Université Libre de Bruxelles
Faculté des Sciences
Séminaire du **Laboratoire de Dynamique des Polymères et de la Matière Molle**

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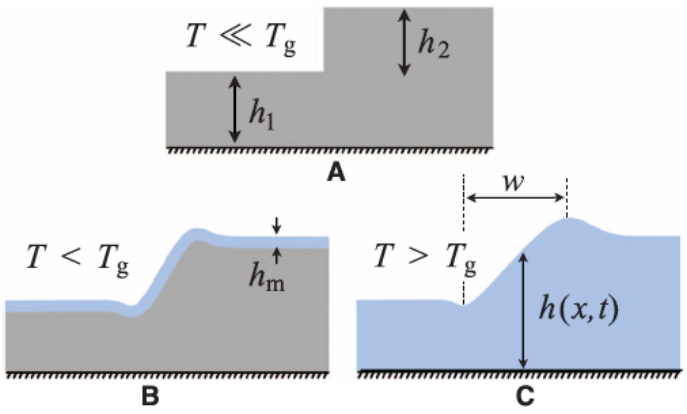
Capillary-driven flow in thin polymer films

The physics of soft materials is distinct from hard matter as the weaker intermolecular bonds can result in a large response to external stresses. A surprising aspect of these materials is that at interfaces and on small lengthscales, like thin films or coatings, these materials can have properties that differ vastly from those of bulk systems. The difference can be the result of molecules being confined or because the interface plays a greater role the smaller the size of the system studied. In this talk I will summarize our recent work on using "stepped films" to uncover some of the physics relevant to polymer rheology on length scales comparable to the size of polymer molecules. The work presented will focus on the efforts of a larger collaboration (Élie Raphaël's theory group [1], James Forrest's experimental group [2], and the experimental group at McMaster [3]). The simple geometry of a polymer film on a substrate with a step at the free surface is unfavourable due to the excess interface induced by the step. Laplace pressure will drive flow within the film which can be studied with optical and atomic force microscopies. These studies provide an opportunity to study how systems transition from the bulk to confined. Starting with some of the results of levelling experiments on simple stepped films as well as the levelling of polymer droplets on thin films, I will finish with a discussion on our more recent efforts to elucidate confinement effects.



[1] T. Salez, M. Benzaquen, E. Raphaël, Gulliver Laboratory, CNRS-ESPCI, Paris, France
[2] Y. Chai & J. A. Forrest, University of Waterloo, Waterloo, Canada.
[3] J. D. McGraw, S. L. Cormier, O. Bäumchen, P. D. Fowler, M. Backholm

le mercredi 14 mai 2014 à 14h30
Campus Plaine, Bat. NO, 9 ème étage
Salle des Profs (N.O9.06)

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