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Nematic and Smectic phases of hard rods in 2 dimensions PAUL CHAIKIN, KUN ZHAO, Princeton University, CHRISTOPHER HARRISON, Schlumberger-Doll Research Center, MATTHEW SULLIVAN, Princeton University, THOMAS MASON, University of California- Los Angeles , WILLIAM RUSSEL, Princeton University — Although lots of work has been done on anisotropic colloidal systems in 3D, little work has been reported on 2D, especially experimental. In this talk, we present a study of high-density phases of an anisotropic colloidal suspension. This suspension consists of PMMA 4.5x0.7 micron circular disks that are standing up in an AC electric field. The disks have been prepared using photolithography. Their gravitational height is $\sim$0.1 micron so they form a single monolayer, especially when standing on edge. Concentrating the disks by slightly tilting the sample cell, we find several phases. Dilute regions are isotropic while more concentrated regions are nematic or quasi-smectic. The quasi-smectic consists of a monolayer of aligned columns of disks. We present measurements of the order parameter and the correlation functions and compare to simulations.

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