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Nancy Ryan Gray, Ph.D.
Director

**2008 GORDON RESEARCH CONFERENCE
on MOLECULAR & IONIC CLUSTERS**

FINAL PROGRESS REPORT

DOE
GRANT NO.: DE-FG02-08ER15966

The Gordon Research Conference on **MOLECULAR & IONIC CLUSTERS** was held at Centre Paul Langevin, Aussois, France, September 7-12, 2008. The Conference was well-attended with 129 participants (attendees list attached). The attendees represented the spectrum of endeavor in this field coming from academia, industry, and government laboratories, both U.S. and foreign scientists, senior researchers, young investigators, and students.

In designing the formal speakers program, emphasis was placed on current unpublished research and discussion of the future target areas in this field. There was a conscious effort to stimulate lively discussion about the key issues in the field today. Time for formal presentations was limited in the interest of group discussions. In order that more scientists could communicate their most recent results, poster presentation time was scheduled. Attached is a copy of the formal schedule and speaker program and the poster program. In addition to these formal interactions, "free time" was scheduled to allow informal discussions. Such discussions are fostering new collaborations and joint efforts in the field.

Thank you for your support of this Conference. As you know, in the interest of promoting the presentation of unpublished and frontier-breaking research, Gordon Research Conferences does not permit publication of meeting proceedings. If you wish any further details, please feel free to contact me. Thank you.

Sincerely,
Jeremy M. Hutson, Chairperson
UNIVERSITY OF DURHAM

MOLECULAR & IONIC CLUSTERS

September 7-12, 2008

Centre Paul Langevin

Aussois, France

Chairs:

Daniel M. Neumark & Jeremy M. Hutson

Vice Chairs:

Kenneth D. Jordan & Masaaki Fujii

The 2008 Molecular and Ionic Clusters Gordon Research Conference will be one of the most exciting and important cluster science meetings of the year. The conference will be held at the Centre Paul Langevin in Aussois, in the French Alps, from September 7-12, 2008. This site is spectacular, with excellent opportunities for hiking and other outdoors activities.

The conference will cover the spectroscopy, dynamics, and reactivity of a wide range of cluster types and sizes, including helium nanodroplets, metal clusters, ionic clusters, hydrogen-bonded networks, and clusters involving biological molecules. Special sessions on cold-molecule collisions and aerosols are also planned. Both experimental and theoretical aspects of cluster science will be well-represented at the conference.

Contributors

We wish to thank the following for their contribution to the success of this conference:

European Office of Aerospace Research and Development, Air Force Office of Scientific Research, United States Air Force Research Laboratory, Coherent Inc., European Science Foundation, GAM Laser Inc., Gordon Research Conferences, Kapteyn-Murnane Labs Inc., Lawrence Berkeley Laboratories, Photonics Industries International Inc., and International Reviews In Physical Chemistry.



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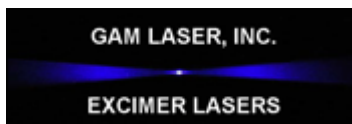


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SUNDAY

4:00 pm - 9:00 pm	Arrival and Check-in
6:00 pm	Dinner
7:30 pm - 7:35 pm	Welcome / Introductory Comments by GRC Site Staff
7:35 pm - 9:30 pm	He Droplets Discussion Leader: Frank Stienkemeier (University of Freiburg)
7:35 pm - 7:45 pm	Discussion Leader's Overview
7:45 pm - 8:20 pm	Andrey Vilesov (University of Southern California) "Study of Hydrogen Clusters in He Droplets"
8:20 pm - 8:30 pm	Discussion
8:30 pm - 9:05 pm	Nadine Halberstadt (Université Paul Sabatier-Toulouse) "Fragmentation Dynamics Inside Helium Nanodroplets: New Theoretical Results"
9:05 pm - 9:15 pm	Discussion
9:15 pm - 9:25 pm	Hot Topic: Oleg Kornilov (University of California, Berkeley and Lawrence Berkeley National Laboratory) "Time-resolved dynamics of photoelectrons in He droplets"
9:25 pm - 9:30 pm	Discussion

MONDAY

7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Ionic Clusters Discussion Leader: Mark Johnson (Yale University)
9:00 am - 9:15 am	Discussion Leader's Overview
9:15 am - 9:50 am	Asuka Fujii (Tohoku University) "Hydrogen Bond Structure of Large-Sized Protonated Water Clusters"
9:50 am - 10:00 am	Discussion
10:00 am - 10:10 am	Hot Topic: Otto Dopfer (Technical University Berlin) "Infrared spectrum of ethyl cation clusters ($C_2H_5^+ \cdot L$): Solvation-induced switch from nonclassical to classical structure"
10:10 am - 10:15 am	Discussion
10:15 am - 10:45 am	Coffee Break / Group Photo
10:45 am - 11:20 am	Michael Duncan (University of Georgia) "Infrared Photodissociation Spectroscopy of Carbocations and Their Clusters"

11:20 am - 11:30 am	Discussion
11:30 am - 12:05 pm	Kenro Hashimoto (Tokyo Metropolitan University) "Formation and Reaction of a Solvated Electron in Water Clusters"
12:05 pm - 12:15 pm	Discussion
12:15 pm - 12:30 pm	General Discussion
12:30 pm	Lunch
1:30 pm - 5:30 pm	Free Time
5:30 pm - 7:30 pm	Aerosols and Nucleation Processes Discussion Leader: Bruce Garrett (Pacific Northwest National Laboratory)
5:30 pm - 5:45 pm	Discussion Leader's Overview
5:45 pm - 6:20 pm	Ruth Signorell (University of British Columbia) "The Influence of Intrinsic Particle Properties on Vibrational Spectra of Aerosols"
6:20 pm - 6:30 pm	Discussion
6:30 pm - 7:05 pm	Jonathan Reid (Bristol University) "The Spectroscopy and Dynamics of Micron-Sized Droplets"
7:05 pm - 7:15 pm	Discussion
7:15 pm - 7:25 pm	Hot Topic: Kevin Wilson (Lawrence Berkeley National Laboratory) "Heterogeneous oxidation of organic aerosols by hydroxyl radicals"
7:25 pm - 7:30 pm	Discussion
8:00 pm	Dinner
9:00 pm - 11:00 pm	Poster Session

TUESDAY

7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Clusters and Intermolecular Potentials Discussion Leader: Kenneth Jordan (University of Pittsburgh)
9:00 am - 9:15 am	Discussion Leader's Overview
9:15 am - 9:50 am	Ad van der Avoird (Nijmegen University) "Dynamics of Open-Shell Complexes on Multiple Potential Surfaces"
9:50 am - 10:00 am	Discussion
10:00 am - 10:10 am	Hot Topic: G. Naresh Patwari (Indian Institute of Technology Bombay) "Hydrogen-bonded complexes of phenylacetylene: Methyl group induced hydrogen bond switching"
10:10 am - 10:15 am	Discussion
10:15 am - 10:45 am	Coffee Break
10:45 am - 11:20 am	Grzegorz Chalasiński (Warsaw University) "Nature and Modeling of Many-Body Interactions in Atomic and Molecular Clusters from Ab Initio Calculations"

11:20 am - 11:30 am	Discussion
11:30 am - 12:05 pm	Yasuki Endo (University of Tokyo) "Experiments and Analyses on the Large Amplitude Motions of Rare Gas van der Waals Complexes"
12:05 pm - 12:15 pm	Discussion
12:15 pm - 12:30 pm	General Discussion
12:30 pm	Lunch
1:30 pm - 5:30 pm	Free Time
5:30 pm - 7:30 pm	Metal Clusters Discussion Leader: Stephen Berry (University of Chicago)
5:30 pm - 5:45 pm	Discussion Leader's Overview
5:45 pm - 6:20 pm	Bernd von Issendorff (University of Freiburg) "Angle Resolved Photoelectron Spectroscopy of Simple Metal Clusters"
6:20 pm - 6:30 pm	Discussion
6:30 pm - 7:05 pm	Catherine Brechignac (Laboratoire Aimé Cotton) "Interaction between folding graphitic surface and silver clusters:curvature effect"
7:05 pm - 7:15 pm	Discussion
7:15 pm - 7:25 pm	Hot Topic: André Fielicke (Fritz-Haber Institute) "Experimental probes for the structures of neutral gold clusters"
7:25 pm - 7:30 pm	Discussion
8:00 pm	Dinner
9:00 pm - 11:00 pm	Poster Session

WEDNESDAY

7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Hydrogen-Bonded Networks Discussion Leader: Masaaki Fujii (Tokyo Institute of Technology)
9:00 am - 9:15 am	Discussion Leader's Overview
9:15 am - 9:50 am	Knut Asmis (Fritz Haber Institute) "Ion Hydration: New Insights from Gas Phase Vibrational Spectroscopy"
9:50 am - 10:00 am	Discussion
10:00 am - 10:10 am	Hot Topic: Tomaso Frigato (Free University Berlin) "Ab initio molecular dynamics simulations of hydrated electrons in water clusters"
10:10 am - 10:15 am	Discussion
10:15 am - 10:45 am	Coffee Break
10:45 am - 11:20 am	Sotiris Xantheas (Pacific Northwest National Laboratory) "The relation between structure, relative energy and infrared spectra in hydrogen bonding networks"

11:20 am - 11:30 am Discussion

11:30 am - 12:05 pm **Martin Beyer** (TU Berlin)
"A Master Equation Model for Water Clusters"

12:05 pm - 12:15 pm Discussion

12:15 pm - 12:30 pm General Discussion

12:30 pm Lunch

1:30 pm - 5:30 pm Free Time

5:30 pm - 7:30 pm **Cold Molecules and Controlled Collisions**
Discussion Leader: **Timothy Softley** (Oxford University)

5:30 pm - 5:45 pm Discussion Leader's Overview

5:45 pm - 6:20 pm **Gerard Meijer** (Fritz Haber Institute)
"Taming molecular beams"

6:20 pm - 6:30 pm Discussion

6:30 pm - 7:05 pm **Matthias Weidemüller** (University of Freiburg)
"Cold Molecules and the Quest for Chemistry without Entropy"

7:05 pm - 7:15 pm Discussion

7:15 pm - 7:25 pm Hot Topic: **Piotr Zuchowski** (University of Durham)
"The prospects for producing ultracold molecules by sympathetic cooling"

7:25 pm - 7:30 pm Discussion

7:30 pm - 8:00 pm Business Meeting
(Nominations for the next Vice Chair; Fill out Conference Evaluation Forms; Discuss future Site & Scheduling preferences; Election of the next Vice Chair)

8:00 pm Dinner

9:00 pm - 11:00 pm Poster Session

THURSDAY

7:30 am - 8:30 am Breakfast

9:00 am - 12:30 pm **Dynamics in Clusters**
Discussion Leader: **Anne McCoy** (Ohio State University)

9:00 am - 9:15 am Discussion Leader's Overview

9:15 am - 9:50 am **Carl Lineberger** (University of Colorado)
"Time-Resolved Photoelectron Spectroscopy of Partially Solvated Anions"

9:50 am - 10:00 am Discussion

10:00 am - 10:10 am Hot Topic: **Yasuhiro Ohshima** (Institute for Molecular Science)
"Coherent vibrational dynamics of benzene dimer induced by nonresonant intense femtosecond laser fields"

10:10 am - 10:15 am Discussion

10:15 am - 10:45 am Coffee Break

10:45 am - 11:20 am **Will Castleman** (Pennsylvania State University)

"An Ultrafast Glimpse of Ionization Processes in Clusters"

11:20 am - 11:30 am Discussion

11:30 am - 12:05 pm **Thomas Möller** (TU Berlin)

"Interaction of Intense Soft X-Ray Pulses with Clusters: Ultrafast Processes and Imaging of Clusters"

12:05 pm - 12:15 pm Discussion

12:15 pm - 12:30 pm General Discussion

12:30 pm Lunch

1:30 pm - 5:30 pm Free Time

5:30 pm - 7:30 pm

Clusters Containing Biological / Large Molecules

Discussion Leader: **John Simons** (Oxford University)

5:30 pm - 5:45 pm Discussion Leader's Overview

5:45 pm - 6:20 pm **Thomas Rizzo** (EPFL Lausanne)

"Infrared Spectroscopy of Cold, Helical Peptides in the Gas-Phase"

6:20 pm - 6:30 pm Discussion

6:30 pm - 7:05 pm **Anne Zehnacker-Rentien** (Laboratoire de Photophysique Moléculaire)
"The Role of Hydrogen-Bonded Networks in Chiral Recognition"

7:05 pm - 7:15 pm Discussion

7:15 pm - 7:25 pm Hot Topic: **Giles Gregoire** (University of Paris 13)

"Infrared multi-photon dissociation spectroscopy of large biological molecules: secondary structure of DNA strands and amyloid- β peptide"

7:25 pm - 7:30 pm Discussion

8:00 pm Conference Banquet

9:30 pm - 11:00 pm Poster Session

FRIDAY

7:30 am - 8:30 am Breakfast

9:00 am Departure



Registration List		
Name	Organization	Participation
Jeremy M. Hutson	University Of Durham	Chair
Daniel M. Neumark	University Of California, Berkeley	Chair
Masaaki Fujii	Tokyo Institute Of Technology	Vice Chair
Kenneth D. Jordan	University Of Pittsburgh	Vice Chair
R. Stephen Berry	University Of Chicago	Discussion Leader
Bruce C. Garrett	Pacific Northwest National Laboratory	Discussion Leader
Mark A. Johnson	Yale University	Discussion Leader
Anne B. McCoy	Ohio State University	Discussion Leader
John P. Simons	Oxford University	Discussion Leader
Timothy P. Softley	University Of Oxford	Discussion Leader
Frank Stienkemeier	University Of Freiburg	Discussion Leader
Knut R. Asmis	Fritz-Haber Institut	Speaker
Martin Beyer	Christian Albrechts Universitaet Zu Kiel	Speaker
Catherine Brechignac	Cnrs Orsay	Speaker
Welford Castleman	Penn State University	Speaker
Grzegorz M. Chalasinski	Warsaw University	Speaker
Michael A. Duncan	University Of Georgia	Speaker
Yasuki Endo	University Of Tokyo	Speaker
Asuka Fujii	Tohoku University	Speaker
Nadine Halberstadt	Cnrs-Universite Toulouse	Speaker
Kenro Hashimoto	Tokyo Metropolitan University	Speaker
W. Carl Lineberger	University Of Colorado	Speaker
Gerard Meijer	Fritz-Haber-Institut Der Max-Planck-Gesellschaft	Speaker
Thomas Moeller	Technische Universitaet Berlin	Speaker
Jonathan P. Reid	University Of Bristol	Speaker
Thomas R. Rizzo	Ecole Polytechnique Federale De Lausanne	Speaker
Ruth Signorell	University Of British Columbia	Speaker
Ad Van Der Avoird	University Of Nijmegen	Speaker
Andrey Vilesov	University Of Southern California	Speaker
Bernd Von Issendorff	Universitaet Freiburg	Speaker
Matthias Weidemueeller	Universitaet Heidelberg	Speaker
Sotiris S. Xantheas	Pacific Northwest National Laboratory	Speaker
Anne Zehnacker-Rentien	Cnrs	Speaker
Misako Aida	Hiroshima University	Poster Presenter
Merwe Albrecht	University Goettingen	Poster Presenter
Jesus Aldegunde	Durham University	Poster Presenter
Oscar I.. Arillo-Flores	Universidad Autonoma Del Estado De Morelos	Poster Presenter
Antonio Armentano	University Of Manchester	Poster Presenter
Joost M. Bakker	Fom Institute For Plasma Physics Rijnhuizen	Poster Presenter
Petru O. Balaj	Christian-Albrechts-Universitat Zu Kiel	Poster Presenter

Thorsten M.. Bernhardt	University Of Ulm	Poster Presenter
Peter Botschwina	University At Goettingen	Poster Presenter
Florent Calvo	University Of Lyon	Poster Presenter
Jing Chen	Johns Hopkins University	Poster Presenter
Emilio J. Cocinero	Universidad Del País Vasco	Poster Presenter
Claude Dedonder-Lardeux	Cnrs	Poster Presenter
Otto Dopfer	Tu Berlin	Poster Presenter
Gary E. Douberly	University Of Georgia	Poster Presenter
Takayuki Ebata	Hiroshima University	Poster Presenter
Undine Erlekam	Laboratoire Chimie Physique	Poster Presenter
Michal Farnik	Academy Of Sciences Of The Czech Republic	Poster Presenter
Andre Fielicke	Fritz-Haber-Institut Der Max-Planck-Gesellschaft	Poster Presenter
Piotr W. Forysinski	University Of British Columbia	Poster Presenter
Kiyokazu Fuke	Kobe University	Poster Presenter
Naresh Patwari Ganpathi	Indian Institute Of Technology Bombay	Poster Presenter
Etienne Garand	Uc Berkeley	Poster Presenter
Oliver Gessner	Lawrence Berkeley National Laboratory	Poster Presenter
Matthias Goetz	University Of Konstanz	Poster Presenter
Maykel L.. Gonzalez-Martinez	Instec	Poster Presenter
Jason R.. Green	University Of Cambridge	Poster Presenter
Christian Hock	University Of Freiburg	Poster Presenter
Robert F. Hockendorf	Christian-Albrechts-Universitaet Zu Kiel	Poster Presenter
Yoshiya Inokuchi	Hiroshima University	Poster Presenter
Shun-Ichi Ishiuchi	Tokyo Institute Of Technology	Poster Presenter
Jay A. Jeffs	University Of Nottingham	Poster Presenter
Christophe Juvet	Cnrs/University Paris Sud	Poster Presenter
Rosen Karaminkov	Technische Universitaet Muenchen	Poster Presenter
Oleg A. Kornilov	Uc Berkeley	Poster Presenter
Jer-Lai Kuo	Nanyang Technological University	Poster Presenter
Jochen Kupper	Fritz-Haber-Institut Der Mpg	Poster Presenter
Katia Le Barbu-Debus	Cnrs	Poster Presenter
Markku Leino	Institute Of Physics Of Rennes	Poster Presenter
James M. Lisy	University Of Illinois, Urbana	Poster Presenter
Toshihiko Maeyama	Tohoku University	Poster Presenter
Philippe Maitre	Université Paris- - Cnrs, Orsay	Poster Presenter
Krishnamurthy Manchikanti	Tata Institute Of Fundamental Research	Poster Presenter
Yoshiyuki Matsuda	Tohoku University	Poster Presenter
Yoshiteru Matsumoto	University Of Hyogo	Poster Presenter
Fuminori Misaizu	Tohoku University	Poster Presenter
Mitsuhiko Miyazaki	Chemical Resources Laboratory	Poster Presenter
Kenta Mizuse	Tohoku University	Poster Presenter
Kiyonobu Nagaya	Kyoto University	Poster Presenter

Masato Nakamura	Nihon University	Poster Presenter
Shinkoh Nanbu	Kyushu University	Poster Presenter
Gereon Niedner-Schatteburg	Tu Kaiserslautern	Poster Presenter
Kazuhiko Ohashi	Kyushu University	Poster Presenter
Yasuhiro Ohshima	Institute For Molecular Science	Poster Presenter
Keisuke Ohta	Tohoku University	Poster Presenter
Tomoko Ohyama-Yamaguchi	Tokyo Metropolitan College Of Indus. Technology	Poster Presenter
Alexander Patzer	Tu Berlin	Poster Presenter
Gustavo A. Pino	Universidad Nacional De Cordoba	Poster Presenter
Lionel Poisson	Cnrs	Poster Presenter
Lukasz T. Rajchel	University Of Warsaw	Poster Presenter
Mathias Rapacioli	Cnrs	Poster Presenter
Kenichiro Saita	Kyushu University	Poster Presenter
Makoto Sakai	Tokyo Institute Of Technology	Poster Presenter
Kenji Sakota	Kyushu University	Poster Presenter
Thomas Schultz	Max Born Institute	Poster Presenter
Hiroshi Sekiya	Kyushu University	Poster Presenter
Rajeev Sinha	Universite De Paris Xi	Poster Presenter
Zheng Su	University Of Oxford	Poster Presenter
Krzysztof Szalewicz	University Of Delaware	Poster Presenter
Akihiro Takeda	Tokyo Institute Of Technology	Poster Presenter
Einar Uggerud	University Of Oslo	Poster Presenter
Timothy D. Vaden	Oxford University	Poster Presenter
Stefan Vajda	Argonne National Laboratory	Poster Presenter
Oriol Vendrell	Universitaet Heidelberg	Poster Presenter
Ondrej Votava	Academy Of Sciences Of The Czech Republic	Poster Presenter
Haopeng Wang	Johns Hopkins University	Poster Presenter
Tobias N. Wassermann	University Goettingen	Poster Presenter
Gary H. Weddle	Fairfield University	Poster Presenter
Guohua Wu	The University Of Nottingham	Poster Presenter
Yuji Yamada	Kobe University	Poster Presenter
Ryan M. Young	Uc Berkeley	Poster Presenter
Philipp Zielke	University Of British Columbia	Poster Presenter
Piotr SZYMON. Zuchowski	Durham University	Poster Presenter
Timothy S. Zwier	Purdue University	Poster Presenter
Adrian L. Boatwright	University Of Nottingham	Attendee
Tomaso Frigato	Free University, Berlin	Attendee
Gilles Gregoire	University Paris 13	Attendee
Steen Hammerum	University Of Copenhagen	Attendee
Alton Hare	Johns Hopkins University	Attendee
William S. Hopkins	University Of Cambridge	Attendee
Atsushi Ichimura	Institute Of Space And Astronautical Science, Jaxa	Attendee

Kevin J. Kuchta	Extrel Cms	Attendee
Claude J. Leforestier	Universite De Montpellier 2	Attendee
Klaus Muller-Dethlefs	University Of Manchester	Attendee
Nicola E. Nugent	Royal Society Of Chemistry	Attendee
Kevin R. Wilson	Lawrence Berkeley National Laboratory	Attendee