



USER MEETING 2016

24-25 NOVEMBER

National Centre for Synchrotron Science



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Contribution ID: 233

Type: Oral

Structure of Concentrated Colloidal Suspensions using SAXS and SANS

Thursday, 24 November 2016 15:00 (15 minutes)

Colloidal suspensions of hard spheres are valuable experimental model systems for exploring phase behaviour and dynamics in condensed matter. Such colloids form colloidal crystals at concentrations above the freezing volume fraction of 0.494, allowing the investigation of the kinetics and dynamics of crystallization. As colloidal particles are much bigger than atoms, processes are correspondingly slower, and metastable states can be studied in real-time using the well-established technique of dynamic light scattering (DLS), or the more recently developed technique of x-ray photon correlation spectroscopy (XPCS). In this work we explore how the use of Synchrotron Small Angle X-ray (SAXS) and Neutron (SANS) scattering can be applied to the study of structure in colloidal suspensions near the freezing volume fraction. In particular we explore their advantages and disadvantages relative to traditional light scattering techniques.

Keywords or phrases (comma separated)

Crystallisation, Hard Spheres, Colloids, SANS, SAXS, XPCS

Are you a student?

No

Do you wish to take part in the Student Poster Slam?

No

Are you an ECR? (<5 yrs since PhD/Masters)

No

What is your gender?

Male

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Session Classification: Concurrent Session 2: Advanced Materials II

Track Classification: Advanced Materials