Post-doctoral position

Synthesis and study of cyano-bridged coordination networks for hydrogen storage

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Overview : Materials able to reversibly store and release hydrogen H_2 represents a critical societal challenge. Porous coordination frameworks have been often compared to other porous materials such as zeolites. The flexibility of molecular chemistry could be taken as an advantage to tune their structure in order to optimize such hydrogen capture.

Objectives: This multidisciplinary proposal is related to the synthesis and study of porous cyano-bridged coordination networks and the evaluation of their potential for hydrogen storage. The main objectives will be to:

- *(i)* Synthesize porous cyano-bridged coordination networks (Prussian Blue Analogues and Hofmann clathrates);
- *(ii)* Post-synthesize these materials with various functionalities able to promote hydrogen storage;
- *(iii)* Characterize the sorption properties of the resulting materials. A particular effort will be devoted to develop and perform in situ Raman spectroscopy with a new equipment purchased in the frame of the proposal.

Duration: 12 months

Starting date: October-November 2021

Techniques:Infra-Red, Raman, Powder X-Ray Diffraction, Thermogravimetric Analysis, MAS NMR, Gas adsorption.

Profile: The candidate should possess strong skills in materials chemistry, coordination and physical chemistries.

Structures: The synthesis and characterization of the materials will be performed at the Institute Charles Gerhardt, in the Ingénierie Moléculaire et Nano-Objets (IMNO) team. The hydrogen sorption experiments will be carried out at the Institut Européen des Membranes.

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