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 2021/2022

IMPRS ULTRAFAST IMAGING & STRUCTURAL DYNAMICS

Cryogenically cooled and controlled beams of proteins for single-particle diffractive imaging

J. Küpper-1

Title of PhD Project	**Cryogenically cooled and controlled beams of proteins for single-particle diffractive imaging**
Type	Experimental
Supervisor(s)	Prof. Jochen Küpper (First Supervisor) Dr. Amit Samanta (Second Supervisor)
Affiliation(s):	UHH DESY
Number of positions:	1
Abstract:	We develop beams of cryogenically (<10 K) shockfrozen bio-nanoparticles. In this project will implement and advance techniques to shock-freeze biological nanoparticles and macromolecules to image and characterize these samples, to implement control, e.g., species selection and laser alignment, techniques for these samples, and to exploit them in single-particle diffractive-imaging experiments at free-electron lasers. This work is especially focused on faster cooling, better characterization, and further control over the particles and on the transfer to smaller bio-particles, such as indoividual protein complexes or even single proteins. The work is heavily synchronized with aerosol-injection performed by the team and with large international collaborative efforts for the x-ray diffractive imaging at FLASH and EuXFEL.
Contact person for scientific questions about the project:	Amit Samanta: amit.samanta@cfel.de Jochen Küpper: jochen.kuepper@cfel.de