

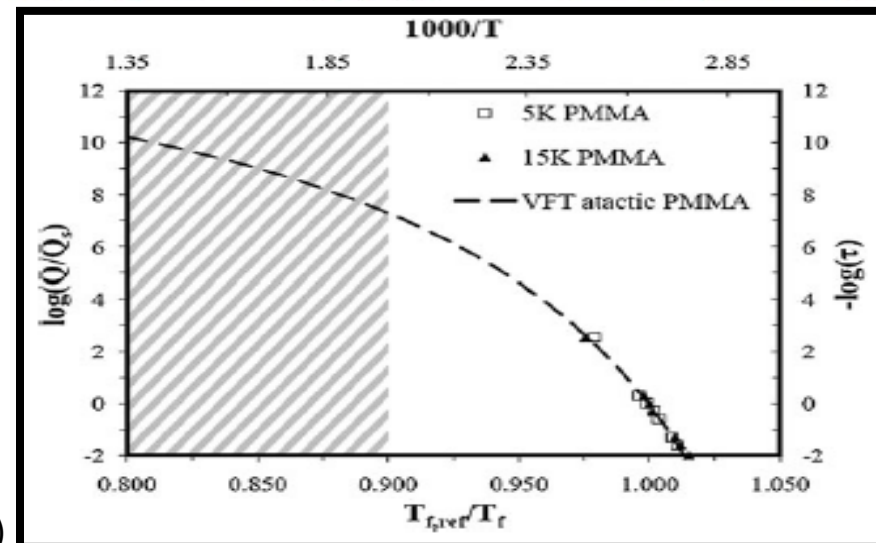
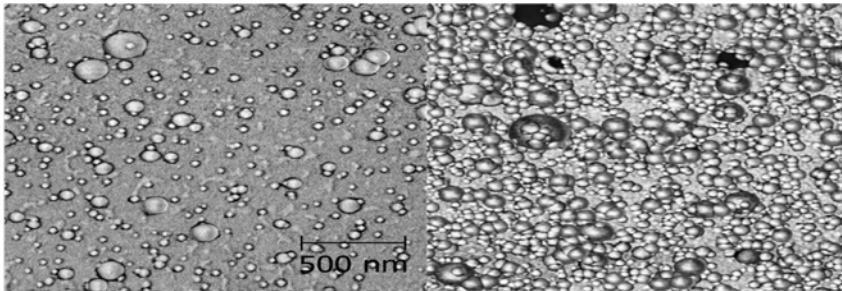
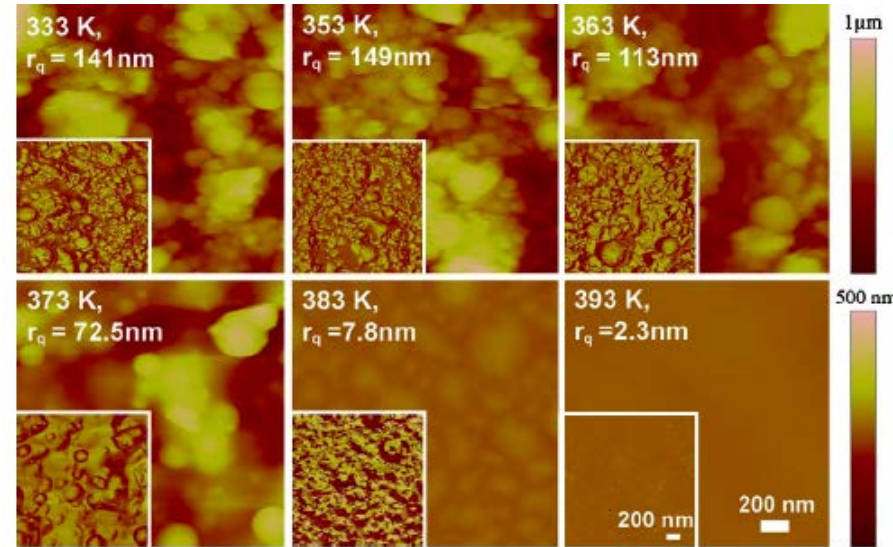
Nanostructured Stable Thin Polymer Films (DMR-0819860)

SEED: R. D. Priestley and C.B. Arnold

Princeton Center for Complex Materials (PCCM)



PCCM researchers are able to form thermally and kinetically stable polymer thin films with an enhanced glass transition temperature (T_g) and high temperature kinetic stability against the glass-to-liquid transition via laser deposition. The films are formed by the buildup of nearly spherical nanoglobules (right). The graph (bottom right) demonstrates that high cooling rates (Q) are achieved during the deposition process, resulting in elevated T_g s. The image (right) illustrates the stability of the nanostructured morphology, against coalescence, at temperatures well above the normal T_g of 350 K. In addition, the nanostructured morphology is formed during the initial stages of deposition (bottom), as globules are observed after 1 and 5 min of deposition.



Guo *et al.*, *Nature Materials*, DOI:10.1038/nmat3234 (2012)
Shepard *et al.*, *App Phy A*, DOI:10.1007/s00339-012-7151-8 (2013)