

Abstract Submitted  
for the MAR12 Meeting of  
The American Physical Society

**Spin coating of superparamagnetic colloids with applied magnetic fields**<sup>1</sup> WENCESLAO GONZÁLEZ-VIÑAS, MOORTHI PICHUMANI, University of Navarra — We report experimental results on the behavior of dilute superparamagnetic colloids under shear stresses (using a commercial spin-coater and varying its rate of rotation) with applied magnetic fields. For the case of zero field, we compare the results obtained for different kind of particles (non-magnetic [1] vs PS based [2] vs silica based [3]) and solvents by analyzing the dried deposits obtained from the spin coating. All the data collapse in a single curve, when the appropriate scaling for the film thickness is performed. This agreement allows us to define a reference to measure the relative change in viscosity, when a magnetic field is applied during the spin coating. Thus, we show the magnetorheological properties of colloidal dispersions. These results shed light into the aggregation and clustering dynamics for colloids under external fields with shear and provide a new method to study the rheological properties of colloids.

[1] M. Giuliani et al. “Dynamics of crystal structure formation in spin-coated colloidal films” *J. Phys. Chem. Lett.* 1(9), 1481 (2010)

[2] M. Pichumani et al. “Spin-coating of dilute magnetic colloids in a magnetic field” *Magnetohydrodynamics*, 47(2), 191 (2011)

[3] M. Pichumani et al. In preparation

<sup>1</sup>This work is partly supported by the Spanish Government Contract No. FIS2008-01126. M.P. acknowledges the financial support from the “Asociación de Amigos de la Universidad de Navarra” Wenceslao González-Viñas  
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Date submitted: 09 Nov 2011

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