



Laboratoire de **Cristallographie et**
Sciences des Matériaux
NORMANDIE UNIV, ENSICAEN, UNICAEN, CNRS

Position for a Post-Doc

***IN SITU* PAIR DISTRIBUTION FUNCTION (PDF) ANALYSIS OF NANO-ZEOLITES FOR GAS SEPARATION**

The CRISMAT laboratory offers a Post-Doc position of one year in collaboration with the LCS (Laboratoire Catalyse & Spectrochimie) of Caen starting from the 1st February 2020.

Recently, zeolites have shown excellent ability to capture CO₂¹. The LCS is actually developing nano-zeolites free of organic templates to capture and separate CO₂ from flue gases. Zeolites are stable at high temperature and do not decompose during the process of adsorption and desorption, avoiding the drawback highlighted for the other technologies. To increase the gas capture and separation capacity of these materials, it is essential to understand the gas adsorption/desorption mechanisms and therefore to characterize the crystal structures of the nano-zeolites locally and on a large scale. These materials are currently characterized at the CRISMAT lab by in situ powder X-ray diffraction and Rietveld refinements. The aim of this project is to develop PDF analyses to follow *in situ* the evolution of the local structure during the CO₂ adsorption-desorption process.

The structural investigations of the nano-zeolites using PDF analysis will be performed at the CRISMAT lab on a new Rigaku Smartlab X-ray diffractometer. Synchrotron and neutron experiments will also be also performed.

This position is funding by the *Région Normandie* via the *RIN* project *DIXOS*. The successful applicant will receive a salary according to the funding guidelines for post-doctoral researchers at the University of Caen Normandie.

[1] Polisi, M. et al. CO₂ Adsorption/Desorption in FAU Zeolite Nanocrystals: In Situ Synchrotron X-ray Powder Diffraction and in Situ Fourier Transform Infrared Spectroscopic Study. *J. Phys. Chem. C* 123, 2361–2369 (2019)

Profile: We are looking for a motivated postdoctoral researcher with a solid experience in PDF analyses. The candidate should have a PhD in solid-state chemistry or physic with more particularly a large knowledge in crystallography. Background knowledge in crystal structure resolution and Rietveld refinements will be a plus. Short motivational letter and a short CV should be sent to Dr Nicolas Barrier

Contact: nicolas.barrier@ensicaen.fr