On the Dynamics of Spin-Coating of Rapidly Dried Colloidal Suspensions

MAXIMILIANO GIULIANI, WENCESLAO GONZÁLEZ-VIÑAS, Universidad de Navarra, KRISTIN PODUSKA, ANAND YETHIRAJ, Memorial University of Newfoundland — The dynamics during the spin-coating of rapidly dried colloidal suspensions was studied. High-speed photography of the temporal evolution of long-range orientational order in both the fluid and dried phases shows three distinct symmetry transitions. Radial non-uniformity in the thickness of the spun suspension was measured from interference fringes, and from this the thinning rates as a function of radial position and time were calculated. A transition between two regimes is observed in the drying front speed. This transition is correlated with changes in the long-range orientational order (dried structure) as well as in the thickness profiles (in the fluid and dried structures).

1Support from NSERC, Departamento de Educación (Gobierno de Navarra) and from MEC (FIS2008-01126)
2Scholarship Asociación de Amigos