

Extreme methods of analysis (EMA) beamline : Status and Future Goals

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Salle PHENIX A1.0.59

A deep understanding of the physical properties of materials requires investigating them under diverse thermodynamic conditions. Submitting them to extreme conditions of pressure, temperature, and magnetic fields can also reveal novel phases of matter that are inaccessible at ambient conditions. The combination of these conditions at synchrotron facilities has already led and continues to lead to the discovery of novel physical phenomena important in many fields of knowledge, including condensed matter physics, chemistry, materials science, and geosciences. This is the aim of the Extreme Conditions Methods of Analysis (EMA) beamline at the Brazilian Synchrotron Light Source, Sirius. EMA was designed to perform high-resolution x-ray absorption spectroscopy, x-ray diffraction, and coherent diffraction imaging on samples subjected to extreme thermodynamic conditions.

The beamline delivers high photon flux and focused beam sizes down to $\sim 1 \times 1 \mu\text{m}^2$, enabling studies with exceptional spatial resolution. Its versatility supports a wide range of sample environments, including pressures up to the megabar regime, cryogenic and high temperatures (from 300 mK up to 700 K), and magnetic fields up to 11 T. In this talk, I will present the status of the EMA beamline and recent scientific results obtained employing its capabilities. I will also outline our plans to upgrade the experimental setup, enabling us to perform x-ray magnetic circular dichroism and imaging techniques.



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 ou dans une salle de réunion, merci de vous munir d'une pièce d'identité (à échanger à l'accueil contre un badge d'accès).

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