EUROPEAN SYNCHROTRON RADIATION FACILITY

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Experiment Report Form

ESRF	**Experiment title:** Structure and Dynamics of Colloidal Hard Sphere Suspensions	**Experiment number**: SC-2335
Beamline: ID10A	**Date of experiment**: from: 07/11/2007 to: 13/11/2007	**Date of report**: 25/02/2011
Shifts: 18	**Local contact(s)**: Federico Zontone	*Received at ESRF:*

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Report:
This work has been published in the Journale of Chemical Physics. Pleas find below the reference of the paper and the abstract:

Reference:

V.A. Martinez, J.H.J. Thijssen, F. Zontone, W. van Megen, and G. Bryant., "Dynamics of hard sphere suspensions using dynamic light scattering and x-ray photon correlation spectroscopy: Dynamics and scaling of the intermediate scattering function.", J. Chem. Phys., 134, 054505, (2011).

Abstract:

Intermediate scattering functions are measured for colloidal hard sphere systems using both dy- namic light scattering and x-ray photon correlation spectroscopy. We compare the techniques, and discuss the advantages and disadvantages of each. Both techniques agree in the overlapping range of scattering vectors. We investigate the scaling behavior found by

Segré and Pusey [Phys. Rev. Lett. 77, 771 (1996)] but challenged by Lurio et al. [Phys. Rev. Lett. 84, 785 (2000)]. We observe a scaling behavior over several decades in time but not in the long-time regime. Moreover, we do not observe long-time diffusive regimes at scattering vectors away from the peak of the structure factor and so question the existence of long-time diffusion coefficients at these scattering vectors.