

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Spin-coating of rapidly dried colloidal suspensions: model and experiments¹ MAXIMILIANO GIULIANI, University of Guelph, WENCESLAO GONZÁLEZ-VIÑAS, University of Navarra, ANAND YETHIRAJ, Memorial University of Newfoundland — The study of the formation of colloidal crystals has been a very active field in recent years. The spin-coating technique has proven to be a highly reproducible process to form large area colloidal crystals. Here, we present recent results on spin-coating of rapidly dried colloidal suspension. We show that the dynamics observed can be represented by an extension of classical Emslie model to highly volatile fluids. We obtained this extension while maintaining the explicit solution for the temporal evolution of the fluid thickness. We observed that the dynamics can be separated in two regimes: one dominated by non-evaporative effects and a second dominated by evaporative effects. The transition between these two dynamical regimes corresponds well with the transition between two symmetries observed during the fluid phase (six and four-fold). Similarly, the quality of the deposited structure is also well correlated to the relative strength of the capillary forces with respect to the viscous ones.

¹Support from NSERC, and MEC (FIS2008-01126).

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Date submitted: 22 Dec 2010

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