

Abstract Submitted  
for the DFD11 Meeting of  
The American Physical Society

**Pattern Formation in Drying Drops of Polystyrene/Water nanofluids** DAVID BRUTIN, BENJAMIN SOBAC, Aix-Marseille University - IUSTI — We study the pattern formation and the evaporation dynamics of drying drops of polystyrene/water based nanofluids with concentrations ranging from 0.01% to 6%. Cracks formation is evidenced to depend on the nanoparticles concentration. The dynamics of evaporation is recorded using an electronic balance with an accuracy of  $10\mu\text{g}$ . A top view recording enables to analyze the pattern formation in relation with the mass evolution. We determine several key parameters such as the time of evaporation, the wetting diameter, the final solid deposition diameter, the number and the spacing of the cracks. We evidence a ring formation above a critical concentration. We evidenced by change of the surrounding humidity in the range of 10 to 90% that this pattern remains constant. The pattern formation is influenced by the liquid phase evaporation dynamics but only depends on the concentration in nanoparticles. These results are of great interest regarding the formation of droplets in several areas such as inkjet printing, pharmacology...

David Brutin  
Aix-Marseille University - IUSTI

Date submitted: 05 Aug 2011

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