

CEA - Saclay 91191 Gif-sur-yvette Cedex  
Service de Physique de l'Etat Condensé  
**SÉMINAIRE**

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**Mercredi 23 novembre 11h15**

**Orme des Merisiers SPEC Salle Itzykson, Bât.774**

**Synchrotron radiation-based characterisation of historical materials**

**Loïc Bertrand**

Plateforme IPANEMA,

Synchrotron Soleil

Materials from cultural heritage and archaeology are usually highly heterogeneous and complex due to the raw materials used, the manufacturing techniques employed to produce artefacts and to materials long-term alteration. For several years, synchrotron-based X-ray diffraction, absorption, fluorescence and Fourier-transform infrared microspectroscopy have been identified as powerful tools to provide complementary information on materials composition, organisation and morphology both at high spatial and spectral resolutions. Among other works, recent research on the synchrotron UV/visible luminescence characterisation of organic binders and resins, and of semiconductor pigments in cross-sections of respectively musical instruments from the 18th century and paintings will be presented. Using an adapted setup of the DISCO beamline at SOLEIL, we were able to collect spectroscopic data at a spatial resolution of typically 0.5  $\mu\text{m}$  on real cross-sections, i.e. with a 10 to 20x increase over usual synchrotron FT-IR measurements. I will finally point out issues at stake and potentials in the context of the current setting-up of the European research platform on ancient and historical materials IPANEMA at the SOLEIL synchrotron (CNRS, Ministry of Culture, National museum of natural history, Dutch funding agency NWO).

A coffee break will be served at 11h00. The seminar will be given in English.