

MONIf • Poster I f - Chemistry

Poster Area

18:00–20:00

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MONIf.1 • 18:00

Mid-IR-Induced Nuclear Wavepacket Motion of a Hydrogen Bonding System: Effects of Mechanical and Electrical Anharmonic Couplings, •Kunihiko Ishii, Satoshi Takeuchi, and Tahei Tahara; *Molecular Spectroscopy Laboratory, RIKEN, 2-1 Hirosawa, Wako, Saitama 351-0198, Japan.*

Coherent hydrogen-bond stretching vibration was observed by probing ultrafast visible absorption change after mid-infrared excitation of a hydrogen-bonded chromophore. The underlying mechanism was discussed on a theoretical basis considering mechanical and electrical anharmonicities.

MONIf.2 • 18:00

Ultrafast Photodecomposition of Dibenzoyl Peroxide studied by Time-Resolved Infrared Spectroscopy, Christian Reichardt¹, Tim Schäfer¹, Jörg Schroeder², Peter Vöhringer³, and Dirk Schwarzer¹; ¹Max-Planck-Institut für biophysikalische Chemie, Göttingen, Germany, ²Institut für Physikalische Chemie, Georg-August-Universität Göttingen, Göttingen, Germany, ³Institut für Physikal. & Theoret. Chemie, Universität Bonn, Germany.

The photodissociation of dibenzoyl peroxide is controlled by its S1-lifetime and in 0.4 ps leads to a benzoyloxy/phenyl radical pair plus CO₂ via concerted bond breakage of the O-O and the phenyl-C(carbonyl) bond.

MONIf.3 • 18:00

Real-Time Monitoring of Structural Evolution in Cis-Stilbene Photoisomerization by Ultrafast Time-Domain Raman Spectroscopy, •Satoshi Takeuchi¹, Sanford Ruhman², Takao Tsuneda³, Mahito Chiba⁴, Tetsuya Taketsugu⁵, and Tahei Tahara¹; ¹Molecular Spectroscopy Laboratory, RIKEN, Wako 351-0198, Japan, ²Department of Physical Chemistry, Hebrew University, Jerusalem 91904, Israel, ³School of Engineering, The University of Tokyo, Tokyo 113-8656, Japan, ⁴National Institute of Advanced Industrial Science and Technology, Tsukuba 305-6568, Japan, ⁵Graduate School of Science, Hokkaido University, Sapporo 060-0810, Japan.

We studied the vibrational structure of reactive S1 cis-stilbene through wavepacket motions generated impulsively at various delay-times. They showed gradual frequency downshift, demonstrating highly anharmonic nature of the excited-state potential and structural evolution with photoisomerization.

MONIf.4 • 18:00

Direct Femtosecond Observation of Tight and Loose Ion Pairs upon Photoinduced Bimolecular Electron Transfer, Omar F. Mohammed¹, Katrin Adamczyk², Natalie Banerji¹, Jens Dreyer², Bernhard Lang¹, Erik T. J. Nibbering², and Eric Vauthey¹; ¹Department of Physical Chemistry, University of Geneva, 30 Quai Ernest-Ansermet, CH-1211 Geneva 4, Switzerland, ²Max Born Institut für Nichtlineare Optik und Kurzzeitspektroskopie, Max-Born-Strasse 2 A, D-12489 Berlin, Germany.

We observe tight and loose ion pairs in bimolecular electron transfer with ultrafast infrared spectroscopy. For large exergonicity tight donor-acceptor pairs do not rearrange into

loose complexes before the reaction proceeds, contrasting generally accepted models.

MONIf.5 • 18:00

Oriental dynamics of OH- in liquid water, •Søren Rud Keiding, Svend Knak Jensen, Christian Petersen, and Jan Thøgersen; *Department of Chemistry, University of Aarhus, Denmark.*

Using transient absorption spectroscopy we have studied the rotational anisotropy of the charge transfer to solvent transition in OH- in liquid water. Measurements are performed in a thin liquid jet as function of temperature.

MONIf.6 • 18:00

Pathways of vibrational relaxation after N-H stretching excitation in intermolecular hydrogen bonds, •Valeri Kozich, Jens Dreyer, and Wolfgang Werncke; *Max-Born-Institut, Max-Born-Strasse 2A, D-12489 Berlin, Germany.*

Pathways of vibrational relaxation of azaindole dimers after NH stretching excitation have been studied by picosecond infrared-pump/anti-Stokes resonance Raman-probe spectroscopy. Our measurements indicate relaxation via a manifold of vibrations with N-H bending character.

MONIf.7 • 18:00

Ultrafast Charge Migration Following Ionization in Oligopeptides, •Alexander I. Kuleff, Siegfried Lünemenn, and Lorenz S. Cederbaum; *Theoretische Chemie, PCI, Universität Heidelberg, Im Neuenheimer Feld 229, 69120 Heidelberg, Germany.*

Electron correlation can be the driving force for ultrafast charge migration. Using ab initio calculations we demonstrate that the positive charge created by ionization of an oligopeptide can migrate throughout the system within just few femtoseconds.

MONIf.8 • 18:00

Origin of Negative and Dispersive Anti-Stokes Features in Femtosecond Stimulated Raman Spectroscopy, •Renee Frontiera, Sangdeok Shim, and Richard Mathies; *Department of Chemistry, University of California, Berkeley, California 94720.* Negative anti-Stokes femtosecond stimulated Raman features seen off-resonance and dynamic dispersive lineshapes seen on resonance are experimentally characterized and explained by multiple four-wave mixing processes that contribute to the total signal.

MONIf.9 • 18:00

Reactive Dynamics in Constrained Environments, •Minako Kondo, Ismael Heisler, and Stephen Meech; *University of East Anglia, Norwich, UK.*

Ultrafast excited state reactions of Auramine are studied in inverse micelles with water droplets between 1 and 10nm. Dynamics, inhomogeneous and a function of droplet size, are discussed in terms of interfacial and confinement effects.

MONIf.10 • 18:00

Symmetry Dependent Solvation of Donor-Substituted Triarylboranes, •Uwe Megerle¹, Christoph Lambert², Eberhard Riedle¹, and Stefan Lochbrunner^{1,3}; ¹LS für BioMolekulare Optik, LMU München, Oettingenstr. 67, D-80538 Munich, Germany, ²Institut für Organische Chemie, Universität Würzburg, Am Hubland, D-97074 Würzburg, Germany, ³Institut für Physik, Universität Rostock,

Universitätsplatz 3, D-18055 Rostock, Germany.

Femtosecond transient absorption reveals an accelerated solvation for a highly symmetric donor-substituted triarylborane compared to its less symmetric counterpart. We explain this by ultrafast intramolecular charge delocalization over the subchromophores of the symmetric compound.

MONIf.11 • 18:00

Substitution- and Temperature-Effects on Hemithioindigo Photoisomerization - The Relevance of Energy Barriers,

•Thorben Cordes¹, Torsten Schadendorf², Markus Lipp¹, Karola Rück-Braun², and Wolfgang Zinth¹; ¹LS für BioMolekulare Optik, LMU München, Oettingenstraße 67, D-80538 München, Germany, ²TU-Berlin, Institut für Chemie, Straße des 17. Juni 135, D-10623 Berlin, Germany.

The kinetics of the Z to E photoisomerization of Hemithioindigo with variations of substitution and temperature are investigated using transient absorption spectroscopy. Effective tuning of energy barriers in the excited electronic state can be achieved by chemical substitution.

MONIf.12 • 18:00

Coherent Control of Retinal Isomerization in

Bacteriorhodopsin in the High Intensity Regime, Andrei C. Florean¹, David Cardoza², James L. White², Janos K. Lanyi³, •Roseanne J. Sension¹, and Philip H. Bucksbaum^{2,4};

¹Department of Physics, University of Michigan, Ann Arbor, MI 48109, USA, ²Department of Physics, Stanford University, Stanford, CA 94305, USA, ³School of Medicine, University of California, Irvine, CA 92697, USA, ⁴PULSE Center, SLAC, Menlo Park, CA 94025, USA.

This paper has been moved to TUE2A.2.

MONIf.13 • 18:00

Attosecond electron dynamics in the conduction band of organic electronic materials, •Hiromi Ikeura-Sekiguchi¹ and Tetsuhiro Sekiguchi²; ¹National Institute of Advanced Industrial Science and Technology (AIST), Central 2-5, 1-1-1 Umezono, Tsukuba, Ibaraki 305-8568, Japan, ²Japan Atomic Energy Agency (JAEA), Tokai, Naka, Ibaraki 319-1195, Japan.

Attosecond electron-delocalization time can be probed by core-hole-clock method. The method has been applied to probe electron delocalization through the empty conduction band or electron tunnelling into the continuum for organic electronic materials.