

Microfluidic technologies combined with X-ray scattering techniques for studying dynamical processes

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We have developed different original tools based on microfluidic technologies for acquisition of thermodynamic and kinetic data concerning out-of-equilibrium processes. In this presentation, we will briefly review some of these microfluidic devices namely:

- microfluidic chips for rapid screening of solubility diagrams and investigating nucleation kinetics
- microevaporators for kinetic explorations of phase diagrams
- simple *millifluidic* systems for investigating sol-gel kinetics

We will also show original experiments combining Small Angle X-Ray Scattering (SAXS) and microfluidic flows. For these investigations, specific microfluidic devices have been developed based on ablation of polyimide films or the use of simple polyimide tubings. Experiments performed at ESRF (LTP SC-2267) on different systems (complex fluids in micro-flows, colloidal particles in droplet-based devices...) will be also presented.