

## 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). 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 which reveals new mesoscopic liquid properties: shear elasticity. Dynamic (viscoelastic and flow), optical (birefringence), magnetic (liquid crystals, ionic liquids, paramagnetic liquids) and **microthermal** study of fluids as well as **phononic coupling** liquid-solid interactions.

**Thermal emissivity:** Identifying the thermal response of fluids to mechanical stress.