Symposium Electron-driven processes: Atomic-scale insights from theory and experiment (SYED)

jointly organized by
the Surface Science Division (O),
the Chemical and Polymer Physics Division (CPP),
the Thin Films Division (DS),
the Semiconductor Physics Division (HL),
the Magnetism Division (MA), and
the Metal and Material Physics Division (MM)

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As traditional approaches for the conversion of light, electrical, and chemical energy are reaching their natural performance boundaries, future advancement demands fundamental understanding of the intricate interplay between light, electronic, and atomic degrees of freedom in materials. Recent progress in (nonlinear) spectroscopic experimental characterisation of ultrafast quasiparticle dynamics, in particular electron-phonon interactions, together with a drastic boost in our ability to theoretically describe and simulate electron-nuclear coupling at the femtosecond-nanometer scale have given rise to new applications of ultrafast science in plasmonics, organic and hybrid electronics, nanooptics, and electron-driven processes in so-called quantum materials. This symposium aims to provide a cross-disciplinary forum, bringing together experimentalists and theoreticians to assess the progress and future challenges in ultrafast electron and nuclear dynamics in materials.

Overview of Invited Talks and Sessions

(Lecture hall HSZ 01)

Invited Talks

SYED 1.1	Thu	9:30–10:00	HSZ 01	**Ultrafast electron dynamics at laser-irradiated surfaces** — •Baerbel Rethfeld
SYED 1.2	Thu	10:00–10:30	HSZ 01	**Unraveling Momentum-Dependent Electron-Phonon Coupling and its Role in the Origin of Charge Density Wave Phases** — •Bradley Siwick, Martin Otto, Jan-Hendrik Pohls, Laurent Rene de Cotret, Mark Sutton
SYED 1.3	Thu	10:30–11:00	HSZ 01	**Light MATTERs!!!** — •Hrvoje Petek, Andi Li, Zehua Wang, Marcel Reutzel
SYED 1.4	Thu	11:15–11:45	HSZ 01	**Quantum localization and delocalization of charge carriers in molecular organic crystals** — •Jochen Blumberger
SYED 1.5	Thu	11:45–12:15	HSZ 01	**Single-Atom Catalysis (SAC): How Structure Influences Reactivity** — •Gareth Parkinson

Sessions

SYED 1.1–1.5	Thu	9:30–12:15	HSZ 01	**Symposium Electron-driven processes**