Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Temperature Step Dewetting Method for Determination of Thin Film T_g[1] ASTRID TORRES ARELLANO, GREGORY MCKENNA, Texas Tech University — A temperature step method for dewetting of thin films on liquid substrates first introduced by Wang and McKenna [J. Polym. Sci., Part B: Polym. Phys., **51**, (2013)] has been implemented for determination of the glass transition temperature T_g of thin polymer films. The dewetting method is an extension of work originally presented by Bodiguel and Fretigny [Phys. Rev. Lett., **97**, (2006)]. In the original method determination of thickness effects on T_g required separate tests for each film thickness. Because of the capability of using one single thin polymer film the temperature step approach reduces the experimental time for the overall determination of the T_g as a function of h. The current goal for the method is to do up to 8 temperature jumps on a single polymer film, thereby, obtaining the same information the 8 individual tests would have provided. Here we have used the novel method to investigate the dewetting of 3-arm polystyrene thin films floated on glycerol and have obtained T_g vs h behavior. The T_g reductions are compared to the previously presented by Wang and McKenna on linear polystyrene films and comparisons are made on the role of the polymer architectures.

[1]National Science Foundation grant DMR-1207070

Astrid Torres Arellano
Texas Tech University

Date submitted: 14 Nov 2013 Electronic form version 1.4