

Abstract Submitted
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Elasticity of the FCC Hard Sphere Crystal from two point microrheology MATTHEW SULLIVAN, Princeton University / Schlumberger-Doll Research, KUN ZHAO, ANDREW HOLLINGSWORTH, P.M. CHAIKIN, Princeton University / New York University, WILLIAM B. RUSSEL, Princeton University — We present a measurement of the full elastic tensor of a hard sphere colloidal crystal. Our system consists of concentrated suspensions of monodisperse PMMA-PHSA particles suspended in a density-matching solvent mixture of decalin and tetrachloroethylene. Single crystals are heterogeneously nucleated from a surface template to produce large face centered cubic (FCC) single crystals. The two-point displacement correlations are measured using confocal microscopy and video analysis. These show a $1/r$ decay with distance and an angular dependence that can be used to determine the three elastic constants of the FCC crystal.

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