Institut des Matériaux Poreux de Paris (IMAP)
Director: Christian Serre

- 8 permanent members + about 20 non-permanent members (postdocs, PhDs and master)
- 8 permanent members participating at the GDR
- Materials synthesis and characterization, nano-structuration, shaping
- CNRS: Section 15, UMR 8004 ENS-ESPCI-CNRS
- Axes: Elaboration, properties measurements

NAME
GDR Nanomaterials for Energy Applications
ELABORATION
MEASUREMENTS & METROLOGY
SIMULATIONS & THEORY
APPLICATIONS

IMAP INSTITUT DES MATÉRIAUX POREUX DE PARIS

1794 ENS

PARIS 1882

PSL RESEARCH UNIVERSITY PARIS

cnrs

Scientific expertise, overview, major themes in relation to the GDR

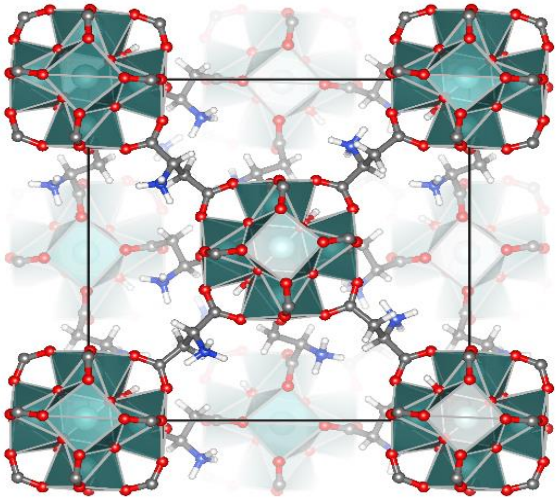
- Porous hybrid materials synthesis and characterization
  (in particular Metal-Organic Frameworks and related composites)

- Which heat carriers ? Phonons

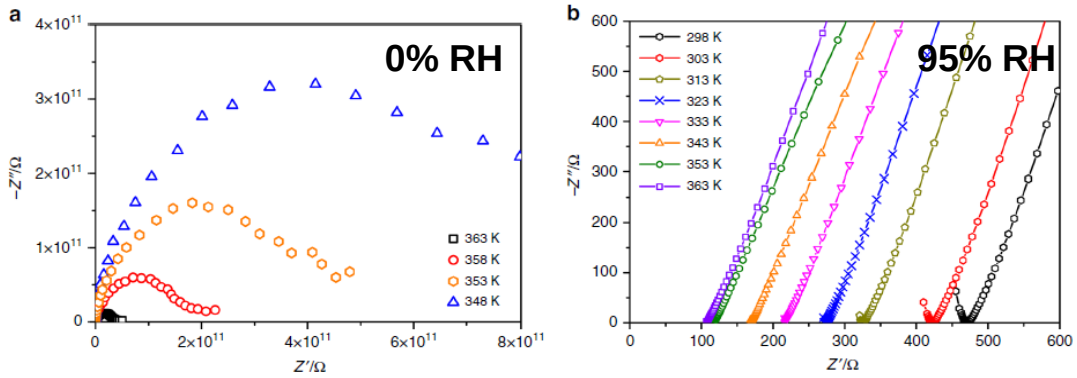
- Type of energy conversion :
  Thermochemical (adsorption)
  Piezoelectricity (flexible frameworks)

- What kind of applications are targeted ?
  Heat reallocation ($W.h.Kg^{-1}$)
  Proton conductivity ($S.cm^{-1}$)
  Gas storage ($cm^3.cm^{-3}$)
  Sensors

MOFs for proton conduction

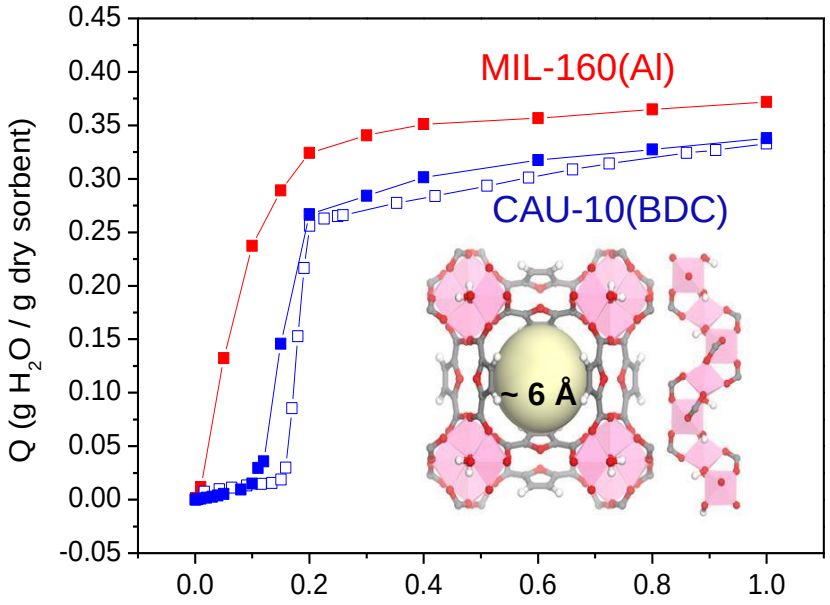


MIP-202(Zr)

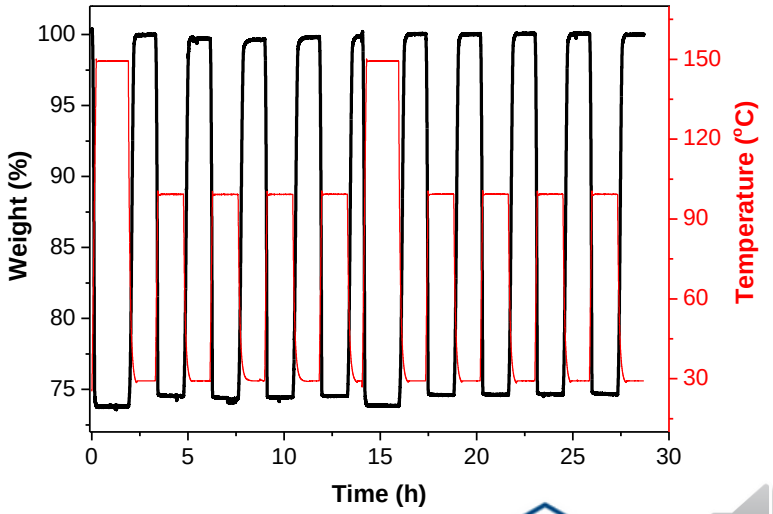


S. Wang et al., Nature Comm, 2018; CNRS Patent 2017

MOFs for heat relocation – water adsorption



A. Cadiau et al., Adv. Mater, 2015



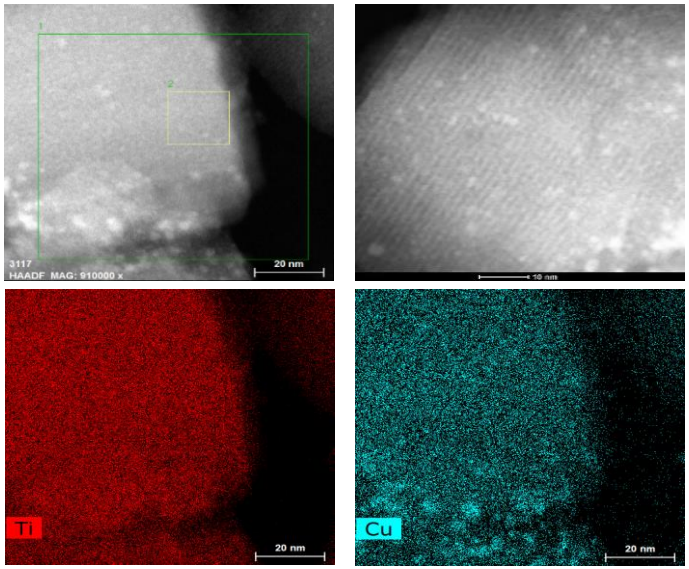
https://gdrname.fr

GDR Nanomaterials for Energy Applications

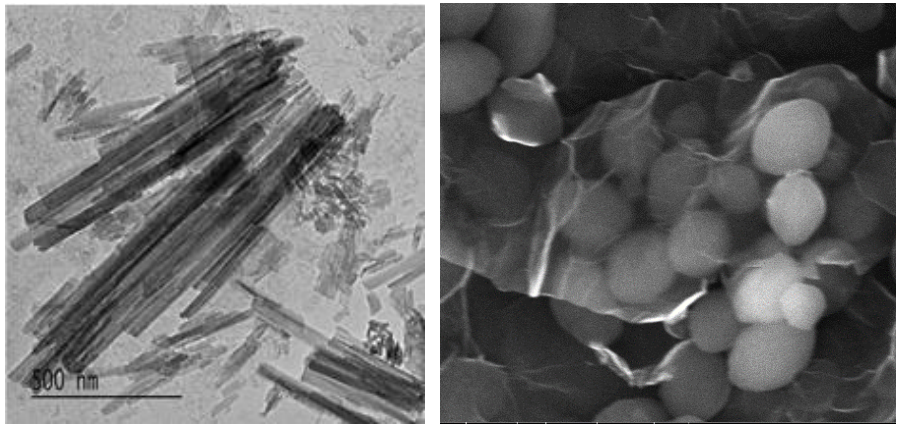
Technical or technological expertise in relation to the GDR issues

- What kind of materials/dimensions: from nano to macro scale

Cu@Ti-MOFs



MOF/GO composites



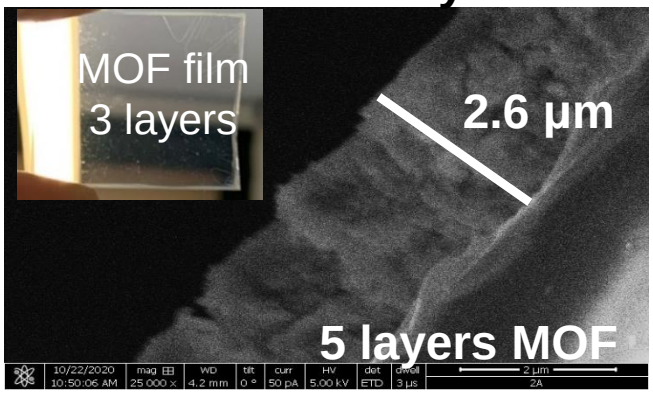
- Bottom-up

- What kind of elaboration techniques :
  solvothermal, microwave

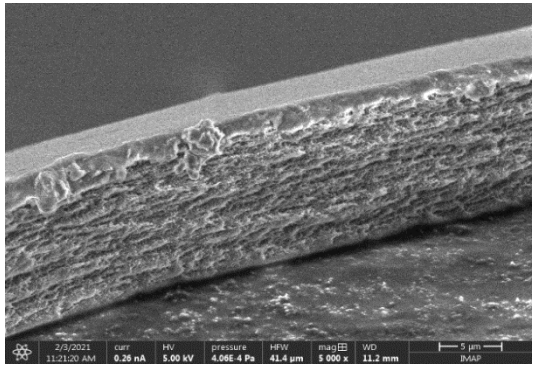
Technical or technological expertise in relation to the GDR issues

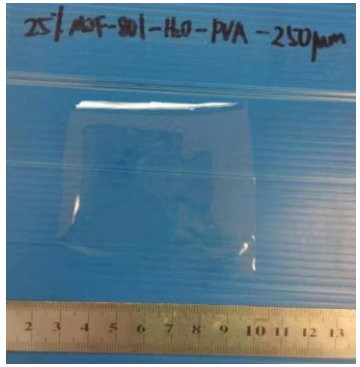
- What kind of elaboration techniques :
  spin coating, casting, extrusion, granulation

MOF thin layers



MOF/polymer mixed-matrix membranes





- Characterization technique are mastered by the lab :
  X-ray diffraction, IR, UV, fluorimetry
  gas/vapor sorption
  electrochemical methods
  SEM, TEM

- Special instruments or methods :
  PDF
  PXRD under controlled atmosphere

Looking for collaborations ??
Physicists and users!