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Thin films with self-assembled monolayers embedded on their surfaces MD. SHAHADAT HOSSAIN, BHAVIN DALAL, SATHISHKUMAR GURUPATHAM, IAN S. FISCHER, New Jersey Institute of Technology, NADINE AUBRY, Carnegie Mellon University, PUSHPENDRA SINGH, New Jersey Institute of Technology — We have recently shown that the capillarity-based process for self-assembling particle monolayers on fluid-liquid interfaces can be improved by applying an electric field in the direction normal to the interface. The electric field gives rise to repulsive dipole-dipole forces amongst the particles causing them to move apart, and thus allowing them to move freely without blocking one another. The latter is important in the formation of virtually defect-free monolayers with long-range order. In this talk, we present a technique for freezing these expanded monolayers onto the surface of a flexible thin film. The technique involves assembling the monolayer on the interface between a UV-curable resin and a fluid which can be air or another liquid, and then curing the resin by applying UV light. The monolayer becomes embedded on the surface of the solidified resin film.

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