

Multi-technique Studies at SOLEIL: Examples from the INRAE-SOLEIL Partnership

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ABSTRACT

SOLEIL produces an extremely bright light which extends from the far-infrared to hard X-ray and offers a very wide range of specific techniques such as diffraction, scattering, spectroscopy, photoemission, circular dichroism, and imaging, providing structural, chemical, electronic, magnetic or morphological information. The use of techniques that complement one another makes it possible to analyse the same sample by several complementary techniques in simultaneous or sequential way. Such an approach is encouraged by the possibility to ask for multi-beamlines proposal.

The INRAEⁱ-SOLEIL partnership aims to promote multi-techniques studies. Indeed, many studies are multiscale studies on complex matrices and required the combination of two or three synchrotron techniques in addition to laboratory characterization techniques. This conference will present several examples of studies coming from INRAE community and conducted using a combination of synchrotron techniques on SOLEIL beamlines. Through three studies on apples quality, myopathy therapy and Influenza A virus, we will cover multiphoton imaging, deep-ultraviolet and infrared micro-spectroscopies, soft X-ray tomography and X-ray fluorescence mapping at macro and nanoscale.

ⁱ INRAE is the new public establishment resulting from the merger of INRA and Irstea, since the 1st January 2020.