Contribution ID: **67** Type: **Talk**

The XRD1 Synchrotron hard X-ray light source beamline as a tool for chemistry and science and technology of materials.

Tuesday, 5 October 2021 10:00 (15 minutes)

The Italian synchrotron Elettra was one of the first 3rd generation accumulation rings designed and built with the aim of producing photon beams to be used in radiation-matter interaction experiments, in which photons constitute a probe to investigate electronic, magnetic and structural properties of matter in solid, liquid and gaseous state. Elettra houses four beamlines dedicated to crystallography, and of these the first to be designed and built, in partnership with the CNR, was XRD1¹. This beamline, originally designed for X-ray diffraction experiments in macromolecular crystallography, has shown over the years to be very versatile and able to adapt to a great variety of geometries and experimental techniques². Its source is a permanent magnet wiggler that offers a continuous range of emission from 4 to 21 keV, its experimental station is equipped with a two-dimensional high dynamic range X-ray detector coupled to a diffractometer for alignment and rotation about various axes of the samples in the beam. At the experimental station, it is possible to perform X-ray diffraction experiments ranging from macromolecular crystallography to studies of surfaces and thin films in grazing incidence, from powder diffraction to the use of low energies for solving the phase problem. Here a brief presentation of the experimental station is given along with some examples of investigations in materials sciences performed there, in particular for applications in electronic (organic semiconductors) energy conversion (solar cell prototypes), food science (ex-situ DSC-XRD combined investigations of lipidic matrices) and of phase transitions and structural properties of high Tc superconductors.

References

1. Bernstorff, S.; Busetto, E.; Gramaccioni, C.; Lausi, A.; Olivi, L.; Zanini, F.; Savoia, A.; Colapietro, M.; 1664.
2. Lausi, A.; Polentarutti, M.; Onesti, S.; Plaisier, J. R.; Busetto, E.; Bais, G.; Barba, L.; Cassetta, A.; Ca

Primary authors: Dr BARBA, Luisa (CNR - Istituto di Cristallografia); Dr CASSETTA, Alberto (CNR - Istituto di Cristallografia); Dr CHITA, Giuseppe (CNR - Istituto di Cristallografia)

Presenter: Dr BARBA, Luisa (CNR - Istituto di Cristallografia)

Session Classification: Session