS, 10 - 30 eV]
- O D. M. Bishop and L. M. Vheung : J. Phys. Chem. Ref. Data 11, 119-133 (1982) -
Vibrational contribution to molecular dipole polarizabilities.
[review, HI, HF, HCl, DCl, CO, NO, CH_4 , SF_6 , C_6H_6 , etc.]
- O N. Bowering, M. Saltzmann, M. Muller, H. -W. Klausing and U. Heinzmann : Phys. Rev. A45, R11-R14 (1992a)
Vibrationally resolved photoelectron-spin-polarization spectroscopy of HI molecules. [E, $h\nu$, HI]
- O N. Bowering, H. -W. Klausing, M. Muller, M. Saltzmann and U. Heinzmann : Chem. Phys. Lett. 189, 467-472 (1992b)
Observation of vibrational excitation in photoelectron spectroscopy of $\text{HI}^+ \ ^2\Pi$. [E, $h\nu$, HI]
- O P. Brewer, P. Das, G. Ondrey and R. Bersohn : J. Chem. Phys. 79, 720-723 (1983)
Measurement of the relative populations of $\text{I}(^2\text{P}_{1/2}^0)$ and $\text{I}(^2\text{P}_{3/2}^0)$ by laser induced vacuum ultraviolet fluorescence. [E, HI, CH_3I , etc.]
- O C. E. Brion and P. Crowley : J. Elect. Spectrosc. Relat. Phenom. 11, 399-416 (1977)
Electron spectroscopy using excited atoms and photons; VIII. Penning ionization of the hydrogen halides. [E, HF - HI]
- O C. E. Brion, I. E. McCarthy, I. H. Suzuki, E. Weigold, G. R. J. Williams, K. L. Bedford, A. B. Kunz and R. Weidman : J. Elect. Spectrosc. Relat. Phenom. 27, 83-107 (1982)
Electron momentum distributions and binding energies for the valence orbitals of hydrogen bromide and hydrogen iodide. [E, HI, HBr]
- O P. R. Bunker : J. Mol. Spectrosc. 42, 478-494 (1972)
On the breakdown of the Born-Oppenheimer approximation for a diatomic molecule. [T, HCl - HI, CO, H_2 , D_2]

- A N. A. Burdett and A. N. Hayhurst : Proc. Roy. Soc. London A355, 377-405 (1977)
Kinetics of formation and removal of atomic halogen ions X^- by $HX + e^- \rightarrow H + X^-$ in atmospheric pressure flames for chlorine, bromine and iodine. [E, HI, HBr, HCl]
- O P. Cadman and J. C. Polanyi : J. Phys. Chem. 72, 3715-3721 (1968)
Production of electronically excited atoms. II. $H + HI \rightarrow H_2 + I^*(^2P_{1/2})$. [E, HI]
- O Z. Calahorra, E. Minami, R. M. White and R. S. Muller : J. Electrochem. Soc. 136, 1839-1840 (1989)
Reactive ion etching of indium-tin-oxide films. [E, HI]
- O T. A. Carlson, P. Gerard, M. O. Krause, G. Von Wald, J. W. Taylor and F. A. Grimm : J. Chem. Phys. 84, 4755-4759 (1986)
Autoionization between the ionization thresholds for the $^2\Pi_{3/2}$ and $^2\Pi_{1/2}$ states of HI^+ . [E, $h\nu$, HI]
- A H. S. Carman, Jr., C. E. Klotz and R. N. Compton : J. Chem. Phys. 99, 1734-1743 (1993)
Rydberg electron transfer to hydrogen iodide : Dissociative and nondissociative electron capture. [E, HI, DI]
- O L. S. Cederbaum and W. Domcke : in Advances in Chemical Physics, Vol. 36, John Wiley & Sons 205-344 (1977)
Theoretical aspects of ionization potentials and photoelectron spectroscopy : A Green's function approach. [T, general theory]
- O J. E. Chamberlain and H. A. Gebbie : Nature 208, 480-481 (1965)
Sub-millimetre dispersion and rotational line strengths of the hydrogen halides. [E, $h\nu$, HCl - HI]
- O D. A. Chapman, K. Balasubramanian and S. H. Lin : Chem. Phys. Lett. 118, 192-196 (1985)
Relativistic configuration interaction calculations on the low-lying electronic states of HI. [T, HI]
- O D. A. Chapman, K. Balasubramanian and S. H. Lin : Phys. Rev. A38, 6098-6106 (1988)
Theoretical study of the negative ions of HBr and HI. [T, HI, HBr]
- O J. M. Cherlow, H. A. Hyatt and S. P. S. Porto : J. Chem. Phys. 63, 3996-4000 (1975)
Raman scattering in hydrogen halide gases. [E, $h\nu$, HCl - HI]
- A L. G. Christophorou, R. N. Compton and H. W. Dickson : 5th ICPEAC, Leningrad 582-583 (1967)
Electron capture by hydrogen halides. [E, HI, HCl, DCl, DBr]
- A L. G. Christophorou, R. N. Compton and H. W. Dickson : J. Chem. Phys. 48, 1949-1955 (1968a)○
Dissociative electron attachment to hydrogen halides and their deuterated analysis. [E, HI, DI, HCl, DCl, HBr, DBr]

- A L. G. Christophorou and J. A. D. Stockdale : J. Chem. Phys. 48, 1956-1960 (1968b)
Dissociative electron attachment to molecules.
[compilation, HI, DI, HBr, HCl, BCl₃, etc. ; about 40 molecules]
- O L. G. Christophorou : Atomic and Molecular Radiation Physics, Wiley (1971)
- A A. Chutjian, S. H. Alajajian and K. -F. Man : Phys. Rev. A41, 1311-1314 (1990) .
Measurement of threshold temperature effects in dissociative electron attachment to HI and DI. [E, HI, DI]
- A A. Chutjian, A. Garscadden and J. M. Wadehra : Phys. Rep. 246, 393-470 (1996) .
Electron attachment to molecules at low electron energies.
[review, HI, DI, F₂, SF₆, CCl₄, CFCl₃]
- O R. D. Clear, S. J. Riley and K. R. Wilson : J. Chem. Phys. 63, 1340-1347 (1975)
Energy partitioning and assignment of excited states in the ultraviolet photolysis of HI and DI. [E, h ν , HI, DI]
- O A. Coehn und K. Stuckardt : Z. Phys. Chem. 91, 722-744 (1916)
Die Einwirkung des Lichtes auf die Bildung und Zersetzung der Halogenwasserstoffe. [E, h ν , HCl - HI, Cl₂ - I₂]
- O L. E. Compton and R. M. Martin : J. Phys. Chem. 73, 3474-3477 (1969)
Photodissociation dynamics. Production of I^{*}(²P_{1/2}) atoms in the photolysis of hydrogen iodide. [E, h ν , HI]
- O A. J. Cormack, A. J. Yench, R. J. Donovan, K. P. Lawley, A. Hopkirk and G. C. King :
Chem. Phys. 221, 175-188 (1997)
High-resolution threshold photoelectron spectroscopy of hydrogen iodide.
[E, h ν , HI; 10.2 - 31 eV]
- O J. A. Coxon and P. G. Hajigeorgiou : J. Mol. Spectrosc. 150, 1-27 (1991)
Isotopic dependence of Born-Oppenheimer breakdown effects in diatomic hydrides : The X¹ Σ^+ states of HI/DI and HBr/DBr. [E and T, h ν , HF - HI]
- A O. H. Crawford and B. J. D. Koch : J. Chem. Phys. 60, 4512-4519 (1974) .
Diabatic capture in dissociative attachment. [T, HI, HF, HCl, HBr]
- O C. Cuthbertson and M. Cuthbertson : Phil. Trans. Roy. Soc. London 212, 1-26 (1913)
Refraction and dispersion of the halogens, halogen acids, ozone steam, oxide of nitrogen, and ammonia. [E, HCl - HI, Cl₂ - I₂, O₃, NO, NH₃]
- O F. C. De Lucia, P. Helminger and W. Gordy : Phys. Rev. A3, 1849-1857 (1971)
Submillimeter-wave spectra and equilibrium structures of the hydrogen-halides. [E, HI, DI, HCl, DCl, HBr, OBr, etc.]
- O R. J. Donovan and D. Husain : Trans. Faraday Soc. 62, 1050-1055 (1966)
Electronically excited iodine atoms. Part 2. - I(⁵2P_{1/2}) in the photolysis of hydrogen iodide. [E, h ν , HI]

- 0 J. H. D. Eland and J. Berkowitz : J. Chem. Phys. 67, 5034-5039 (1977)
Photoionization mass spectrometry of HI and DI at high resolution.
[E, $h\nu$, HI, DI]
- 0 J. A. Fiss, L. Zhu, K. Suto, G. He and R. J. Gordon : Chem. Phys. 233, 335-341 (1998) -
Mechanism of the coherent control of the photoionization and
photodissociation of HI and DI. [E, $h\nu$, HI, DI]
- A D. C. Frost and C. A. McDowell : J. Chem. Phys. 29, 503-506 (1958a)
Electron capture processes in the hydrogen halides.
[E, HI, HCl, HF, HBr, SF₆, O₂]
- I D. C. Frost and C. A. McDowell : Can. J. Chem. 36, 39-47 (1958b)
Excited states of the molecular ions of hydrogen fluoride, hydrogen
iodide, water, hydrogen sulphide, and ammonia.
[E, HI, HF, H₂O, H₂S, NH₃]
- 0 D. C. Frost, C. A. McDowell and D. A. Vroom : J. Chem. Phys. 46, 4255-4259 (1967)
Photoelectron spectra of the halogens and the halogen halides.
[E, $h\nu$, HF - HI, F₂ - I₂]
- S J. W. Gallagher, E. C. Beaty, J. Dutton and L. C. Pitchford : JILA Information
Center Report No. 22, 1-258 (1982)
A compilation of electron swarm data in electron-negative gases.
[compilation, HI, H₂O, CF₄, SF₆, etc.]
- S J. W. Gallagher, E. C. Beaty, J. Dutton and L. C. Pitchford : J. Phys. Chem. Ref. Data
12, 109-152 (1983)
An annotated compilation and appraisal of electron swarm data in
electronegative gases.
[compilation, HI, HCl, NO, Cl₂, Br₂, N₂O, NH₃, NF₃, SF₆, C₃F₈, etc.]
- 0 D. J. Gendron and J. W. Hepburn : J. Chem. Phys. 109, 7205-7213 (1998)
Dynamics of HI photodissociation in the A band absorption via H-atom
Doppler spectroscopy. [E, $h\nu$, HI; 200 - 300 nm]
- V F. A. Gianturco and N. K. Rahman : Chem. Phys. Lett. 48, 380-384 (1977)
Threshold behaviour of polar molecule vibrational excitations by electron
impact. [T, HI, HCl, HF, HBr]
- 0 M. L. Ginter, S. G. Tilford and A. M. Bass : J. Mol. Spectrosc. 57, 271-283 (1975)
Electronic spectra and structure of the hydrogen halides. States
associated with the ($\sigma^2\pi^3$) $c\sigma$ and ($\sigma^2\pi^3$) $c\pi$ configurations of HI and
DI. [E, $h\nu$, HI, DI; 1425 - 1570 Å]
- 0 D. S. Ginter, M. L. Ginter and S. G. Tilford : J. Mol. Spectrosc. 92, 40-54 (1982a)
Electronic spectra and structure of the hydrogen halides :
Characterization of the electronic structure of HI lying between 67800
and 74400 cm⁻¹ above X¹Σ⁺. [E, $h\nu$, HI; 1457 - 1344 Å]

- 0 D. S. Ginter, M. L. Ginter and S. G. Tilford : J. Mol. Spectrosc. 92, 55-66 (1982b)
Electronic spectra and structure of the hydrogen halides :
Characterization of the electronic structure of DI lying between 67800
and 74400 cm^{-1} above $X^1\Sigma^+$. [E, $h\nu$, DI; 1457- 1344 Å]
- 0 C. F. Goodeve and A. W. C. Taylor : Proc. Roy. Soc. London A154, 181-187 (1936)
The continuous absorption spectrum of hydrogen iodide. [E, $h\nu$, HI]
- 0 C. Haeusler, C. Meyer et P. Barchewitz : J. Physiq. 25, 961-965 (1964)
Constantes de vibration et de rotation de l'acide iodhydrique gazeux
etude des bandes d'absorption ν_{0-2} et ν_{0-4} . [E, $h\nu$, HI]
- 0 D. J. Hart and J. W. Hepburn : Chem. Phys. 129, 51-64 (1989)
Vacuum ultraviolet laser photoionization spectroscopy : A high-resolution
study of spin-orbit autoionization in HI. [E, $h\nu$, HI]
- 0 A. J. R. Heck and D. W. Chandler : Annu. Rev. Phys. Chem. 46, 335-372 (1995)
Imaging techniques for the study of chemical reaction dynamics.
[review, HI, O_3 , C_2H_2 , CH_3I]
- 0 G. Herzberg : Molecular Spectra and Molecular Structure. I. Spectra of
Diatomic Molecules. 2nd ed., Van Nostrand-Reinhold (1950)
- V J. Horacek, W. Domcke and H. Nakamura : Z. Phys. D42, 181-185 (1997)
- A Electron attachment and vibrational excitation in hydrogen iodide :
Calculations based on the Nonlocal resonance model.
[T, HI, DI; 0.01 - 0.2 eV for q_a , 0.2 - 4.5 eV for q_v]
- 0 K. P. Huber and G. Herzberg : Molecular Spectra and Molecular Structure.
Constants of Diatomic Molecules, van Nostrand-Reinhold 324-328 (1979)
- 0 B. J. Huebert and R. M. Martin : J. Phys. Chem. 72, 3046-3049 (1968)
Gas-phase far-ultraviolet absorption spectrum of hydrogen bromide and
hydrogen iodide. [E, $h\nu$, HI, HBr; 1800 - 3000 Å for HI]
- 0 S. C. Hurlock, R. M. Alexander, K. Narahari Rao and S. N. Dreska : J. Mol. Spectrosc.
37, 373-376 (1971)
Infrared bands of HI and DI. [E, $h\nu$, HI, DI]
- 0 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]
- 0 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]
- E Y. Itikawa : Phys. Rep. 46, 117-164 (1978) -
Electron scattering by polar molecules. [review, general theory]

- O N. Jacobi : J. Mol. Spectrosc. 22, 76-79 (1967)
Electrical anharmonicities of diatomic molecules. [T, HCl - HI, CO]
- O G. Jones and W. Gordy : Phys. Rev. 136, A1229-A1232 (1964)
Submillimeter-wave spectra of HCl and HBr.
[E, $h\nu$, HI, HCl, HBr; 0.48 - 0.59 nm]
- O C. Kalyanaraman and N. Sathyamurthy : Chem. Phys. Lett. 209, 52-56 (1993)
Channel control in a chemical reaction. Vibrational enhancement of I^*/I branching ratio in HI photodissociation. [T, $h\nu$, HI]
- O L. Karlsson, S. Svensson, P. Baltzer, M. Carlsson-Göthe, M. P. Keane, A. N. de Brito, N. Correia and B. Wannberg : J. Phys. B22, 3001-3009 (1989)
The NVV Auger electron spectrum of the HI molecules. [E, HI]
- O K. Kimura, S. Katsumata, Y. Achiba, T. Yamayaki and S. Iwata : Handbook of He I Photoelectron Spectra of Fundamental Organic Molecules, Halsted (1981)
- A D. Klar, B. Mirbach, H. J. Korsch, M. -W. Ruf and H. Hotop : Z. Phys. D31, 235-244 (1994) .
Comparison of rate coefficients for Rydberg electron and free electron attachment. [E, HI, SF₆]
- O J. B. Koffend, B. H. Weiller and R. F. Heidner III : J. Phys. Chem. 96, 9315-9320 (1992)
Kinetics of chemically pumped NF($b^1\Sigma^+$) : Study of NF($a^1\Delta$ + $I^*(^2P_{1/2}) \rightarrow$ NF($b^1\Sigma^+$) + I($^2P_{3/2}$) energy pooling. [E, $h\nu$, HI; UV absorption c.s.]
- O S. R. Langford, P. M. Regan, A. J. Orr-Ewing and M. N. R. Ashfold : Chem. Phys. 231, 245-260 (1998)
On the UV photodissociation dynamics of hydrogen iodide.
[E and T, $h\nu$, HI]
- A Y. Le Coat, R. Azria and M. Tronc : J. Phys. B18, 809-821 (1985)
Differential cross section for dissociative attachment in HI : $H^- (^2P_{3/2}, ^2P_{1/2})$ formation. [E, HI; 3.5 - 9.5 eV]
- O H. Lefebvre-Brion, A. Giusti-Suzor and G. Raseev : J. Chem. Phys. 83, 1557-1566 (1985)
Theoretical study of the spin-orbit autoionization in molecules application to the HI photoionization spectrum. [T, $h\nu$, HI]
- O H. J. Lempka, T. R. Passmore and W. C. Price : Proc. Roy. Soc. London A304, 53-64 (1968)
The photoelectron spectra and ionized states of the halogen acids.
[E, $h\nu$, HF - HI]
- O I. Levy and M. Shapiro : J. Chem. Phys. 89, 2900-2908 (1988)
Theory of electronic branching in the photodissociation of HI and DI.
[T, $h\nu$, HI, DI; potential energy curves]

- O A. Mank, M. Drescher, T. Huth-Fehre, G. Schonhense, N. Bowering and U. Heinzmann :
J. Elect. Spectrosc. Relat. Phenom. 52, 661-670 (1990)
Photoelectron dynamics of HI ionized by coherent VUV radiation.
[E, $h\nu$, HI]
- O A. Mank, M. Drescher, T. Huth-Fehre, N. Bowering, U. Heinzmann and H. Lefebvre-Brion :
J. Chem. Phys. 95, 1676-1687 (1991)
Photoionization of jet-cooled HI with coherent vacuum ultraviolet
radiation : Evidence for Hund's case (c). [E, $h\nu$, HI]
- O R. M. Martin and J. E. Willard : J. Chem. Phys. 40, 2999-3007 (1964)
Reactions of photochemically produced hot hydrogen atoms. I.
Photolysis of HI at 1849 Å. [E, $h\nu$, HI]
- A H. S. W. Massey : Negative Ions, 3rd ed., Cambridge University Press (1976)
- O C. Meyer, C. Haeusler et P. Barchewitz : J. Physiq. 26, 305-316 (1965)
Intensités et largeurs des raies de vibration-rotation de molécules
diatomiques. [E, $h\nu$, HI, NO]
- E M. A. Morrison : in Advances in Atomic and Molecular Physics, Vol. 24,
V Academic Press 51-156 (1988)
Near-threshold electron-molecule scattering. [review]
- O R. S. Mulliken : Phys. Rev. 51, 310-332 (1937)
Low electronic states of simple heteropolar diatomic molecules : III,
Hydrogen and univalent metal halides. [T, HF - HI, AgI, NaI, etc.]
- O R. S. Mulliken : J. Chem. Phys. 8, 382-395 (1940)
Intensities in molecular electronic spectra. X. Calculations on mixed-
halogen, hydrogen halide, alkyl halide, and hydroxyl spectra.
[T, $h\nu$, HF - HI, F₂ - Br₂, OH, CH₃Cl - CH₃I, etc.]
- O S. M. Naude and H. Verleger : Proc. Phys. Soc. London A63, 470-477 (1950)
The vibration/rotation bands of the hydrogen halides HF, H³⁵Cl, H³⁷Cl,
H⁷⁹Br, H⁸¹Br and H¹²⁷I. [E, $h\nu$, HF - HI]
- O J. F. Ogilvie : Trans. Faraday Soc. 67, 2205-2215 (1971)
Semi-experimental determination of a repulsive potential curve for
hydrogen iodide. [E and T, $h\nu$, HI, DI; 32000 - 52000 cm⁻¹]
- O J. F. Ogilvie and D. Koo : J. Mol. Spectrosc. 61, 332-336 (1976)
Dunham potential energy coefficients of the hydrogen halides and carbon
monoxide. [T, HF - HI, CO]
- O J. F. Ogilvie, W. R. Rodwell and R. h. Tipping : J. Chem. Phys. 73, 5221-5229 (1980)
Dipole moment functions of the hydrogen halides. [T, HF - HI]
- O G. A. Oldershaw, D. A. Porter and A. Smith : J. Chem. Soc. Faraday Trans. I, 68,
2218-2223 (1972)
Energy partition in the photolysis of HI and of H₂S. [E, HI, H₂S]

- O L. Pauling : J. Am. Chem. Soc. 54, 988-1003 (1932)
The nature of the chemical bond. III. The transition from one extreme bond type to another. [T, HF - HI, etc.; potential energy curve]
- A S. A. Pozdnev : Sov. Phys. Tech. Phys. 27, 919-923 (1982) ·
Use of quantum three-body theory to calculate the cross sections for the dissociative attachment of electrons to hydrogen halide molecules. [T, HI, HCl, HBr]
- O S. T. Pratt : J. Chem. Phys. 101, 8302-8309 (1994)
Zero kinetic energy pulsed-field ionization spectroscopy of hydrogen iodide. [E, $h\nu$, HI]
- O W. C. Price : Proc. Roy. Soc. London A167, 216-227 (1938)
The absorption spectra of the halogen acids in the vacuum ultra-violet. [E, $h\nu$, HCl - HI]
- U A. A. Radzic and B. M. Smirnov : Reference Data on Atoms, Molecules and Ions, Springer-Verlag (1985)
- O G. Raseev, F. Keller and H. Lefebvre-Brion : Phys. Rev. A36, 4759-4774 (1987)
Theoretical spin-polarization parameters of molecular photoelectrons : Application to hydrogen halides. [T, $h\nu$, HI, HBr]
- O G. Raseev, N. A. Cherepkov : Phys. Rev. A42, 3948-3961 (1990)
Spin polarization of molecular photoelectrons in the case of rotationally resolved photoionization spectra. [T, $h\nu$, HI]
- E M. E. Riley, C. J. MacCallum and F. Biggs : Atomic Data Nucl. Data Tables 15, 443-475 (1975); Erratum 28, 379-379 (1983)
Theoretical electron-atom elastic scattering cross sections. Selected elements, 1 keV to 256 keV. [T, I, etc.]
- O G. K. Rollefson and J. E. Booherr : J. Am. Chem. Soc. 53, 1728-1732 (1931)
The absorption spectrum and photochemical decomposition of hydriodic acid. [E, $h\nu$, HI]
- O J. Romand : Ann. Physiq. 4, 527-529 (1949)
Absorption ultraviolette dans la region de Schumann etude de ClH, BrH, et IH gazeux. [, $h\nu$, HI, HCl, HBr]
- O R. Schmiedl, H. Dugan, W. Meier and K. Welge : Z. Phys. A304, 137-142 (1982)
Laser Doppler spectroscopy of atomic hydrogen in the photodissociation of HI. [E, $h\nu$, HI]
- O P. Schwerdtfeger, L. v. Szentpaly, H. Stoll and H. Preuss : J. Chem. Phys. 87, 510-513 (1987) ·
Relativistic pseudopotential calculations for HBr^+ , HBr, HBr^- , HI^+ , HI, and HI^- . [T, HI, HBr, etc.]

- A V. H. Shul, P. I. Singh, B. Kivel and E. R. Bressel : AIAA J. 17, 1178-1184 (1979) -
Electron attachment at high temperatures.
[E, HI, HCl, SF₆, CCl₄, etc.; 500 - 3500 K]
- A D. Smith and N. G. Adams : J. Phys. B20, 4903-4913 (1987)
Studies of the reactions HBr(HI) + e → Br⁻(I⁻) + H using the FALP and
SIFT techniques. [E, HI, HBr]
- A D. Smith and P. Spanel : in Advances in Atomic, Molecular and Optical Physics,
Vol. 32, Academic 307-343 (1994)
Studies of electron attachment at thermal
[review, HI, HBr, CCl₄, CCl₃, CCl₂F₂, SF₆, Cl₂, C₂F₆, C₆F₆, etc.]
- D. Spence and T. Noguchi : J. Chem. Phys. 63, 505-514 (1975)
Feshbach resonances associated with Rydberg states of hydrogen halides.
[E, HI, HBr, HF, HCl]
- A D. Spence, W. A. Chupka and C. M. Stevens : J. Chem. Phys. 76, 2759-2761 (1982)
Mass spectrometric observation of the stable negative molecular ions HI⁻
and H₂I⁻. [E, HI, H₂I]
- O D. T. Terwilliger and A. L. Smith : J. Chem. Phys. 63, 1008-1020 (1975)
Autoionization on diatomics : Measured line shape parameters and
predicted photoelectron spectra for some autoionizing states of the
hydrogen halides. [E, hν, HCl - HI, DBr, DCl]
- O S. G. Tilford, M. L. Ginter and A. M. Bass : J. Mol. Spectrosc. 34, 327-340 (1970)
Electronic spectra and structure of the hydrogen halides. The b³Π_i
and C¹Π states of HI and DI. [E, hν, HI, DI; below 1900 Å]
- O R. H. Tipping and A. Forbes : J. Mol. Spectrosc. 39, 65-72 (1971)
Dipole moment function of HI. [T, HI]
- O T. Tokuhiro : J. Chem. Phys. 47, 109-113 (1967)
Vibrational and rotational effects on the nuclear quadrupole coupling
constants in hydrogen deuterium, and tritium halides.
[T, HCl - HI, DCl - DI, etc.]
- O B. P. Tsai and T. Baer : J. Chem. Phys. 61, 2047-2049 (1974)
Analysis of autoionizing Rydberg states in HI and CH₃I. Comments on
Rydberg electron wavefunctions. [E, hν, HI, CH₃I; photoionization]
- O D. W. Turner, C. Baker, A. D. Baker and C. R. Brundle : Molecular Photoelectron
Spectroscopy, Wiley (1970)
- O F. A. van Dijk and A. Dymanus : Chem. Phys. Lett. 2, 235-236 (1968)
Hyperfine structure of the rotational spectrum of HI in the submilli-
meter region. [E, hν, HI]
- O F. A. van Dijk and A. Dymanus : Chem. Phys. Lett. 5, 387-389 (1970)
The electric dipole moment of HI and HBr. [E, HI, HBr]

- 0 G. N. A. van Veen, K. A. Mohamed, T. Baller and A. E. de Vries : Chem. Phys. 80, 113-120 (1983)
Photofragmentation of HI in the first continuum. [E, $h\nu$, HI]
- 0 W. von Niessen, L. S. Cederbaum, W. Domcke and G. H. F. Dierksen : Chem. Phys. 56, 43-52 (1981)
Green's function calculations on the complete valence ionization spectra of HF, HCl, HBr and HI. [T, HF - HI]
- 0 D. A. Vroom : Thesis, University of British Columbia 1-202 (1965)
Photoelectron spectroscopy of gases.
[E, $h\nu$, HF - HI, F₂ - I₂, N₂, O₂, NO, CO, etc.]
- 0 K. Watanabe, T. Nakayama and J. Mottl : J. Quant. Spectrosc. Radiat. Transf. 2, 369-382 (1962)
Ionization potentials of some molecules.
[compilation, E, $h\nu$, HF - HI, etc., about 300 molecules]
- 0 Z. Xu, B. Koplitz and C. Wittig : J. Phys. Chem. 92, 5518-5523 (1988)
Determining reactive pathways and spin-orbit populations in the photodissociation of HBr and HI using velocity-aligned Doppler spectroscopy.
[E, $h\nu$, HI, HBr]
- 0 Z. Xu, B. Koplitz and C. Wittig : J. Chem. Phys. 90, 2692-2702 (1989)
Velocity-aligned Doppler spectroscopy.
[E, $h\nu$, HI, H₂S, NH₃; photodissociation]
- 0 A. J. Yencha, D. K. Kela, A. Hopkirk, A. Kvaran and R. J. Donovan : 17th ICPEAC, Brisbane 62-62 (1991)
Photoionization of HCl, HBr, and HI and ion-pair formation in HCl.
[E, $h\nu$, HI, HCl, HBr]
- 0 A. J. Yencha, M. -W. Ruf and H. Hotop : Z. Phys. D29, 163-177 (1994)
Penning ionization electron spectrometry of hydrogen iodide. [E, HI]
- 0 M. A. Young : J. Phys. Chem. 97, 13508-13514 (1993)
1+1 resonant multiphoton ionization of HI through the first UV continuum.
[E, $h\nu$, HI]
- 0 M. A. Young : J. Phys. Chem. 98, 7790-7797 (1994)
Photochemistry in HI clusters via excitation of the first UV continuum.
[E, $h\nu$, (HI)₂]
- 0 M. A. Young : J. Chem. Phys. 102, 7925-7936 (1995)
Kinetic energy analysis of (HI)_n cluster photofragments.
[E, $h\nu$, (HI)_n; 240 nm]
- 0 C. J. Zietkiewicz, Y. -Y. Gu, A. M. Farkas and J. G. Eden : J. Chem. Phys. 101, 86-94 (1994)
Photoelectron spectroscopy of the multiphoton ionization and above threshold ionization of HI at 532 and 355 nm. [E, $h\nu$, HI]

Addenda of References for HI

(published in 2000, plus some old papers)

2000 (1 page)

- V J. Horacek : in AIP Conf. Proc., No. 500, 21th ICPEAC, Sendai 329-338 (2000)
- A Inelastic low-energy electron collisions with hydrogen halides.
[T, review, HI, HCl, HBr, DBr]
- A D. Klar, M. -W. Ruf, I. I. Fabrikant and H. Hotop : J. Phys. B34, 3855-3878 (2001)
Dissociative electron attachment to dipolar molecules at low energies
with meV resolution : CFC1₃, 1,1,1-C₂Cl₃F₃, and HI. [E, HI, etc.]
- O R. J. Le Roy, G. T. Kraemer and S. Manzhos : J. Chem. Phys. 117, 9353-93 (2002)
1 potential, 2 potentials, 3 potentials - 4 : Untangling the UV photo-
dissociation spectra of HI and DI. [T, h ν , HI, DI]
- O S. Manzhos, H. -P. Loock, B. L. G. Bakker and D. H. Parker : J. Chem. Phys. 117,
9347-9352 (2002)
Photodissociation of hydrogen iodide in the A-band region 273 - 288 nm.
[E, h ν , HI]
- V A. -C. Sergenton and M. Allan : Chem. Phys. Lett. 319, 179-183 (2000)
Excitation of vibrational levels of HI up to v = 8 by electron impact.
[E, HI; 0 - 2.8 eV]

Addenda (1901 - 1999)

- O D. R. J. Boyd and H. W. Thompson : Spectrochim. Acta 5, 308-312 (1952)
The fundamental vibration band of hydrogen iodide. [E, h ν , HI]
- O M. Cowan and W. Gordy : Phys. Rev. 104, 551-552 (1956)
Further extension of microwave spectroscopy in the submillimeter wave
region. [E, h ν , HI]
- O M. Czerny : Z. Phys. 44, 235-255 (1927)
Die Rotationsspektren der Halogenwasserstoffe. [E, h ν , HI, HBr, HF]
- O C. F. Goodeve and A. W. C. Taylor : Proc. Roy. Soc. London A154, 181-187 (1936)
The continuous absorption spectrum of hydrogen iodide. [E, h ν , HI]
- O P. Niay, P. Bernage, C. Coquant and H. Bocquet : J. Mol. Spectrosc. 68, 329-330
(1977)
High-resolution near-infrared absorption measurements on the 7-0
vibration-rotation band of hydrogen iodide. [E, h ν , HI]

- 0 P. Niay, P. Bernage, C. Coquant and R. Houdart : Can. J. Phys. 56, 727-736 (1978a)
Measurement of the line strengths for the $0 \rightarrow 4$ and $0 \rightarrow 5$ rovibrational
absorption bands of gaseous HI. [E, $h\nu$, HI; in French]
- 0 P. Niay, P. Bernage, C. Coquant and A. Fayt : J. Mol. Spectrosc. 72, 168-171
(1978b)
High-resolution measurements on the $1 \leftarrow 0$ infrared absorption band of
hydrogen iodide. [E, $h\nu$, HI]
- 0 E. D. Palik : J. Chem. Phys. 23, 217-218 (1955)
The pure rotational spectra of DBr, HI, and DI in the spectral region
between 45 and 170 microns. [E, $h\nu$, HI, DI, DBr]
- 0 S. D. Price and J. H. D. Eland : J. Elect. Spectrosc. Relat. Phenom. 52, 649-660
(1990)
Photoelectron-photoelectron coincidence spectroscopy.
[E, $h\nu$, HI, Ar, Xe, CH_3I , OCS]
- 0 W. C. Price : Proc. Roy. Soc. London A167, 216-227 (1938)
The absorption spectra of the halogen acids in the vacuum ultra-violet.
[E, $h\nu$, HI, HBr, HCl]
- 0 J. Romand and B. Vodar : Compt. Rend. Acad. Sci. 226, 890-892 (1948a)
Absorption spectra of HBr and HI in the Schumann region.
[E, $h\nu$, HI, HBr; in French]
- 0 J. Romand and B. Vodar : Compt. Rend. Acad. Sci. 227, 117-119 (1948b)
Determination of the potential energy curves for the excited states of
HBr and HI : comparison of calculated and experimental extinction
coefficients. [T, HI, HBr; in French]
- 0 J. Romand : Ann. Physiq. 4, 529-5 (1949b)
- 0 S. J. Singer, K. F. Freed and Y. B. Band : in Advances in Chemical Physics, Vol. 61,
John Wiley & Sons 1-113 (1985)
Photodissociation of diatomic molecules to open shell atoms.
[T, review, $h\nu$, general theory]
- 0 S. R. Ungemach, H. F. Schaefer III and B. Liu : J. Mol. Spectrosc. 66, 99-105 (1977)
Theoretical dipole moment function of the $X^1\Sigma^+$ state of HI.
[T, HI, DI]
- 0 R. N. Zare : Mol. Photochem. 4, 1-37 (1972)
Photoejection dynamics. [T, review, general theory]

Quick Addenda of References for HI

- O A. Goldman, M. T. Coffey, J. W. Hannigan, W. G. Mankin, K. V. Chance and C. P. Rinsland :
J. Quant. Spectrosc. Radiat. Transf. 82, 313-317 (2003) -
HBr and HI line parameters update for atmospheric spectroscopy
databases. [E, review, $h\nu$, HI, HBr]
- A K. Houfek, M. Cizek and J. Horacek : Phys. Rev. A66, 062702/1-9 (2002)
Calculation of rate constants for dissociative attachment of low-energy
electrons to hydrogen halides HCl, HBr, and HI and their deuterated
analogs. [T, HI, DI, HCl, DCl, HBr, DBr, etc.]

Author Index for HI References

Y. Achiba 7
M. Y. Adam 1
N. G. Adams 1, 10
S. H. Alajajian 1, 4
R. M. Alexander 6
M. Allan 12
G. Ameer 1
L. C. Anderson 1
M. N. R. Ashfold 7
R. Azria 1, 7

T. Baer 10
C. Baker 10
A. D. Baker 10
B. L. G. Bakker 12
K. Balasubramanian 3
T. Baller 11
P. Baltzer 1, 7
Y. B. Band 13
P. Barchewitz 6, 8
A. M. Bass 5, 10
J. R. Bates 1
E. C. Beaty 5
K. L. Bedford 2
W. Benesch 1, 2
J. Berkowitz 5
P. Bernage 2, 12, 13
R. Bersohn 2
M. H. F. Bettega 2
F. Biggs 9
D. M. Bishop 2
H. Bocquet 12
J. E. Booherr 9
N. Bowering 2, 8
D. R. J. Boyd 12
E. R. Bressel 10
P. Brewer 2
C. E. Brion 2
C. R. Brundle 10
P. R. Bunker 2
N. A. Burdett 3

P. Cadman 3
Z. Calahorra 3
T. A. Carlson 3

M. Carlsson-Gothe 7
H. S. Carman 3
L. S. Cederbaum 3, 11
J. E. Chamberlain 3
D. W. Chandler 6
D. A. Chapman 3
N. A. Cherepkov 9
J. M. Cherlow 3
L. G. Christophorou 3, 4
W. A. Chupka 10
A. Chutjian 1, 4
R. D. Clear 4
A. Coehn 1, 4
M. T. Coffey
L. E. Compton 4
R. N. Compton 3
C. Coquant 12, 13
A. J. Cormack 4
N. Correia 1, 7
J. A. Coxon 4
M. Cowan 12
O. H. Crawford 4
P. Crowley 2
C. Cuthbertson 4
M. Cuthbertson 4
M. Czerny 12

P. Das 2
A. N. de Brito 7
F. C. De Lucia 4
A. E. de Vries 11
H. W. Dickson 3
G. H. F. Diercksen 11
W. Domcke 3, 6, 11
R. J. Donovan 4, 11
M. Drescher 8
S. N. Dreska 6
H. Dugan 9
J. Dutton 5
A. Dymanus 10

J. G. Eden 11
J. H. D. Eland 5, 13

I. I. Fabrikant 12
A. M. Farkas 11

A. Fayt 13
L. G. Ferreira 2
J. A. Fiss 5
A. Forbes 10
K. F. Freed 13
D. C. Frost 5

J. W. Gallagher 5
A. Garscadden 4
H. A. Gebbie 3
D. J. Gendron 5
P. Gerard 3
F. A. Gianturco 5
D. S. Ginter 5, 6
M. L. Ginter 5, 6, 10
A. Giusti-Suzor 7
A. Goldman
C. F. Goodeve 6, 12
R. J. Gordon 5
W. Gordy 4, 7, 12
F. A. Grimm 3
Y. -Y. Gu 11

C. Haeusler 6, 8
P. G. Hajigeorgiou 4
J. O. Halford 1
J. W. Hannigan
D. J. Hart 6
A. N. Hayhurst 3
G. He 5, 6
A. J. R. Heck 6
R. F. Heidner III 7
U. Heinzmann 2, 8
P. Helminger 4
M. J. Henschman 1
J. W. Hepburn 5, 6
G. Herzberg 6
A. Hopkirk 4, 11
J. Horacek 6, 12
H. Hotop 7, 11, 12
R. Houdart 2, 13
K. P. Huber 6
B. J. Huebert 6
S. C. Hurlock 6
D. Husain 4
T. Huth-Fehre 8
H. A. Hyatt 3

M. Inokuti 6
Y. Itikawa 6

S. Iwata 7
N. Jacobi 7
G. Jones 7

C. Kalyanaraman 7
L. Karlsson 1, 7
S. Katsumata 7
M. P. Keane 1, 7
D. K. Kela 11
F. Keller 9
K. Kimura 7
G. C. King 4
B. Kivel 10
D. Klar 7, 12
H. -W. Klausning 2
C. E. Klots 3
B. J. D. Koch 4
J. B. Koffend 7
D. Koo 8
B. Kopplitz 11
H. J. Korsch 7
G. T. Kraemer 12
M. O. Krause 3
A. B. Kunz 2
A. Kvaran 11

S. R. Langford 7
K. P. Lawley 4
Y. Le Coat 7
H. Lefebvre-Brion 7, 8, 9
H. J. Lempka 7
R. J. Le Roy 12
I. Levy 7
M. A. P. Lima 2
S. H. Lin 3
B. Liu 13
H. -P. Loock 12

C. J. MacCallum 9
K. -F. Man 4
A. Mank 8
S. Manzhos 12
R. M. Martin 4, 6, 8
H. S. W. Massey 8
I. E. McCarthy 2
C. A. McDowell 5
W. Meier 9
C. Meyer 6, 8
E. Minami 3

B. Mirbach 7
K. A. Mohamed 11
M. A. Morrison 8
J. Mottl 11
M. Muller 2
R. S. Muller 3
R. S. Mulliken 8

H. Nakamura 6
T. Nakayama 11
K. Narahari Rao 6
S. M. Naude 8
A. Naves de Brito 1
P. Niay 2, 12, 13
T. Noguchi 10

J. F. Ogilvie 8
G. A. Oldershaw 8
G. Ondrey 2
A. J. Orr-Ewing 7

E. D. Palik 13
D. H. Parker 12
T. R. Passmore 7
L. Pauling 9
J. F. Paulson 1
L. C. Pitchford 5
J. C. Polanyi 3
D. A. Porter 8
S. P. S. Porto 3
S. A. Pozdneev 9
S. T. Pratt 9
H. Preuss 9
S. D. Price 13
W. C. Price 7, 9, 13

A. A. Radzic 9
N. K. Rahman 5
G. Raseev 7, 9
P. M. Regan 7
M. E. Riley 9
S. J. Riley 4
W. R. Rodwell 8
G. K. Rollefson 9
J. Romand 9, 13
M. -W. Ruf 7, 11, 12

M. Saltzmann 2
N. Sathyamurthy 7
H. F. Schaefer 13

R. Schmiedl 9
G. Schonhense 8
P. Schwerdtfeger 9
A. -C. Sergenton 12
M. Shapiro 7
V. H. Shul 10
S. J. Singer 13
P. I. Singh 10
B. M. Smirnov 9
A. Smith 8
A. L. Smith 10
D. Smith 1, 10
P. Spanel 10
D. Spence 10
C. M. Stevens 10
J. A. D. Stockdale 4
H. Stoll 9
K. Stuckardt 4
K. Suto 5
I. H. Suzuki 2
S. Svensson 1, 7
L. v. Szentpaly 9

A. W. C. Taylor 6, 12
J. W. Taylor 3
D. T. Terwilliger 10
H. W. Thompson 12
S. G. Tilford 5, 6, 10
R. H. Tipping 10
T. Tokuhira 10
M. Tronc 7
B. P. Tsai 10
D. W. Turner 10
J. E. Turner 6

S. R. Ungemach 13

F. A. van Dijk 10
G. N. A. van Veen 11
H. Verleger 8
L. M. Vheung 2
A. A. Viggiano 1
B. Vodar 13
W. von Niessen 11
G. Von Wald 3
D. A. Vroom 5, 11

J. M. Wadehra 4
B. Wannberg 1, 7
K. Watanabe 11

R. Weidman 2
E. Weigold 2
B. H. Weiller 7
K. Welge 9
R. M. White 3
J. E. Willard 8
G. R. J. Williams 2
K. R. Wilson 4
C. Wittig 11

Z. Xu 11

T. Yamayaki 7
A. J. Yencha 4, 11
M. A. Young 11

R. N. Zare 13
L. Zhu 5
C. J. Zietkiewicz 11

Some Comments on Electron Collision Cross Sections for HBr

We have determined the electron collision cross section set for HCl (Hayashi (1987)), assuming that all HCl molecules are in the ground state. This assumption is not true, so we do not like our cross section set of HCl.

As an example, we discuss the electron cross sections for HBr here. Experimental and theoretical studies on electron collision cross sections of HBr are summarized as follows :

On the study of electron scattering cross sections for HBr

grand total cross section Q_T

no work

elastic experiment

no data

(F. Linder 1977)

elastic theory

M. E. Riley 1975

Y. Itikawa 1978

E. Estrada 1984

S. Pozdneev 1988

L. Malegat B 1990

R. Fandreyer B 1993

T. N. Rescigno C 1996

I. M. Smith B 1998

< 1 eV

general theory

0.1 - 11 eV

0 - 10 eV, DCS

rotational excitation experiment and theory

no work

vibrational excitation experiment

J. P. Ziesel	C 1975	○	
K. Rohr	B 1977a		DCS at 0.41 eV
K. Rohr	B 1978	○	th. - 7 eV for $v = 0 \rightarrow 1$
R. Azria	B 1980		
S. Cvejanovic	1993		
A. -C. Sergenton	1999		0.3 - 2.7 eV
M. Cizek	P 2001	○	0 - 4 eV
G. P. Karwasz	2001		compilation
M. Cizek	2002		

vibrational excitation theory

F. A. Gianturco	1977		
H. Estrada	1984		
S. Pozdneev	1988		
F. Fandreyer	B 1993		th. - 4.5 eV
J. Horacek	P 1996		
J. Horacek	2000		
S. A. Pozdneev	2000		
M. Cizek	P 2001	○	0 - 4 eV

electronic excitation experiment

G. R. Mohlmann	1979		
P. A. Shaw	B 1984		1500 eV
S. Cvejanovic	B 1987		
K. England	1987		0.5 - 50 eV
K. England	B 1990	○	0.5 - 50 eV
K. H. Becker	1994		
D. Cubric	B 1994		

electronic excitation theory

T. N. Rescigno (V. McKoy)	C 1996		th. - 25 eV
------------------------------	--------	--	-------------

ionization experiment

K. H. Becker	1994		
--------------	------	--	--

ionization theory

H. Deutsch	1997		
------------	------	--	--

attachment experiment

H. Gutbier	1954		
D. C. Frost	C 1958		
I. S. Buchelnikova	1959		
L. G. Christophorou	C 1968a		
L. G. Christophorou	C 1968b		
K. G. Mothes	1972		
A. A. Christodoulides	1974	≤ 0.4 eV	
O. H. Crawford	C 1974		
S. S. Nagra	1975		
J. P. Ziesel	C 1975	○	Br ⁻ formation, 0 - 1.9 eV
R. Abouaf	1977		
N. A. Burdett	1977		
D. W. Trainor	1978		
R. Abouaf	1980		0.05 - 2 eV
R. Azria	1982		
Y. Le Coat	B 1982	○	H ⁻ formation, 5 - 10 eV
N. G. Adams	C 1986		
D. Smith	B 1987		
W. C. Wang	1988a		
M. Cizek	P 2001	○	
G. P. Karwasz	2001		compilation
J. B. A. Mitchell	2001		
T. Speck	2001		

attachment theory

S. A. Pozdneev	1982
A. U. Hazi	B 1983
S. A. Pozdneev	1988
J. Horacek	P 1996
S. A. Pozdneev	2000
K. Houfek	2001
K. Houfek	P 2002

We need more experimental studies of cross sections and other processes, especially grand total cross section, elastic scattering cross section, ionization cross section and electron swarm parameters, for the determination of tentative and approximate cross section set for HBr.

We cannot determine the exact value of cross section set for molecules. The HBr molecules are always mixture of HBr(r) and HBr(v) at given experimental conditions. And cross section sets for HBr(r) and HBr(v) are different.

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 :

$$M = M(g) + M(r_j) + M(v_i) + M_N$$

where $M(g)$, $M(r_j)$, $M(v_i)$ 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 ($N \geq 2$), 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 $M(v_i)$, and the concentration of $M(r_j)$ and $M(v_i)$ 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 $M(v_i)$. 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 $M(v_i)$ 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 increases, 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. Unfortunately, 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 $\text{N}_2\text{O}(\text{v})$ and also $\text{N}_2\text{O}(\text{r})$ 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_{ms} , Q_{mr} , Q_{mv} , Q_{rs} , Q_{rr} , Q_{rv} , Q_{vs} , Q_{vr} , and Q_{vv} for $\text{H}_2(\text{g})$, $\text{H}_2(\text{r}_1)$ and $\text{H}_2(\text{v}_1)$, 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_{ms} , Q_{mr} , Q_{rs} , Q_{rr} for $\text{H}_2(\text{g})$ and $\text{H}_2(\text{r}_1)$ at the same time. It is clear that the threshold energies of Q_{r} and Q_{v} for $\text{H}_2(\text{g})$ and $\text{H}_2(\text{r}_1)$ 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 $\text{H}_2(\text{g})$ and $\text{H}_2(\text{r}_1)$. We want the elastic DCS values for $\text{H}_2(\text{g})$ and $\text{H}_2(\text{r}_1)$ at low electron energies lower than 10 eV. Swarm experiments also carried out in the mixtures of $\text{H}_2(\text{g})$ and $\text{H}_2(\text{r}_1)$, except for para- $\text{H}_2(\text{g})$ at 78 K (concentration of $\text{H}_2(\text{g})$ is 99.3 %). We compare the experimental and calculated swarm parameters at given conditions.

Usually, theoreticians calculate the DCS for $\text{M}(\text{g})$, not for $\text{M}(\text{r}_1)$ and $\text{M}(\text{v}_1)$, 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 $\text{M}(\text{r})$ and $\text{M}(\text{v})$, and $\text{M}(\text{r})$ and $\text{M}(\text{v})$ 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 $\text{M}(\text{r})$ and $\text{M}(\text{v})$ 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

Numbers of References
on Electron and Photon Collisions
with Atoms and Molecules
published in the 20th Century

Atoms (17)			Molecules (51)			
A + e, A + hν			M + e, M + hν,			
He 2	2170 *		2 H ₂ , D ₂	2200 ○	5 CH ₄	800
Ne 10	1140 *		N ₂	2240 ○		
Ar 18	1960 ○		O ₂	1700	CF ₄	390
Kr 36	1000		CO	1190	CCl ₄	210
Xe 54	1180 ○		NO	880	CCl ₂ F ₂	250
					CH ₃ Cl	90
Li 3	450		F ₂	190 ○		
Na 11	800		Cl ₂	360 ○	SiH ₄	230
			Br ₂	140 ○	SiF ₄	140
K 19	370		I ₂	240 ○	GeH ₄	50
Rb 37	220					
Cs 55	370		HF	330 ○	6 C ₂ H ₄	370
			HCl	420 ○	CH ₃ OH	350
O 8	390		HBr	220 ○		
			HI	150 ○	7 SF ₆	920 ○
F 9	90					
Cl 17	130		3 CO ₂	1240 ○	8 C ₂ H ₆	260
			H ₂ O	1200 ○	C ₂ F ₆	150
Cu 29	180				Si ₂ H ₆	70
Cd 48	210		O ₃	480		
Ba 56	340		N ₂ O	450	9 C ₃ H ₆	120
			NO ₂	350	C ₂ H ₅ OH	60
Hg 80	600		H ₂ S	270		
			SO ₂	290		
			CS ₂	260		
			OCS	280	11 C ₃ H ₈	190
not final, but finished mostly			4 C ₂ H ₂	390	C ₃ F ₈	100
					12 C ₄ F ₈	100
include electron swarm papers			NH ₃	700	C ₆ H ₆	240
			NF ₃	110	C ₆ F ₆	100
			BF ₃	110		
include review papers			BCl ₃	90	60 C ₆ O	300
			PH ₃	120		
			H ₂ CO	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-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 (1): 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^{9+} 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
- NIFS-DATA-83 Bibliography of Electron and Photon Cross Sections with Atoms and Molecules Published in the 20th Century – Hydrogen Halide Molecules –; Mar. 2004