

19th June 2025, 10:00–11:00h

CFEL – Building 99, seminar room I and II (ground floor)

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Aerosol-Based Sample Delivery for Single Particle Imaging at X-Ray Free-Electron Lasers

Single Particle Imaging (SPI) at X-ray Free-Electron Lasers (XFELs) requires efficient and reliable sample delivery to enable high-resolution structural studies of individual particles. Aerosol injection is a promising approach for SPI sample delivery; however, it faces several challenges, including low particle transmission efficiency, gas background scattering, limited sample compatibility, and the absence of real-time monitoring, all of which hinder data quality and throughput. In this presentation, we describe our recent efforts to address these issues. We demonstrate improved particle transmission, introduce gas replacement strategies to reduce background scattering, and present a coaxial nozzle design that broadens sample compatibility. Additionally, we integrate a Rayleigh scattering system for in-situ monitoring of sample stability.

