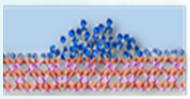
RESEARCH TOPICS:

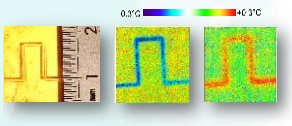
Current research topics aim at identifying and analyzing long range correlated (collective) effects in fluids

Structural studies: Self-organized systems (thermotropic, lyotropic, ionic), polymer melts (usual, mesomorphic, semiconductor), simple liquids, ionic, paramagnetic liquids (Van der Waals, hydrogen bonded) and physiological fluids. Scaling laws.

Extreme conditions: hydrostatic pressure, confinement (nanotubes), flow near phase transitions, chain conformation under flow, liquid-surface interactions, etc studied using **Large Research Facilities**: elastic & inelastic scattering, diffraction & neutron imaging.



Dynamics: Low frequency mechanical behavior: a no man's land revealing mesoscopic collective liquid properties. Dynamic (viscoelastic and flow), optical (birefringence), magnetic (liquid crystals, ionic liquids, paramagnetic liquids) and **microthermal** study of fluids as well as **phononic approach** of the liquid-solid interactions.



Thermal emissivity: New liquid properties: Confined fluids emit a thermal signal in response to mechanical stress (without thermal source).