

Plenary Talk

PV V Tue 9:15 Audimax

Chirality differentiation and manipulation using tailored microwave fields — ●MELANIE SCHNELL — DESY, Hamburg, Germany
— CAU Kiel, Germany

Chirality is ubiquitous in nature and involved in many aspects of life, making it an important phenomenon to understand. The enantiomers of chiral molecules have identical physical properties (despite the predicted small contributions due to parity-violating weak interactions), while their chemical and biochemical properties can differ dramatically. Due to these different behaviors, the development of sensitive spectroscopic methods that can differentiate and/or separate molecules

of opposite handedness, particularly in complex sample mixtures, are of utmost importance.

In recent years, there is tremendous development in chiral molecule research. Powerful methods to analyse and control chirality in the gas phase have been developed, up to the attosecond range. In my group, we focus on characterizing, controlling, and manipulating chirality using microwave radiation. Using a coherent, non-linear, and resonant microwave three-wave mixing approach, we can differentiate enantiomeric pairs of chiral molecules using tailored microwave pulses. The technique is uniquely mixture-compatible and allows for enantiomer separation, as will be discussed.