

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Electric control interfacial jamming and dynamics MENGMENG CUI, CAROLINE MIESCH, IREM KOSIF, HUARONG NIE, TODD EMRICK, THOMAS RUSSELL, University of Massachusetts Amherst — Particles, partially wetted by two immiscible fluids, can adsorb at the interface and interfacially jammed when the interfacial area is decreased. Here, electric fields were used to change the interfacial area by distorting or merging fluid droplets suspended in an immiscible liquid. To get the desired interfacial jamming, ligand exchange was used to enhance the binding energy of the particles at the interface. Jamming nanoparticles at the interface arrests the dynamics so as to kinetically trap morphologies in highly non-equilibrium states. Morphologies hitherto inaccessible using conventional routes were obtained by the interfacial jamming. The hyper-diffusive dynamics of interfacial jamming and its dependence on nanoparticle concentration, size and shape were observed by X-ray photo correlation spectroscopy (XPCS). Kinetics were studied by tensiometer and optical microscopy.

Mengmeng Cui
University of Massachusetts Amherst

Date submitted: 04 Jan 2013

Electronic form version 1.4