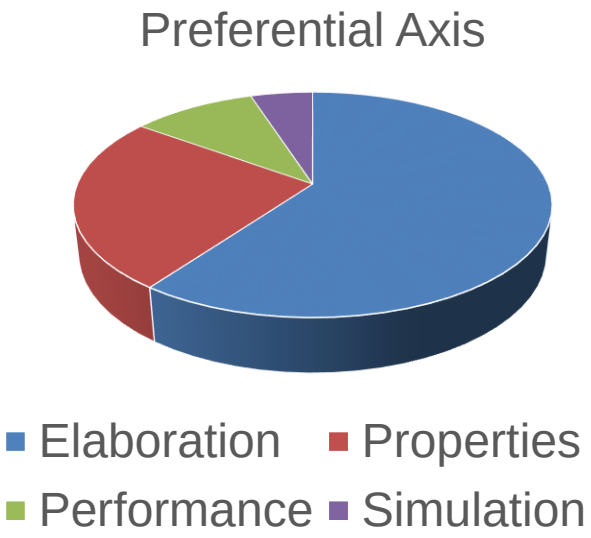
Institut de Chimie de la Matière Condensée de Bordeaux

Aline Rougier

- Number of people : ≈ 250 (117 permanent staff)
- Number of people involved in the GDR : 16
- Area of expertise of the labs : – Energy – Functional materials – Nanomaterials – Environment and sustainable development
- CNRS and/or univ section : 15-14 (10) // CNU 33, (32, 28, & 85)
- Main Contribution ? Atelier 1 / Atelier 5



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

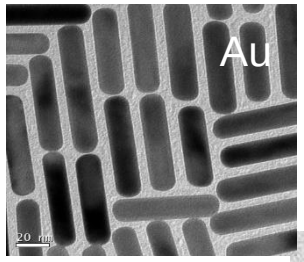
icmcb
institut de chimie de la matière condensée de bordeaux

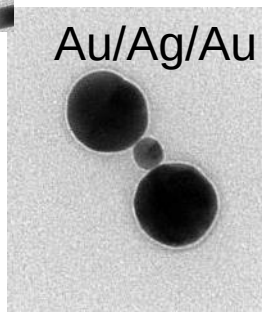
cnrs université de BORDEAUX IPB INSTITUT POLYTECHNIQUE BORDEAUX

http://www.icmcb-bordeaux.cnrs.fr

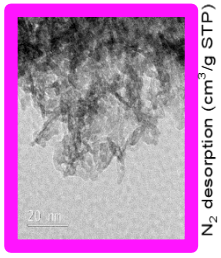
cnrs

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

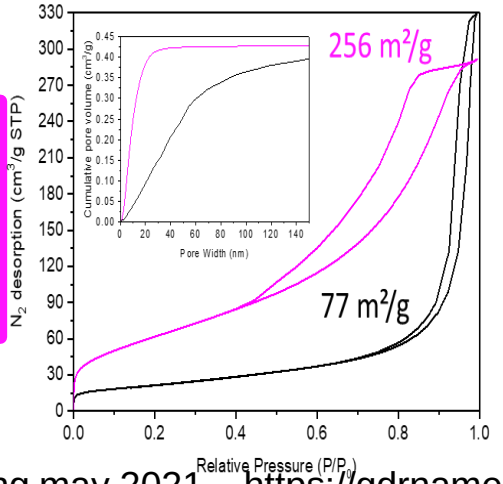




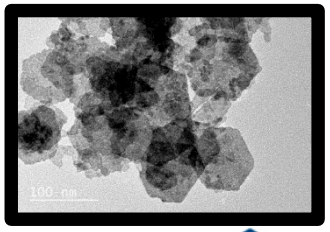
- **Mastering nanoscale synthesis of NPs** (from <10 nm to few hundred nms), surface modification, encapsulation and assembly of nanoparticles, **thin films**
- Which heat carriers ? Phonons/Electrons
- Type of energy conversion : piezoelectric, thermoelectric, photovoltaïc, electrochemical storage…
- What kind of applications are targeted ? harvesting, storage, sensors, molecular electronics, barocaloric refrigerent, carbon fiber, solar cells, food packagings, permanent magnets, X-chromic, batteries, super-capacitors, …..
-



H_xCoO_2-IL

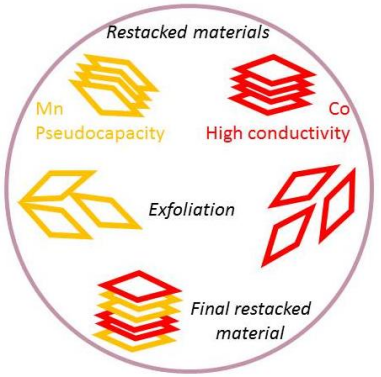


H_xCoO_2



Technical or technological expertise in relation to the GDR issues

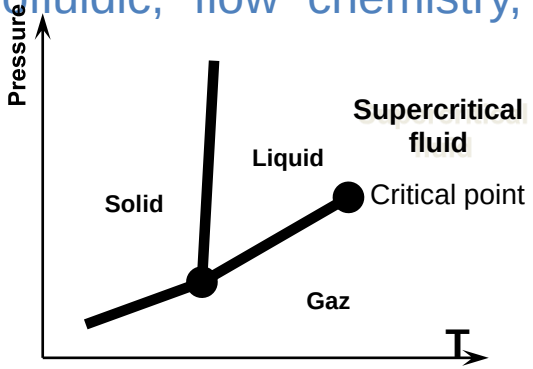
- What kind of materials/dimensions; oxide/ (oxy)hydroxide/ polyanionic
- (e.g. phosphate) geominerals, coordination complexes and polymers, nitrides, metal, sulphides, phosphides….
  (from <10 nm to few hundred nms)

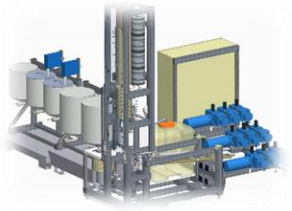


- Both Bottom-up and top-down approaches

What kind of elaboration techniques : combining solid state chemistry, sol-gel synthesis, coordination chemistry, molecular grafting, sub- and supercritical solvo-/hydrothermal synthesis, ionothermal synthesis, exfoliation-restacking, Micellare synthesis, spray drying, microfluidic, flow chemistry, sublimation, evaporation, PVD….

Wet chemistry





Technical or technological expertise in relation to the GDR issues

*

- What kind of characterization technique are mastered by the lab/group/team
  Structural characterization from local scale to long range order (XRD) - electrochemical properties –Combination ex-situ/in-situ/operando…
  Spectroscopy (NMR, EPR, Mossbauer..)

- Special instruments or methods : Magnetic measurements, EGaIn, Raman, cool-SPS,
  Recycling of materials, Sustainable and Continuous Process,
  Circular Chemistry

  Looking for collaborations ?? Yes,

  * Proposing tailor-made nanoparticles

  * Help for understanding the role of ionic liquids and collaboration to test our materials for application beyond the electrochemical energy storage (e.g. catalysis)