

AKjDPG 2: Tutorial Molecular Spectroscopy

Time: Sunday 17:00–18:30

Location: B302

Tutorial AKjDPG 2.1 Sun 17:00 B302
New perspectives in the investigation of ultrafast molecular dynamics — ●ANDREA TRABATTONI — Center for Free-Electron Laser Science, Deutsches Elektronen-Synchrotron DESY, Hamburg, 22607, Germany — Institute of Quantum Optics, Leibniz Universität Hannover, Welfengarten 1, 30167 Hannover, Germany

Imaging the microscopic world in real space and real time is a grand challenge of science. In this context, the landscape of techniques to image ultrafast molecular dynamics is vast, including promising and powerful methods such as lightwave-driven scanning tunnelling microscopy or photoelectron diffraction. In this tutorial, the main methods and results in the field of ultrafast molecular physics will be presented, with a particular emphasis on laser-induced electron diffraction (LIED) in terms of experimental results and advanced modeling. Possible perspectives toward the future advancement of time-resolved molecular imaging will be discussed.

Tutorial AKjDPG 2.2 Sun 17:45 B302

Femtosecond spectroscopy in the condensed and gas phase — ●LUKAS BRUDER — Institute of Physics, University of Freiburg, Hermann-Herder-Str. 3 79104 Freiburg

Molecular processes can be extremely fast and often involve many degrees of freedom. This poses a major challenge for experiments. The problem can be tackled with femtosecond spectroscopy, which allows to resolve the molecular dynamics in real-time. The majority of femtosecond spectroscopy is performed in the condensed phase, which is the natural environment of most molecular processes. On the contrary, experiments in the gas phase allow to study molecular model systems such as isolated molecules and molecular complexes. This provides a complementary view on the molecular dynamics. Hence, both approaches are important in order to improve our understanding of molecular dynamics.

In this tutorial I will give a basic introduction to femtosecond spectroscopy including coherent multidimensional spectroscopy and discuss the technical differences for experiments in the condensed phase and gas phase.