

## **Melt Rheology of Hyperbranched Polystyrene Synthesized with Multi-site Macromonomer**

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Melt rheological behaviors of hyperbranched polystyrene (PS) copolymerized by dendric macromonomer technique are presented. The time-temperature superposition principle was applicable to the hyperbranched PS. The branched PS showed slightly lower zero shear viscosity in comparison with linear PS regardless of a presence of a number of branches expected from the dendric macromonomer technique. Although the influence of use of multi-methacryloyl macromonomer in the polymerization process was marginal for linear viscoelastic regime, nonlinear shear and uniaxial elongational flows showed distinct differences between linear and branched PS. The strain dependence of the damping function became weak as increase of macromonomer content. The branched PS exhibited the growing elongational viscosity function comparing with linear PS. This prominent effect on the elongational flow behavior can be explained by the molecular architecture of the branched PS.