Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

The glass transition of supported and unsupported polymer nanorods using Flash differential scanning calorimetry MADHUSUDHAN REDDY PALLAKA, SINDEE SIMON, Texas Tech University — Nanoconfinement is known to influence the glass transition temperature (T_g). In the case of polymer ultrathin films supported on neutral surfaces, T_g generally decreases with decreasing film thickness, and the magnitude of the depression increases as cooling rates decreases. Compared to ultrathin films, glass-forming polymeric materials in nanopores have been less well studied. Here, we aim to examine the glass transition behavior of supported and unsupported PMMA and polystyrene (PS) nanorods over five decades of cooling rates, from 0.1 – 1000 K/s, using Flash differential scanning calorimetry. The supported PS nanorods are prepared by the vacuum infiltration of 2000 kg/mol PS into AAO templates having a thickness of 5 μm and a pore diameter of 55 nm. Preliminary results indicate that T_g increases for native AAO pores.

Madhusudhan Reddy Pallaka
Texas Tech University

Date submitted: 11 Nov 2016 Electronic form version 1.4