

Synchrotron imaging-based techniques for the study of bio-samples

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Invitée par Rachid BELKHOU

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Grand Amphi SOLEIL

Séminaires

In almost all fields of science, and especially in the area of bio-medicine, biology, bio-chemistry, bio-physiological or environmental science, there is a growing need to explore the detailed structural, morphological, magnetic and chemical properties of heterogeneous matter with the best spatial, elemental and chemical sensitivity possible. Researchers need to get the most complete characterization of their sample, without destroying it and/or with as little degradation as possible. After the use of conventional or laboratory techniques, necessary first step providing most of the time average information at the macro-scale, scientists need to examine their sample on localized and specific area. Ideally, all these characterization procedures should be realized on the same specimen, and at the very same location. The challenge there resides in sample preparation (preferentially minimum and fully respectful of all the sample properties), sample environment for characterization and on the successive applications of the techniques. To probe biological materials, heterogeneous and complex by nature, multidisciplinary, interdisciplinary and multifaceted synchrotron imaging-based techniques have demonstrated separately their specificity, strength and interest. Among them, infrared spectro-microscopy, 2D and 3D X-ray microscopy -via numerous contrast mechanisms (absorption, phase contrast, fluorescence)- and X-ray spectroscopy (as XANES) are becoming widely used in bio-scientific research programs.

Once correlated, these techniques allow scientist to assess biochemical, biophysical and morphological information at sub-cellular levels, with high elemental, chemical and spatial sensitivity, leading to significant new comprehension on samples specific structures, biological status and reactivity. The purpose of this seminar is therefore to provide an overview of ways in which synchrotron imaging-based techniques were correlated at Elettra within for instance the SSSI (infrared), Syrmep (micro tomography) and TwinMic (soft X-ray microscopy, fluorescence) beamlines. Presented by the mean of examples dealing with marine biology, plant science, medicine and archeometry, the developments of the techniques to fulfill the correlation procedures will be discussed.



Ce séminaire sera suivi d'une pause-café



Formalités d'entrée : accès libre dans l'amphi du Pavillon d'Accueil. Si la manifestation a lieu dans le Grand Amphi Soleil du Bâtiment Central, merci de vous munir d'une pièce d'identité (à échanger à l'accueil contre un badge d'accès).

SYNCHROTRON SOLEIL

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