

8th December 2010 - 11:00
DESY Building 49 - Seminar Room (108)

Flavio Capotondi
 Sincrotrone Trieste

Coherent Diffraction Imaging at FERMI@ELETTRA

One of the three beamlines at FERMI will be dedicated on exploring matter structure and dynamics evolving at the nanoscale through simultaneous detection of the scattered diffraction pattern and emitted charged particles from the target with spatial and temporal resolution limited by the FERMI wavelength (4.2-100 nm in the first harmonic) and pulse duration (20-100 fs).

The beamline is designed to meet the requirements for performing all types of static and dynamic coherent imaging experiments, including split-delay correlation system and focusing KB optics for demagnifying the beam to a $3 \times 5 \mu\text{m}^2$. The main characteristics of the measurement station are modularity and high flexibility of the construction allowing easy replacement of components and implementation of new ones in order to meet the requirements from different research fields. The design was made in partnership and is based on the transferred know-how accumulated in fixed target, time-delay holography and particle injection imaging at FLASH.

Using the tunability and multiple polarization of FERMI source different measurements modes will allow access to the structure of non-periodic inorganic and organic targets of different complexity and size and the dynamic phenomena, such as structural deformation, magnetic domain dynamics, phase separation and nucleation, complex rearrangements of constituents in cells etc.

The end station has passed the commissioning test at the Nanospectroscopy beamline at Elettra storage ring and the commissioning results will be presented.

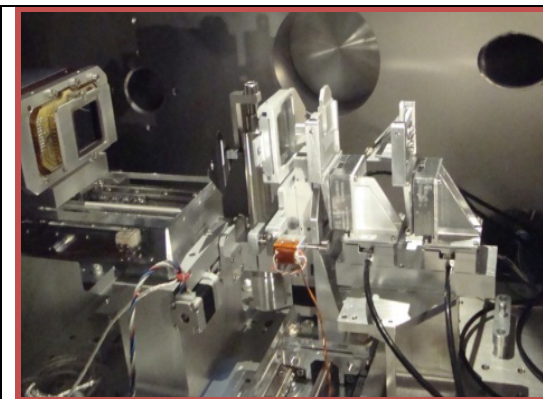


Figure1: Cleaning apertures, sample and detector stage inside DIPROI chamber.

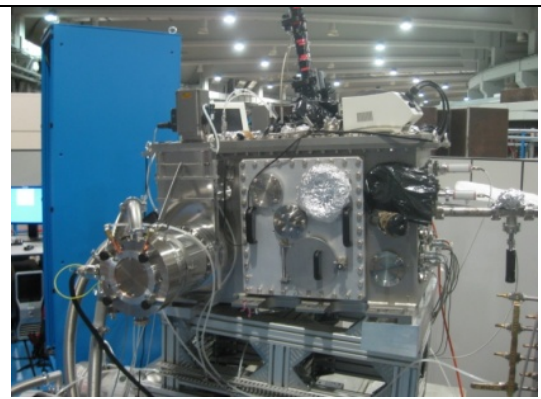


Figure 2: The experimental station at Nanospectroscopy beamline at Elettra