

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Facile assembly of oil-water drop structures on tunable surface energy FOSM-DMA-FOSM (FDF) physical network hydrogel films<sup>1</sup>** NAMRATA SALUNKE, Univ of Akron, R. A WEISS, Retired, ALAMGIR KARIM, Univ of Akron — We report the confinement effects of an amphiphilic block copolymer - FDF (F: 2-(N-ethylperfluorooctane sulfonamido) ethyl methyl acrylate D: dimethyl acrylamide). A thickness dependent (40-400 nm) surface wettability gradient ranging from hydrophobic (120) to hydrophilic (9) is observed as a consequence of variation in scale of phase separation at the film-air interface. The research further reports the role played by these physico-chemically structured substrates on the unique liquidus shape of compounded droplets of oil-water mixtures. Thus examining the fundamental correlations of substrate's heterogeneous "patchy" properties, where two phases of contrasting surface energies are present with accompanying domain topography, to oil-water compound droplet wetting and shape molding feature aspects. We find that the unique geometries observed can be related to an effect of average substrate surface energy as observed in the case of homogeneous topographically patterned or unpatterned substrates.

<sup>1</sup>NSF

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Date submitted: 10 Nov 2016

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