

# ***Sixth International Conference on Dissociative Recombination: Theory, Experiments and Applications***

**12-16 July 2004, Mosbach, Germany**

---

## ***First Announcement***

Dissociative recombination between electrons and molecular ions is one of the most striking processes occurring in the electron-induced dynamics of molecules. It reflects the coupling of electronic and nuclear motion within molecular systems and is determined by a rich variety of resonant phenomena, representing coupled electronic, vibrational and rotational dynamics. Dissociative excitation by electron impact is a closely related process. In addition, vibrational and rotational (de-)excitation of molecular ions in electron collisions has been studied theoretically and experimentally in the context of dissociative recombination. Studies on dissociative recombination and excitation have a substantial overlap with neighboring fields of molecular physics, such as photodissociation via high lying electronic states, resonant electron attachment, and electron-induced processes in large molecules and clusters. Experimental methods applied include stored and trapped molecular ions, plasma techniques such as stationary and flowing afterglow, and laser spectroscopic diagnostic of molecular excitations.

International Conferences on Dissociative Recombination between electrons and molecular ions were held at Lake Louise, Alberta, Canada (1988), Saint Jacut, Brittany, France (1992), Ein Gedi, Israel (1995), and Nässlingen, Stockholm Archipelago, Sweden (1999). Later an internationally attended Symposium on the same subject was held at the American Chemical Society meeting in Chicago, USA (2001). This series of meetings is characterized by intense discussions and close interaction between theoretical and experimental researchers. Moreover, the role of dissociative recombination and related molecular processes in adjacent fields of science is emphasized by the participation of leading investigators from such areas as astrophysics, plasma science, as well as atmospheric and planetary physics. The meetings have generated a series of carefully edited and refereed Proceedings volumes that serve as accepted, in-depth references in the research field.

Along these lines the sixth meeting of the series is planned to be held in

**Mosbach, Neckar-Odenwald Region, Germany**

in the week of

**July 12-16, 2004.**

The event is being organized by the Research Group on Atomic and Molecular Physics with Stored Ions at the Max-Planck Institute for Nuclear Physics (MPIK), Heidelberg. It is one of the scientific activities within the Research Training Network "Electron Transfer Reactions" funded by the European Community in the period of 2000-2004. Special arrangements are planned for students and young researchers.

With the present announcement we ask for a pre-registration, preferably via the web site <http://www.mpi-hd.mpg.de/ato/Conf2004/>. An indicative list of topics is included with this announcement. Invited speakers will be contacted in the following weeks and a list of speakers will be given on the web site as soon as available.

We would appreciate if you could pre-register as soon as possible. This step will help us to adjust the scientific and practical organization to the interest in the community. In the tradition of the former meetings we intend to keep the conference within a framework of up to ~80 participants.

Please pass on this information on the meeting to interested colleagues.

We will be happy to welcome you to the 2004 Conference on Dissociative Recombination.

For the Local Scientific Committee

Andreas Wolf

Heidelberg, October 13, 2003

### ***International Scientific Committee :***

L. H. Andersen (Aarhus University, Denmark)  
J. Glosik (Charles Univ. Prague, Czech Republic)  
S. Guberman (ISR, Lexington, Mass.)  
M. Larsson (Stockholm University, Sweden; chair)  
J. B. A. Mitchell (Rennes University, France)  
A. Orel (Univ. of California, Davis, USA)  
A. Suzor-Weiner (Univ. Paris Sud, Orsay, France)  
H. Takagi (Kitasato Univ., Japan)  
J. Tennyson (UC London, United Kingdom)  
W. J. van der Zande (Nijmegen University, The Netherlands)  
D. Zajfman (Weizmann Institute of Science, Rehovot, Israel and MPIK, Heidelberg, Germany)  
A. Wolf (MPIK, Heidelberg, Germany; coordination)

### ***Local Scientific Organizing Committee:***

A. Wolf (MPIK, Heidelberg; chair)  
H. Kreckel (MPIK, Heidelberg)  
L. Lammich (MPIK, Heidelberg)  
H. B. Pedersen (MPIK, Heidelberg)  
P. Schmelcher (Inst. f. Theoretical Chemistry, Heidelberg University)  
D. Schwalm (MPIK, Heidelberg)  
D. Zajfman (Weizmann Institute of Science, Rehovot, and MPIK, Heidelberg)

### ***Topics***

**New experimental and theoretical developments in the following fields:**

- 1. Experimental and theoretical study of dissociative recombination**
  - Electron capture mechanisms
  - Dissociation dynamics and fragment excitation
  - Rate coefficient measurements
  - Isotope effects
- 2. Data needs on dissociative recombination and related processes**
  - Astrophysical plasmas
  - Atmospheric physics
  - Laboratory plasmas
- 3. Fragmentation of highly excited molecules**
  - Dissociative excitation
  - Photoexcitation and dissociation
- 4. Internal excitation and interactions of molecular ions**
  - Electron-impact ro-vibrational heating and cooling
  - Radiative cooling
  - Ion molecule collisions and ro-vibrational cooling
  - Diagnostic of internal excitation
- 5. Electron interactions and properties of complex molecular ions**
  - Hydrocarbons
  - Biomolecules
  - Clusters
- 6. Electron impact detachment of negative molecular ions**
  - Fragmentation of polyatomic systems