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**Comparing measurements of iron oxide nano-particle monolayer structure using GISAXS, Langmuir-Schraefer Method and SEM** JACOB STANLEY, LEANDRA BOUCHERON, YELING DAI, University of California, San Diego, BINHUA LIN, MATI MERON, University of Chicago, OLEG SHPYRKO, University of California, San Diego — Iron oxide nanoparticles coated with an oleic acid ligand readily form self-assembled monolayers when drop cast onto water's surface. For low particle densities, upon drop casting, particles form into hexagonally close-packed islands, which then merge together when laterally compressed to higher densities. Using Grazing Incidence Small Angle X-Ray Scattering (GISAXS) off the liquid surface we were able to measure the first through fifth order diffraction peaks. By analyzing the peaks' position and shape we investigated the in-plane structure of these monolayers. Alternatively, using the Langmuir-Schraefer method this film can be transferred to a solid substrate for imaging using SEM. Subsequently, applying a Fourier Transform analysis to the SEM images we demonstrate a comparable measurement to that made using GISAXS - thereby obtaining similar in-plane structural information. Correcting for instrumental factors, we can account for some of the differing features between the data taken by the two techniques. By way of this technique comparison we also demonstrate that the Langmuir-Schraefer method is capable of preserving the nano-particle film structure during transfer from liquid surface to solid substrate.

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