Factors that Affect Physical Aging of Polymer Films

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We have used ellipsometry to investigate what factors affect physical aging of glassy polymer films.

Chemical Structure – No inherent difference is found between polymers with stiff backbones or flexible C–C backbones with bulky side groups despite differences in free volume distribution

Support Geometry – Strong differences in aging rate are found for films quench in freestanding compared to supported geometries due to differences in thermal stresses

Films quenched freestanding exhibit faster aging rates for thinner films