

X-ray absorption spectroscopy characterization of materials for advanced energy applications in proton exchange membrane devices

Andrea ZITOLO

(Ligne SAMBA, Synchrotron SOLEIL, St Aubin, France)

Lundi 8 juin 2015 – 14h
Amphithéâtre SOLEIL

Increased production of renewable energy aimed at satisfying the world's growing energy demand while reducing CO₂ emissions is a major challenge toward a sustainable standard of living. In this context, fuel cells are promising devices that generate electrical power from fuels that may be renewably produced, such as H₂ or lower-weight alcohols. Of the different types of fuel cells under development at the present time, the proton exchange membrane fuel cell (PEM) is attracting the most attention. This can start up fast and easily and operates at moderate temperatures. It offers the prospect of a highly efficient, low pollution power source for vehicles, stationary power generation and cogeneration applications and portable power devices. However, nowadays the use of platinum group metals (PGM) as electrodes to perform both the hydrogen oxidation reaction (HOR) and the oxygen reduction reaction (ORR) prevents their implementation on a global scale. Similar constraints are found in the sister PEM water electrolysis technology where PGM catalysts are used for the hydrogen evolution reaction (HER) and the oxygen evolution reaction (OER). Finding a more cost-effective way to perform these reactions is currently one of the most challenging targets of the scientific community. Different earth-abundant transition metals based catalysts have been proposed as promising alternatives, but the comprehension of the reaction mechanisms and the structural properties of these materials holds several questions to be investigated. In this framework, X-ray absorption spectroscopy represents a powerful technique to unveil the nature of the catalytic active centres and to find a link between structure and activity.



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

L'Orme des merisiers - Saint-Aubin - BP48 - 91192 GIF S/YVETTE cedex

www.synchrotron-soleil.fr/Soleil/ToutesActualites

CONTACT : sandrine.vasseur@synchrotron-soleil.fr

SEMINAIRE