

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Diffusion-controlled Aggregation of Bucky Balls on Freely Suspended Smectic Liquid Crystal Films** ZOOM NGUYEN, TATYANA MALININA, CHEOL PARK, JOSEPH MACLENNAN, MATTHEW GLASER, NOEL CLARK, University of Colorado-Boulder, LIQUID CRYSTAL MATERIALS RESEARCH CENTER TEAM — Bucky balls (BB) have the tendency to clump together, making it hard to have them suspended in a solvent. We find that in highly viscous bulk 8CB, a smectic liquid crystal at room temperature, the aggregation happens more slowly. As the result, a freely suspended film made from the 8CB-BB mixture contains mostly small BB clumps. The diffusion coefficients of the clumps in thin films are much bigger than in the bulk, however, accelerating the aggregation process. We measure, via video microscopy, the decrease of the clumps' diffusion coefficients over time, indicating that their sizes increase towards a terminal size determined from the rate of diffusion. The terminal-sized clumps still diffuse around and stick to each other when they meet, forming the classic fractal pattern.

Zoom Nguyen  
University of Colorado-Boulder

Date submitted: 22 Nov 2010

Electronic form version 1.4