

Double Crystal Based Medium-resolution Small-Angle Neutron Scattering (MSANS) facility

Characteristics of MSANS facility

• Monochromatic/ Analyzer crystal : Si (111)
 • Neutron Wavelength (λ): 0.312 nm.
 • $\Delta\lambda/\lambda$: 1%
 • Accessible q range: 0.003 – 0.173 nm⁻¹.
 • Resolvable real space: 1000 – 20 nm.
 • Smallest step size of rotation of analyzer : 0.0008°
 • Calibrated with USANS (S18) of ILL, France
 • Sample temperature: RT to 100° C

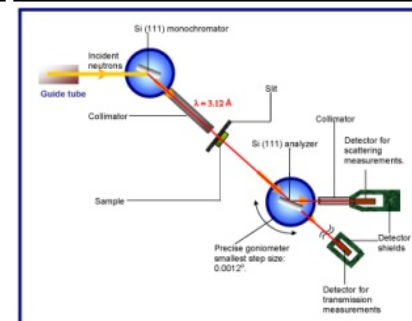
MSANS at GT Lab Dhruva



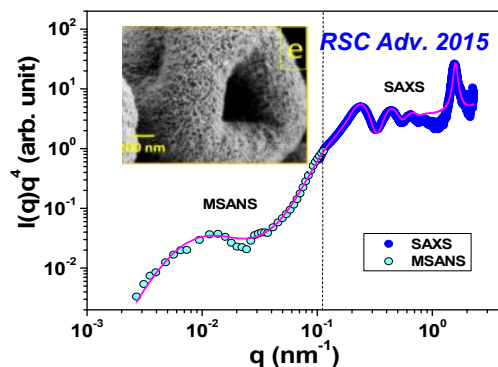
Micro-Rotational stage



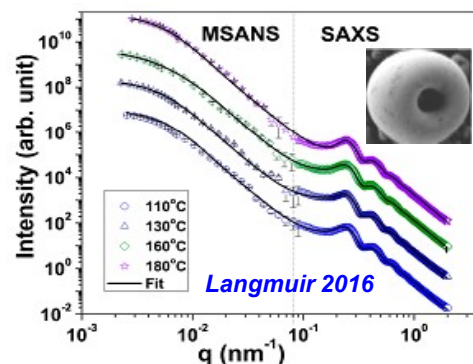
Schematic of MSANS



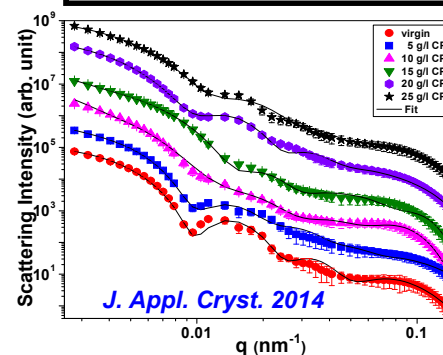
Composite Spray dried granules



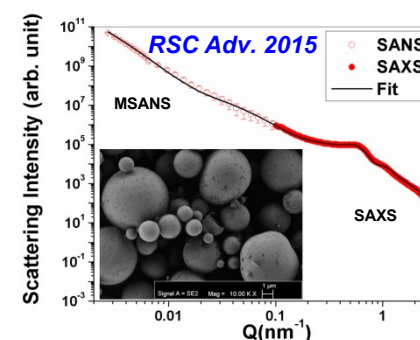
Data from Spray dried granules



Waste loaded cement



Core-shell micro-granules



PYTHON based GUI Software



References for the facility

1. "Performance and calibration of the newly installed medium resolution double crystal based small-angle neutron scattering instrument at Trombay": S. Mazumder, D. Sen, T. Saravanan and P.R. Vijayaraghavan *J. Neutron Research*, **9**, 39 (2001).
2. "A medium resolution double crystal based small-angle neutron scattering instrument at Trombay": S. Mazumder, D. Sen, T. Saravanan and P.R. Vijayaraghavan *Current Science*, **81**, 257 (2001).
3. "A double crystal based SANS instrument at DHRUVA": S. Mazumder, D. Sen, T. Saravanan and P.R. Vijayaraghavan *Neutron News*, **13**, 26-30 (2002).
4. "Mesoscopic structural investigation using neutrons at Trombay": S. Mazumder, V.K. Aswal, D. Sen, J. Bahadur, S. Kumar and Avik Das *Neutron News*, **25**, 26-30 (2014)