

Symposium Chirality meets ultrafast (SYCU)

jointly organized by
the Molecular Physics Division (MO) and
the Quantum Optics and Photonics Division (Q)

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Holding a sea snail in your hand during your beach vacations you may wonder about the beauty and the function of countless chiral objects, including the snail and the hand. Chiral objects cannot be superimposed onto their mirror-images. One is left to wonder what is the purpose of this asymmetry in nature? Our ability to shake hands is one of them. Chiral molecules, including elementary building blocks of life such as amino acids and nucleosides form chiral complexes, a “molecular handshake”, when embedded into a chiral medium. Thanks to this chiral recognition we can perceive odors and tastes and metabolize drugs. Discriminating enantiomers and understanding chiral interactions are major challenges in pharmacology, food and fragrance industry, chemistry, life sciences, and physics.

Chiral light-matter interaction is only possible due to chiral light. This symposium will spotlight a disruptive step, the electric dipole revolution, in chiral discrimination, which enabled extremely efficient interaction between light and chiral matter. This opened the way not only to ultrafast imaging, but also to controlling such interactions in chiral molecules on various time scales, from electronic and vibronic to rotational, and eventually even to spatially separate enantiomers. Efficient control over chiral light matter interactions requires a new type of light, i.e., a synthetic chiral electric field, which is fundamentally different from the circularly polarized light we are familiar with.

Overview of Invited Talks and Sessions

(Lecture hall e415)

Invited Talks

SYCU 1.1	Mon	11:00–11:30	e415	Photoelectron circular dichroism in the light of resonance enhanced multi-photon ionization — ●THOMAS BAUMERT
SYCU 1.2	Mon	11:30–12:00	e415	New strategies for controlled chirality from the rovibrational dynamics of molecules — ●ANDREY YACHMENEV
SYCU 1.3	Mon	12:00–12:30	e415	Time-dependency in Photoelectron Circular Dichroism: from femtosecond scale to attosecond — ●VALERIE BLANCHET
SYCU 1.4	Mon	12:30–13:00	e415	Synthetic chiral light for efficient control of chiral light-matter interaction — ●DAVID AYUSO, OFER NEUFELD, ANDRES F. ORDONEZ, PIERO DECLEVA, GAVRIEL LERNER, OREN COHEN, MISHA IVANOV, OLGA SMIRNOVA

Sessions

SYCU 1.1–1.4 Mon 11:00–13:00 e415 **Chirality meets Ultrafast**

Invited Talk and Contributed Session in the Molecular Physics Division (MO)

MO 3.1	Mon	14:00–14:30	f102	Enantio-selective controllability of asymmetric top molecules — ●MONIKA LEIBSCHER, EUGENIO POZZOLI, MARIO SIGALOTTI, UGO BOSCAIN, CHRISTIANE P. KOCH
MO 3.1–3.9	Mon	14:00–16:30	f102	Chiral Molecules