

International research group

Multi-scale materials under the nanoscope (CNRS)



The International Research Group (GDRI) “Multi-scale materials under the nanoscope” is an initiative organized under the auspices of the CNRS to which UPPA participates through the federation [IPRA](#).

The aim is to formulate a conceptual tool called the “nanoscope” that combines most advanced statistical Physics numerical simulations (such as accelerated Molecular Dynamics) and experiments (such as X-Ray tomography and microscopy...). The “nanoscope” tools attempt to elucidate the 3D texture of multi-scale (and most of the time porous) materials, from the scale of atoms up to microns, focusing in particular on mechanical and transport properties. The coupling between numerical simulation and experiments is a major theme, and it is one of the most challenging issues in Material Science, Mechanics and condensed matter Physics.

The scientific project is both fundamental and applied: as physicists or material scientists are driven by engineering challenges and engineers move into the fundamentals of physics, a shift of paradigm is taking place that enables progress at the interface of physics and engineering for a large variety of critical problems that are at the core of many societal, environmental and economic concerns in connection with durability and sustainability issues in construction, transportation, energy and waste management.