
The 15th Annual
Symposium
on
Chemical Physics
at the
University of Waterloo
November 5-7, 1999

Symposium on Chemical Physics

at the University of Waterloo

November 5-7, 1999

REGISTRATION begins at 7:00 p.m.

Davis Centre Room 1301

SESSION I: Friday, November 5, 1999 - P.M.

Davis Centre Room 1302

Chair: **Bob Le Roy**

7:45 - 8:30 Jonathan Tennyson (University College, London)

Assigning the Spectrum of Water on the Sun and Elsewhere

8:30 - 8:45 S.M. Cybulski and R.R. Toczyłowski (Miami University)

Ground State Potential Energy Curves For He₂, Ne₂, Ar₂, He-Ne, He-Ar and Ne-Ar: A Coupled-Cluster Study

8:45 - 9:00 Gary W. Leach, Tanya Kekteva and Dmitry Star (Simon Fraser University)

Nonlinear Optical Studies of Coherent Motion on Surfaces

9:15 Informal Discussion - Grad House

SESSION II: Saturday, November 6, 1999 - A.M.

Davis Centre 1351

Chair: **Jim Sloan**

9:00 - 9:45 James Farrar (University of Rochester)

Electronic Spectroscopy of Mass-Selected Clusters: Probes of Ion Solvation

9:45 - 10:00 Alexandre A. Shvartsburg and Martin F. Jarrold (Northwestern University)

Solid Clusters Above the Bulk Melting Point

10:00 - 10:15 Pierre-Nicholas Roy (University of Alberta)

Quantum Statistics in Quantum Molecular Dynamics Simulations Using Feynman Path Integral Methods

10:15 - 10:45 **Coffee Break**

Invited talks are 45 min. including 5 min. for discussion

Contributed talks are 15 min. including 3 min. for discussion

SESSION III: Saturday, November 6, 1999 - A.M.

Davis Centre 1351

Chair: **Terry McMahon**

- 10:45 - 11:45 Paul Corkum (NRC, Steacie Institute for Molecular Science, Ottawa)
Strong Fields Molecular Optics
- 11:45 - 12:00 Jeff Paci and David Wardlaw (Queen's University)
The Strong Field Dissociation of HCl⁺
- 12:00 - 12:15 J.J. Larsen, S. Lochbrunner, M. Schmitt, J.P. Shaffer and A. Stolow (NRC, Ottawa)
Non-Adiabatic Dynamics in Polyatomic Molecules Studied by Time-Resolved Photoelectron Spectroscopy
- 12:15 - 1:30 **Lunch** - Davis Centre 1301

SESSION IV: Saturday, November 6, 1999 - P.M.

Davis Centre 1351

Chair: **John Hepburn**

- 1:30 - 2:15 Wolfgang Jaeger (University of Alberta)
Spectra of Van der Waals Complexes: Fingerprints of Intermolecular Interactions
- 2:15 - 2:30 K. Kobayashi, Leah D. Pride and Trevor J. Sears (Brookhaven National Laboratory)
Spectrum of Singlet CH₂ near 9500 cm⁻¹
- 2:30 - 2:45 Carlo Callegari, Andre Conjusteau, Irene Reinhard, Kevin K. Lehmann, Giacinto Scoles (Princeton University) and Franco Dalfov (Universita di Trento, Italy)
A Model for the Enhanced Moment of Inertia of Molecules in Superfluid Helium
- 2:45 - 3:00 Julie M. McCormack, Richard Ochran and Paul M. Mayer (University of Ottawa)
Dissociation and Isomerization in Proton-Bound Cluster Ions
- 3:00 - 3:15 Ronald M. Lees and Li-Hong Xu (University of New Brunswick)
The Dark Side of Methanol: Observation of Inverted Torsional Structure in the n₁₁ Out-of-Plane CH₃-Rocking Band

Invited talks are 45 min. including 5 min. for discussion

Contributed talks are 15 min. including 3 min. for discussion

SESSION V: Saturday, November 6, 1999 - from 3:30 P.M.

Davis Centre Lobby

POSTER SESSION AND SPONSOR'S DISPLAY

6:00 P.M. Poster session ends.
Depart for St. Jerome's University

6:30 P.M. Cash Bar

St. Jerome's University

7:00 P.M. DINNER

St. Jerome's University

SESSION VI: Sunday, November 7, 1999 - A.M.

Davis Centre 1302

Chair: **Peter Bernath**

9:15 - 10:00 David Pratt (University of Pittsburgh)

Static and Dynamic Properties of Molecular Assemblies in the Gas Phase

10:00 - 10:15 Javier B. Giorgi, Fedor Y. Naumkin, John C. Polanyi, Sergei A. Raspopov and Newman S.-K. Sze (University of Toronto)

Surface Aligned Photochemistry: Photodissociation of Cl₂ and Cl₂ ... Cl Absorbed on LiF(001)

10:15 - 10:30 K. Thomas Lorenz, David W. Chandler and George C. McBane (Ohio State University)

State-To-State Differential Cross Sections for Ne-CO Rotationally Inelastic Scattering by Velocity Mapping

10:30 - 11:00 **Coffee Break**

SESSION VII: Sunday, November 7, 1999 - A.M.

Davis Centre 1302

Chair: **Fred McCourt**

11:00 - 11:45 Kelly Chance (Harvard-Smithsonian Astrophysical Observatory)

Fitting Atmospheric Spectra in the Infrared Through Ultraviolet: Exercises in Spectroscopy and Radiative Transfer

11:45 - 12:00 Nicholas Lakin, Otto Dopfer and John P. Maier (Universitaet Basel, Switzerland)

The Intermolecular Potential of NH₄⁺ - Ar: Calculations for the Rotational Structure of the n₃ Band

12:00 - 12:15 P.R. Bunker (NRC, Ottawa) and R.E. Moss (University of Southampton, UK)

Forbidden Electric Dipole Rotation and Rotation-vibration Transitions in H₂⁺

Invited talks are 45 min. including 5 min. for discussion

Contributed talks are 15 min. including 3 min. for discussion

POSTER SESSION

Chair: **John Hepburn**

To give people presenting papers in this session an opportunity to both present their work and visit other posters, this session is divided into two time slots:

3:30 - 4:45 Those whose papers were given (a) labels (1a, 2a, 3a, etc.) should attend their posters.

4:45 - 6:00 Those whose papers were given (b) labels (1b, 2b, 3b, etc.) should attend their posters.

- 1a) Marian Kowalski (York University)
Classical Description of Photon Emission from Atomic Hydrogen
- 1b) H.-P. Loock, B. Bakker and D. Parker (Queen's University)
Photodissociation of HI above the First Ionization Potential
- 2a) Tanya N. Gamble and Terry B. McMahon (University of Waterloo)
An ab initio Study of the Deuterium Isotope Effects on the Energetics of Clustering Reactions of Small Organic Molecules
- 2b) Bogdan Bogdanov and Terry B. McMahon (University of Waterloo)
An ab initio Investigation of the Structures and Energetics of Halide Alcohol Complexes in the Gas Phase
- 3a) Allan G. Adam and Wei Sha (University of New Brunswick)
Recent Spectroscopic Results for Cobalt Monofluoride
- 3b) Todd C. Melville, John A. Coxon (Dalhousie University), Colin Linton, Cicely A. Brodie and Allan G. Adam (University of New Brunswick)
High Resolution Laser Spectroscopy of YbCl
- 4a) Chris Boone, F.W. Dalby and I. Ozier (University of British Columbia)
Doppler-free Magnetic Rotation Spectroscopy in I₂
- 4b) R.H. Tipping and Q. Ma (University of Alabama) and (Inst. for Space Studies, Goddard Space Flight Center)
A Monte Carlo Calculation of the Far-Wing Line Shape of H₂O-N₂

- 5a) Bor-Chen Chang, Matt Costen, Greg Hall, Grant Ritchie and Trevor Sears (Brookhaven National Laboratory)
The near-IR Spectrum of HCB_r
- 5b) A. Alavi, R.M. Lynden-Bell and R.J.C. Brown (Queen's University)
Ammonium Fluoride: An ab initio Vibrational Analysis
- 6a) Zhuhong Zhang and Donna Strickland (University of Waterloo)
Dual Wavelength Chirped Pulse Amplification System
- 6b) Jennifer van Wijngaarden and Wolfgang Jaeger (University of Alberta)
Rotational Spectra and ab initio Calculations of the Ne-NH₃ and Kr-NH₃ Van der Waals Complexes
- 7a) A. Czajkowski, J.B. Atkinson and L. Krause
Laser Spectroscopy of the HgZn(B 0⁺) Exciplex
- 7b) G.E. Hall, M.L. Costen, T.J. Sears (Brookhaven National Laboratory) and T. Steimle (Arizona State University)
Transient FM Spectroscopy in a Free Jet of Metal Radicals
- 8a) James H. Reho, Udo Merker, Mathew R. Radcliff, Kevin K. Lehmann and Giacinto Scoles (Princeton University)
Studies of Mg and Al Atoms Solvated in Helium Nanodroplets
- 8b) Thomas Schultz, (NRC, Ottawa) and Ingo Fischer (ETH Zurich, Switzerland)
Dynamics of the Allyl Radical Excited States
- 9a) Qing Xu, Mike DeWitte and J.J. Sloan (University of Waterloo)
The Effect of Formic Acid on Deliquescence of Model Sea Salt Aerosol
- 9b) J. Guo and C.M. Sadowski (York University)
Total and State-To-State Rotational Energy Transfer Rate Constants for CN(B ²Σ⁺, v=0, N) + H₂
- 10a) N. Hansen, H. Maeder and F. Temps (Brookhaven National Laboratory) and (Christian-Albrechts-Universitaet Kiel, Germany)
Fourier Transform Microwave Detection of Free Radicals Relevant to Combustion and Atmospheric Chemistry
- 10b) George McBane, Paresh C. Ray, Ao Lin, Tai Ahn and Antonis Tsakotellis (Ohio State University)
Progress in the Inelastic Scattering of Acetylene

- Ram S. Ram (University of Arizona), Lloyd Wallace and Kenneth Hinkle (Kitt Peak National Observatory, Tucson, Arizona)
The $B' \ ^2\Sigma^+ - X \ ^2\Sigma^+$ Transition of MgH
- 11b) Jenning Y. Seto and Robert J. Le Roy (University of Waterloo), Jean Vergès and Claude Amiot (Laboratoire Aimé Cotton, Campus d'Orsay)
Direct Potential Fit Analysis of the $X' \ \Sigma_g^+$ State of Rb_2 : Nothing else will do!
- 12a) Ruth Tanner, Scott Harris and N.P.C. Westwood (University of Guelph)
 H_3BNH_3 , H_2BNH_2 and HBNH: Infrared Spectroscopy and ab initio Calculations
- 12b) Treana Parekunnel, Tsuyoshi Hirao, Mohammed Elhanine and Peter Bernath (University of Waterloo)
The Electronic Emission Spectrum of CuCl
- 13a) K. Tereszchuk, V. Grichko, W.W. Duley and P.F. Bernath (University of Waterloo)
Identification of the 21-Micron Feature in Post-AGB Stars
- 13b) Xiaowei Fan and K.T. Leung (University of Waterloo)
Electron-impact Doubly Excited Autoionizing Resonances of He: Bethe Surfaces and Absolute Generalized Oscillator Strengths
- 14a) Hongzhi Li and Peter F. Bernath (University of Waterloo)
Chemiluminescence Spectrum of BaO
- 14b) Wai-To Chan and Rene Fournier (York University)
Binding of Ammonia to Small Copper and Silver Clusters
- 15a) N.S.-K. Sze, N. Siddique and J.J. Sloan (University of Waterloo)
Chemical Speciation of Urban Particulate Matter by Raman Spectroscopy
- 15b) Beiyang Jin, Hartmut Schmider and David Wardlaw (Queen's University)
Potential Energy Surfaces for the Collinear H_3^+ System
- 16a) Nicholas Lakin, John P. Maier, Majdi Hochlaf and Pavel Rosmus (Universitaet Basel, Switzerland)
The Potential Energy Surface of the CH_3H^- : Calculations for the Rovibrational Structure in the Ground State
- 16b) Nicholas Lakin, Otto Dopfer and John P. Maier (Universitaet Basel, Switzerland)
The Intermolecular Potential of $NH_4^+ - Ar$: Calculations for the Rotational Structure of the ν_3 Band

- 17a) Randall Skelton and Peter Bernath (University of Waterloo)
Applications of the Atmospheric Chemistry Experiment
- 17b) A.K. Bertram, D. Dickens and J.J. Sloan (University of Waterloo)
Freezing of Nitric Acid Aerosols Under Polar Stratospheric Conditions
- 18a) Nam-Huan Khieu and Gilles H. Peslherbe (Concordia University)
Theoretical Studies of Glyoxal Unimolecular Dissociation
- 18b) Denise Koch and Gilles H. Peslherbe (Concordia University)
Product Energy Distributions of Nitrogen Clusters Scattered on a Surface
- 19a) H. Srivastava, A. Conjusteau, A. Callegari, K. Lehmann and G. Scoles (Princeton University)
Eigenstate Resolved Unimolecular Reactions: Two-cavity IR Spectroscopy Above 2 eV with 10 MHz Resolution
- 19b) Rafael Escribano and Alain Camparque (Inst. Estructura de la Materia, CSIC, Madrid, Spain)
Room Temperature Absorption Spectroscopy of GeH₂ Near 585 nm
- 20a) Geoffrey Hunter and Winnie Yin Man Poon (York University)
*Q. How Long Does it Take for an Atom to Absorb or Emit a Photon?
A. One Period of the Photon's Oscillating Electromagnetic Field*
- 20b) F.P. Temme (Queen's University)
Scalar Invariants of Uniform (2n)-fold Spin Ensemble Via Bipart- $\chi^{[n-i, i]_1^n} S_n$ Characters and Combinatorics: Representational Views of Superboson Dual-group Mappings Revisited.
- 21a) T. Hirao and P.F. Bernath (University of Waterloo)
Rotational Analysis of A-X Band of MgBr
- 21b) Richard Dawes, Kathleen M. Gough (University of Manitoba) and Jason R. Dwyer (University of Toronto)
Influence of Ring Conformation and Strain on Raman Trace Scattering Intensities in Hydrocarbons
- 22a) T.D. Fridgen (University of Waterloo) and J.M. Parnis (Trent University)
Density Functional Theory Studies of the Neutral-Base Catalyzed 1,3-Hydrogen-Shift Isomerization Reaction: Comparison of Acetone, Acetaldehyde, Ethanol and Formamide Radical Cation Isomerization Reactions

- 22b) David B. Pedersen, J. Mark Parnis and David M. Rayner (Trent University), (Queen's University) and (NRC, Ottawa)
Toward a Comprehensive Potential Energy Surface Model for Metal Cluster Reactions with Hydrocarbons
- 23a) Kelly J. Higgins and William Klemperer (Harvard University)
He-CH₃F: ab initio Prediction and Experimental Observation of Two Isomeric Forms
- 23b) Gerald Osmani, P.R. Bunker, W.P. Kraemer and Per Jensen (NRC, Ottawa)
Coulomb Explosion Imaging and CH₂⁺

Invited Speakers for Past Waterloo Symposia on Chemical Physics

<i>Name</i>	<i>Affiliation</i>	<i>Title of Presentation</i>
<i>1998</i>		
J. Jortner	<i>U. Tev Aviv</i>	On Dynamics. From Isolated Molecules to Biomolecules
A. Adam	<i>U. New Brunswick</i>	High Resolution Laser Spectroscopy of Diatomic Molecules Containing Cobalt
F. Davis	<i>Cornell U.</i>	Transition Metal Chemistry in a Crossed Molecular Beam
M. Johnson	<i>Yale U.</i>	Making and breaking Water Networks Around Halide Ions: Ions vs. Interwater Hydrogen Bonding
R.J.D. Miller	<i>U. Toronto</i>	Femtosecond Surface reaction Dynamics: Mapping the "Electron Trajectory"
N. Westwood	<i>U. Guelph</i>	Ground, Excited and Ionic States of Unstable Molecules: Experiment and Theory
<i>1997</i>		
T. Oka	<i>U. Chicago</i>	Detection of Interstellar H ₃ ⁺ : Molecules in Astronomy
Y. Endo	<i>U. Tokyo</i>	Laser-Induced Fluorescence Spectroscopy of Carbon Chain Free Radicals
M. Okumura	<i>Cal. Tech.</i>	Solvation and State-Mixing in Clusters
R. Saykally	<i>U.C. Berkeley</i>	Infrared Cavity Ring Down Laser Absorption Spectroscopy
T. Sears	<i>Brookhaven</i>	Transient Frequency Modulation Spectroscopy of Simple Carbenes
J.K.G. Watson	<i>S.I.M.S., NRC</i>	The Diffuse Interstellar Band Problem
<i>1996</i>		
A.D. Buckingham	<i>Cambridge U.</i>	Molecules in Optical, Electric and Magnetic Fields
M. Alexander	<i>U. Maryland</i>	Weakly Bound Complexes of Atomic Boron with Argon and Hydrogen
R. Curl	<i>Rice U.</i>	Infrared Laser Spectroscopy, and Comments on the Discovery of C ₆₀
M.A. Duncan	<i>U. Georgia</i>	Electrostatic Bonding in Gas Phase Metal Atom Complexes
A. Stolow	<i>S.I.M.S., NRC</i>	Time Resolved Photoelectron/Photoion Spectroscopy: Towards Wavepacket Technology
D. Wardlaw	<i>Queen's U.</i>	Molecular Surface Hopping in Intense Laser Fields
<i>1995</i>		
W. Klemperer	<i>Harvard U.</i>	Spectroscopy, Structure and Dynamics of Molecular Complexes
T. Carrington	<i>U. Montréal</i>	A Time Dependent Multi-Surface Calculation of the Orientation of Photofragments: The Photodissociation of ICN
T.A. Miller	<i>Ohio State U.</i>	Laser Spectroscopy of Cold Methoxy Radicals and Its Derivatives: Molecules that Sometimes Fluoresce and Sometimes Don't
M. Moskovits	<i>U. Toronto</i>	Thinking Small - Megascience with Nanostructures
B. Simard	<i>S.I.M.S., NRC</i>	Experimental and Theoretical Studies of Cu-group 13 and Al-group 14 Diatomics
W. Weisshaar	<i>U. Wisconsin</i>	Understanding Methyl Rotor Barriers
<i>1994</i>		
G. Scoles	<i>Princeton U.</i>	Clusters Within Clusters: Matrix Isolation Spectroscopy in Condensed Helium Beams
M.S. Child	<i>Oxford U.</i>	Inversion of Spectroscopic Data
T.E. Gough	<i>U. Victoria</i>	Infrared Spectroscopy of Molecular Microcrystallites
J.M. Hutson	<i>U. Durham</i>	Additive and Non-Additive Intermolecular Forces from the Spectroscopy of Van der Waals Complexes
A.R.W. McKellar	<i>H.I.A., NRC</i>	Long-Path Infrared Spectra of Weakly-Bound Complexes
R.E. Miller	<i>U. North Carolina</i>	Photofragmentation of Oriented Molecules: New Insights into Photodissociation Dynamics from Pendular States

<i>Name</i>	<i>Affiliation</i>	<i>Title of Presentation</i>
<i>1993</i>		
A. Zewail	<i>Cal. Tech.</i>	Recent Advances in Femtochemistry
P. Hackett	<i>NRC</i>	Studies of the Structure and Reactivity of Small Clusters
R. Kapral	<i>U. Toronto</i>	The Structure and Dynamics of Binary Clusters
E.C. Lim	<i>U. Akron</i>	Excited-State Dynamics and Photochemistry of Van der Waals Dimers and Clusters of Aromatic Molecules
A. Myers	<i>U. Rochester</i>	Dissecting the Ensemble Average: Spectroscopy and Dynamics of Individual Molecules
P. Schultz	<i>U. Western Ontario</i>	Probing Defects in Semiconductors with Slow Positrons
<i>1992</i>		
W.C. Lineberger	<i>U. Colorado</i>	Time-Resolved Cage Recombination Dynamics in Large Molecular Cluster Ions
P.R. Bunker	<i>H.I.A., NRC</i>	The Infrared Spectrum, Torsional Barrier and Vibrational Motions in Dimethylacetylene
J.B. McConkey	<i>U. Windsor</i>	Use of Laser-Induced Fluorescence Techniques to Probe the Breakup of Simple Molecules Under Electron Impact
D. Perry	<i>U. Akron</i>	Infrared Molecular Eigenstate Spectroscopy: A Probe for the Rate and Mechanism of Intramolecular Relaxation
L. Sanche	<i>U. de Sherbrooke</i>	Surface Reactions and Desorption Induced by Electron Attachment
A.J. Thakkar	<i>U. New Brunswick</i>	Van der Waals Coefficients, Polarizabilities and Hyperpolarizabilities: Current Computational Possibilities
<i>1991</i>		
R.Z. Zare	<i>Stanford U.</i>	State-Selected and State-Detected Reaction Dynamics
T. Amano	<i>H.I.A., NRC</i>	The Dissociative Recombination Rate of H_3^+
P. Houston	<i>Cornell U.</i>	The HCO Potential Energy Surface: Probes Using Molecular Scattering and Photodissociation
W.J. Meath	<i>U. Western Ontario</i>	Effects of Permanent Dipoles on the Resonance Profiles and Dynamics Associated with Single- and Multi-Photon Laser-Molecule Interactions
T. Rizzo	<i>U. Rochester</i>	Multiple Laser Probes of Intramolecular Dynamics
D. Roy	<i>Université Laval</i>	The Surface Chemistry of Silicon Investigated by Electron Spectroscopy: Some New Results
<i>1990</i>		
D.G. Truhlar	<i>U. Minnesota</i>	Calculation of Quantum Effects in Chemical Reaction Dynamics
D.J. Donaldson	<i>U. Toronto</i>	Predissociation Dynamics of CS_2
K.C. Janda	<i>U. Pittsburgh</i>	Pump-Probe Studies of the Structure and Dynamics of Van der Waals Molecules
J. Barker	<i>U. Michigan</i>	Collisional Deactivation of Highly Excited Polyatomic Molecules
B. Henry	<i>U. Guelph</i>	Sources of Intensity for Local Mode Overtones
D. Salahub	<i>U. Montréal</i>	Density Functional Theory and the Quantum Chemistry of Transition Metal Systems
<i>1989</i>		
J.P. Toennies	<i>MPI, Göttingen</i>	Hot Molecules and Cold Clusters
P. Corkum	<i>NRC</i>	Femtosecond Lasers for Chemical Physics
A.P. Hitchcock	<i>McMaster U.</i>	Inner-Shell Excitation Spectroscopy of Molecules
S. Mukamel	<i>U. Rochester</i>	Solvation Dynamics in Electron Transfer & Non-Linear Optical Susceptibilities: A Unified Description
R. Lipson	<i>U. Western Ontario</i>	VUV Laser Spectroscopy of Reactive States: Valence to Ion-Pair Transitions of Halogens
V.H. Smith	<i>Queen's U.</i>	Adventures in the 3-Body Problem: Exotic Molecules

<i>Name</i>	<i>Affiliation</i>	<i>Title of Presentation</i>
<u>1988</u>		
R.S. Berry	<i>U. Chicago</i>	How Good is Neil Bohr's Model of the Atom?
D. Rosner	<i>U. Western Ontario</i>	Testing Quantum Electrodynamics with Lasers & Simple Atoms
R.F.W. Bader	<i>McMaster U.</i>	A Quantum Theory of Molecular Structure
M.J. Dignam	<i>U. Toronto</i>	Spectroscopy of Ordered Molecular Assemblies
W. Siebrand	<i>NRC</i>	Tunneling of Hydrogen and Heavier Atoms
S. Filseth	<i>York University</i>	Energy Disposal in CN Produced by Photodissociation and Reactions
<u>1987</u>		
D.R. Herschbach	<i>Harvard U.</i>	Electronic Structure in Strange Dimensions
P. Norton	<i>U. Western Ontario</i>	Phase Transitions and Surface Reactivity
R.J.D. Miller	<i>U. Rochester</i>	Picosecond Dynamics of Surface Mediated Electron Transfer Processes at Single Crystal Semiconductor Interfaces
B. Schlegel	<i>Wayne State U.</i>	Spin Pojection and Moller-Plessit Perturbation Theory
J. Reid	<i>McMaster U.</i>	Optically Pumped NH ₃ Laser: A New Approach to Stable Lasers
P. Brumer	<i>U. Toronto</i>	Chaotic Intramolecular Energy Transfer
<u>1986</u>		
Y.T. Lee	<i>U.C.-Berkeley</i>	Dynamics & Spectroscopy by Lasers and Molecular Beams
A. Bandrauk	<i>U. Sherbrooke</i>	Non-Adiabatic Effects in Multiphoton Transitions
T.H. Ellis	<i>U. Montréal</i>	Direct Measurements of Surface Kinetics by Time Resolved EELS
W.L. Hase	<i>Wayne State U.</i>	Potential Energy Surface Properties and Dynamics of H + CH ₃ Recombination and IVR in Benzene
G. Scoles	<i>U. Waterloo</i>	Atomic Beam Scattering Studies of Intermolecular Forces at the Gas-Solid Interface
S.C. Wallace	<i>U. Toronto</i>	Excited State Dynamics of Van der Waals Clusters
<u>1985</u>		
R.B. Gerber	<i>Hebrew U.</i>	Molecular Dissociation in Impacts on Crystal Surfaces
J.C. Polanyi	<i>U. Toronto</i>	Photodissociation and Photodesorption of Adsorbed Species
T.F. George	<i>SUNY-Buffalo</i>	Molecular Dynamics and Spectroscopy at Gas-Solid Interfaces
J. Hepburn	<i>U. Waterloo</i>	State-to-State Photofragmentation of Small Molecules and Molecular Clusters
C.M. Sadowski	<i>York University</i>	Energy Disposal in the Photodissociation of Triatomic Cyanides
M. Moskovitz	<i>U. Toronto</i>	Photochemistry at Metal Surfaces