

## TUE4A • Photoinduced Reactions

Auditorium

16:15–18:00

## TUE4A • Photoinduced Reactions

Chair: Kaoru Yamanouchi, The University of Tokyo, Japan

## TUE4A.1 • 16:15

•Invited•

**Real-time Evolution of the Valence Orbitals in a Dissociating Molecule as Revealed by Femtosecond Photoelectron Spectroscopy**, •Philippe Wernet<sup>1</sup>, Michael Odelius<sup>2</sup>, Kai Godehusen<sup>1</sup>, Jérôme Gaudin<sup>1</sup>, Olaf Schwarzkopf<sup>1</sup>, and Wolfgang Eberhardt<sup>1</sup>; <sup>1</sup>BESSY, Berlin, Germany, <sup>2</sup>Stockholm University, Stockholm, Sweden.

We follow in real time the evolution of the valence orbitals of Br<sub>2</sub> molecules as the bonds break during dissociation with femtosecond vacuum-ultraviolet photoelectron spectroscopy and with simulations of the nuclear and electron dynamics.

## TUE4A.2 • 16:45

**Influence of the Environment on Reaction Dynamics: Excited State Intramolecular Proton Transfer in the Gas Phase and Solution**, •Christian Schrieffer<sup>1</sup>, Stefan Lochbrunner<sup>2</sup>, and Eberhard Riedle<sup>1</sup>; <sup>1</sup>LS für BioMolekulare Optik, LMU München, Oettingenstr. 67, D-80538 Munich, Germany, <sup>2</sup>present address: Institut für Physik, Universität Rostock, Universitätsplatz 3, D-18055 Rostock, Germany.

Femtosecond transient absorption reveals very similar excited state intramolecular proton transfer and associated wavepacket dynamics in the gas phase and in solution. There are striking differences for the kinetics associated with the subsequent internal conversion.

## TUE4A.3 • 17:00

**Photoreaction from a light generated non-equilibrium state**, •Simone Draxler<sup>1</sup>, Stephan Malkmus<sup>1</sup>, Thomas Brust<sup>1</sup>, Jessica A. DiGirolamo<sup>2</sup>, Watson J. Lees<sup>2</sup>, Markus Braun<sup>1</sup>, and Wolfgang Zinth<sup>1</sup>; <sup>1</sup>BioMolekulare Optik, Fakultät für Physik, Ludwig-Maximilians-Universität München, Oettingenstr. 67, D-80538 München, Germany, <sup>2</sup>Department of Chemistry and Biochemistry, Florida International University, 11200 SW 8th St., Miami, FL, 33199, USA.

We report on the acceleration of the S<sub>1</sub> photoreaction combined

with the dramatic increase of the photochemical quantum efficiency, when the reaction is directly preceded by another ultrafast photoreaction.

## TUE4A.4 • 17:15

**Excited-State Nuclear Wavepacket Motion of an Ultrafast Inorganic Molecular Switch**, Munetaka Iwamura, Hidekazu Watanabe, Kunihiko Ishii, Satoshi Takeuchi, and •Tahei Tahara; Molecular Spectroscopy Laboratory, RIKEN, 2-1 Hirosawa, Wako, Saitama 351-0198, Japan.

Ultrafast photo-induced structural change of [Cu(dmphen)<sub>2</sub>]<sup>+</sup> was studied by pump-probe spectroscopy with 25-fs time-resolution. The observed nuclear wavepacket motion unveiled a new mechanism of photo-induced Jahn-Teller distortion that is a key of inorganic molecular switches.

## TUE4A.5 • 17:30

**Femtosecond Electronic Dynamics via a Conical Funnel**, Eric Smith, William Peters, and •David Jonas; Department of Chemistry and Biochemistry, University of Colorado, Boulder, Colorado 80309-0215, USA.

Femtosecond polarization spectroscopy measures electronic wavepacket motion after vibrational wavepackets are excited near an energetically inaccessible conical intersection in a free-base naphthalocyanine. Partial equilibration via the conical funnel takes place within ~100 fs.

## TUE4A.6 • 17:45

**Capturing Transient Structure in Solution by Transient X-ray Diffraction**, Jae Hyuk Lee<sup>1</sup>, •Tae Kyu Kim<sup>2</sup>, Joonghan Kim<sup>1</sup>, Qingyu Kong<sup>3</sup>, Marco Cammarata<sup>3</sup>, Maciej Lorenc<sup>3</sup>, Michael Wulff<sup>3</sup>, and Hyotcherl Ihee<sup>3</sup>; <sup>1</sup>Center for Time-Resolved Diffraction, Department of Chemistry, Korea Advanced Institute of Science and Technology, Daejeon, Korea, <sup>2</sup>Department of Chemistry, Pusan National University, Busan, Korea, <sup>3</sup>European Synchrotron Radiation Facility, Grenoble, France.

Here we report tracking of structural and kinetic information for photo-induced elimination of 1,2-diiodotetrafluoroethane in solution by transient x-ray diffraction. The transient structure of CF<sub>2</sub>CF<sub>2</sub>I is determined to be classical mixture and following structural dynamics is elucidated.