

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Autophobic dewetting of symmetric diblock copolymer films on ordered lamellae** MARK ILTON, Department of Physics and Astronomy, McMaster University, Hamilton, ON, Canada, PAWEL STASIAK, MARK W. MATSEN, School of Mathematical and Physical Sciences, University of Reading, Whiteknights, Reading, UK, KARI DALNOKI-VERESS, Department of Physics and Astronomy, McMaster University, Hamilton, ON, Canada — Autophobic dewetting is the process in which a material retracts from a substrate of the same material. This has been observed for homopolymer melts on brush layers as well as in diblock copolymer systems. In the case of diblock copolymer films, autophobic dewetting can arise above the bulk order-disorder transition temperature due to a gradient of segregation strength induced by the film interfaces. We have measured the contact angle of autophobically dewetting droplets of symmetric polystyrene-*b*-poly(2-vinyl pyridine) as a function of temperature and the number of ordered lamellae that form the substrate layer. The contact angle decreases monotonically with both temperature and the number ordered lamellae, which can be understood as a dependence on the degree of order at the substrate interface. We compare our experimental results to a self-consistent field theory calculation which includes the decaying order away from the interfaces.

Mark Ilton  
Department of Physics and Astronomy,  
McMaster University, Hamilton, ON, Canada

Date submitted: 27 Nov 2012

Electronic form version 1.4