

Abstract Submitted  
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**Depletion Effect on Self-Organization of atactic Polymer Chain Segments in Microcells**<sup>1</sup> ZHAOQU WANG, Department of Polymer Science and Engineering, Nanjing University, KAIYI LIU, BO CHE, GI XUE — Glass transitions for atactic polystyrene and poly(methyl methacrylate) prepared in nano-cells by microemulsion polymerization in the presence of non-solvents were measured by DSC experiments. An increase in  $T_g$  was observed for these polymers. The first DSC scan for the virgin polymers indicated  $T_g$  at 112 °C and 138 °C for *a*-PS and *a*-PMMA, respectively. While the re-precipitated samples show  $T_g$  at 105 °C and 125 °C, respectively. Solid-state NMR relaxation and wide angle X-ray diffraction experiments indicated that the virgin polymer powders were in compact and partially self-organized states. The re-precipitated *a*-PS and *a*-PMMA did not show any self-organization under the same experimental conditions, although there are no changes in molecular weight or tacticity of the polymer chains. A depletion-interaction phenomenon was understood to provide entropic force for the self-organization of polymer chains inside the walls of the microemulsion cells during polymerization.

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