

Max-Planck-Institut für Struktur und Dynamik der Materie

Max Planck Institute for the Structure and Dynamics of Matter



IMPRS UFAST Call for PhD applications 2022/2023



FC1- Real-time investigation of UV-induced chiral dynamics by covariance spectroscopy

Title of PhD Project	Real-time investigation of UV-induced chiral dynamics by covariance spectroscopy
Type	Experimental
Supervisor(s)	Prof. Dr. Francesca Calegari (DESY, UHH) Dr. Vincent Wanie (DESY)
Affiliation(s):	UHH DESY
Number of positions:	1
Abstract:	Ultraviolet (UV) radiation has a key role in a vast range of scientific areas, including light-harvesting technologies, atmospheric chemistry and biochemistry. Our research team has recently developed a number of light sources delivering few-femtosecond UV pulses to reproduce ultrafast molecular processes that occur in nature and to track in real-time their underlying mechanisms. In this project, a high repetition rate (200 kHz) UV light source will be used for real-time investigation of chiral dynamics in gas phase molecules. Triggered by UV-excitation, the chiral response of small bio-relevant systems will be probed by a circularly polarized infrared field using time-resolved circular dichroism (TR-PCD) with femtosecond time resolution. The data will be acquired via covariance measurements, requiring the high statistics provided by our unique setup. Small chiral systems such as amino-acids and esters will be investigated in order to develop new schemes to manipulate the outcome of enantioselective chemical processes via charge-directed reactivity.
Contact person for scientific questions about the project:	Francesca.calegari@desy.de Vincent.wanie@desy.de

