

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

First order phase transition in the height of a meniscus in a tapered capillary MICHAEL PETTERSEN, Washington and Jefferson College, ETIENNE ROLLEY, Laboratoire de Physique Statistique, Ecole Normale Supérieure — When a fluid rises in a capillary of non-uniform cross section, additional terms arise in the balance of capillary forces, compared to the case of a capillary of uniform cross section, due to the changing area of the meniscus. Recently, it has been pointed out that this can lead to a first order phase transition, resulting in a discontinuous jump in the equilibrium position of the meniscus. We present the results of an experiment using isopropanol and silicone oil in cones with apex upwards of different opening angles. The cone is slowly lowered into the liquid using a translation stage. We have measured the capillary rise in this geometry, and observed the predicted phase transition.

Michael Pettersen
Washington and Jefferson College

Date submitted: 27 Nov 2007

Electronic form version 1.4