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Physical Aging in Confined Geometries: The Role of Stiff Backbone and Bulky Side Groups CONNIE B. ROTH[1], RODNEY D. PRIESTLEY[2], MANISH K. MUNDRA[3], JOHN M. TORKELSON[4], Northwestern University, Evanston, IL 60208-3120 — Although confinement effects on the glass transition have been well documented, little work has been done to probe the effects of confinement on low temperature structural relaxations. A decade ago the membrane community started reporting accelerated physical aging in free-standing films approximately 500 nm thick, relative to bulk films, in high free volume, stiff backbone polymers such as polysulfone (PSF) and poly(phenylene oxide) (PPO). Recently our group has reported suppressed physical aging in supported ultrathin films of poly(methyl methacrylate) (PMMA), a low free volume polymer. Here we compare the impact of confinement on physical aging in high free volume polymers with bulky side groups such as poly(tert-butyl methacrylate) (PtBMA) and poly(ethyl methacrylate) (PEMA).

[1]Dept. of Chemical and Biological Engineering
[2]Dept. of Chemical and Biological Engineering
[3]Dept. of Materials Science and Engineering
[4]Depts. of Chemical and Biological Engineering and Materials Science and Engineering

Connie B. Roth
Northwestern University, Evanston, IL 60208-3120

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