

MON3 • Two-Dimensional Spectroscopy

Auditorium

14:00–15:45

MON3 • Two-Dimensional Spectroscopy

Chair: Erik Nibbering, Max-Born-Institute, Berlin, Germany

MON3.1 • 14:00**•Invited•**

Automated 2D IR and Vis spectroscopies using pulse shaping. •Martin Zanni; University of Wisconsin-Madison, USA.

We present a method for collecting 2D infrared and visible spectroscopies that uses a pulse shaper and a pump-probe beam geometry. This approach reduces the technical hurdles for implementing these techniques and makes many new experiments possible.

MON3.2 • 14:30

Relaxation-Assisted Dual-Frequency Two-Dimensional Infrared Spectroscopy: Measuring Distances and Bond Connectivity. •Igor Rubtsov, Sri Ram Naraharisetty, Christopher Keating, and Valeriy Kasyanenko; Tulane University, New Orleans, USA.

Potential of a novel relaxation-assisted 2DIR spectroscopy method is demonstrated on several molecular systems, including model compounds, peptides, and transition metal complexes. Cross-peaks for modes separated by distances greater than 11 Å can be easily detected.

MON3.3 • 14:45

Triggered-exchange Two-dimensional Infrared Spectroscopy of Metal Carbonyl Photodissociation Dynamics. •Carlos R. Baiz, Matthew J. Nee, Robert McCanne, Jessica M. Anna, and Kevin J. Kubarych; University of Michigan, Ann Arbor, MI, USA. We present an ultrafast study of the excited state dynamics of metal carbonyls using triggered-exchange Fourier transform 2DIR spectroscopy.

MON3.4 • 15:00

Observation of Quantum Coherence in Photosynthetic Complexes by Two-Dimensional Electronic Spectroscopy,

•Tessa Calhoun¹, Gabriela Schlau-Cohen¹, Naomi Ginsberg¹, Roberto Bassi², and Graham Fleming¹; ¹Department of Chemistry, University of California, Berkeley and Physical Biosciences Division, Lawrence Berkeley National Laboratory, Berkeley, California 94702, USA, ²Dipartimento Scientifico e Tecnologico, Facolta di Scienze, Universita di Verona, Strada Le Grazie, I-37134, Verona, Italy.

Two-dimensional Fourier transform electronic spectroscopy is employed to investigate quantum beating in the major light-harvesting complex II. The importance of this beating, arising from the electronically coherent nature of energy transfer between chromophores, is discussed.

MON3.5 • 15:15

Vibrational Beating in Two-Dimensional Electronic Spectra, •Alexandra Nemeth¹, Franz Milota¹, Tomas Mancal², Vladimir Lukes³, Harald F. Kauffmann¹, and Jaroslav Sperling¹; ¹Department of Physical Chemistry, University of Vienna, Währingerstraße 42, 1090 Vienna, Austria, ²Institute of Physics, Faculty of Mathematics and Physics, Charles University, Ke Karlovu 5, 12116 Prague, Czech Republic, ³Department of Chemical Physics, Slovak Technical University, Radlinskeho 9, 81237 Bratislava, Slovakia.

We trace vibrational wavepacket motion in two-dimensional electronic spectra of a two-level electronic system. The vibronic evolution induces a periodic beating pattern of the diagonal-to-antidiagonal peak width ratio, similar to the one for electronic coherences.

MON3.6 • 15:30

Novel Coherent Multidimensional Spectroscopy Signals Designed to Probe Electron Correlations in Semiconductors and Molecular Aggregates, •Shaul Mukamel, Lijun Yang, Zhenyu Li, Rafal Oszwaldowski, and Darius Abramavicius; Chemistry department, University of California Irvine, USA.

Principles for the design of pulse sequences for multidimensional spectroscopy are surveyed. Many-body effects for electrons in molecules and semiconductors, and excitons in molecular complexes, are revealed through correlation-induced signals.