

Séminaire SOLEIL

## "Using synchrotron radiation techniques to understand the structure and formation of mesoporous thin films"

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**Lundi 5 septembre à 14h00**  
**Grand Amphi SOLEIL**

Mesoporous materials (MPM) present complex phases with positional ordering of nanodomains in several length scales : atomic, mesoscopic and submicronic. In particular, processing MPM as thin films permits to combine the high surface area, narrow pore size distribution and pore structure of these materials with transparency, accessibility and connectivity to conductive substrates. This leads to a wealth of potential applications in new nanocomposite solar cells, fuel cell membranes, selective electrodes, or biomaterials.

In order to reach these desired applications, it is essential to understand MPM features such as porosity, pore symmetry, and orientation, framework composition and crystallinity, presence and speciation of organic functional groups, etc... Synchrotron techniques are ideal towards this goal, for they provide the collection of a great variety of spectroscopic or scattering methods that provide high precision information in all the desired length scales. In addition, synchrotron-based techniques are ideal for working with very low matter quantities, such as those found in thin films. In this presentation, we will present several examples of how to use crossed synchrotron techniques to determine the pore symmetry and orientation (SAXS and GI-SAXS), porosity and porosity filling (XRR), composition and crystallization (XAS), and behavior of surface functions (XPS). In addition, the use of in-situ SAXS to follow the formation of the initial films, and their thermal evolution will be shown.



**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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