Effects of Molecular Geometry on the Self-Assembly of Giant Polymer-Dendron Conjugates in Condensed State

Xue-Hui Dong,[a] *Xiaocun Lu,*[a] *Bo Ni,*[a] *Ziran Chen,*[a] *Kan Yue,*[a] *Yiwen Li,*[a] *Lixia Rong,*[b] *Tadanori Koga,*[c] *Benjamin S. Hsiao,*[b] *George R. Newkome,*[a] *An-Chang Shi,*[d] *Wen-Bin Zhang**[a] *and Stephen Z. D. Cheng**

[a]Department of Polymer Science, College of Polymer Science and Polymer Engineering,

The University of Akron, Akron, OH 44325-3909, USA

[b]Department of Chemistry, Stony Brook University, Stony Brook, New York, 11794-3400

[c]Chemical and Molecular Engineering Program, Stony Brook University, Stony Brook, New York, 11794-2275

[d]Department of Physics and Astronomy, McMaster University, Hamilton, Ontario L8S 4M1, Canada

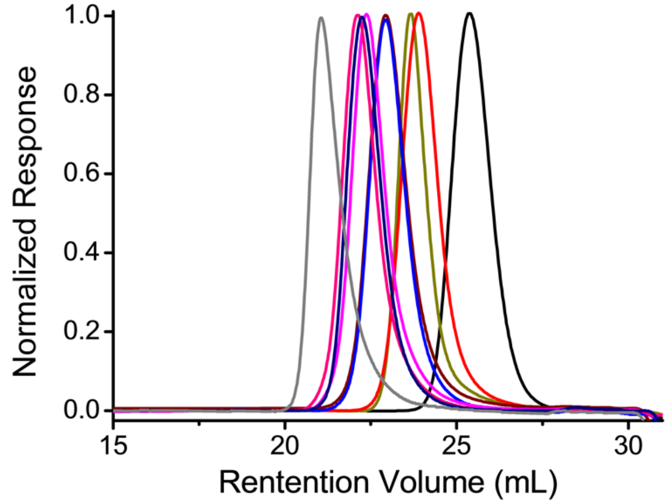

Figure S1. SEC chromatograms of PS_N with different degree of polymerization (see Table 1).

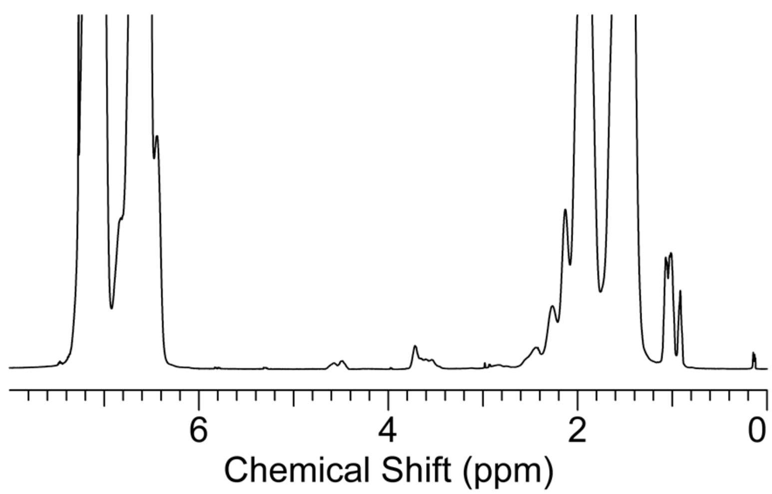

Figure S2. Typical ^{1}H NMR spectrum of PS_N-Br prepared *via* ATRP. The results are based on the samples with $N = 19$.

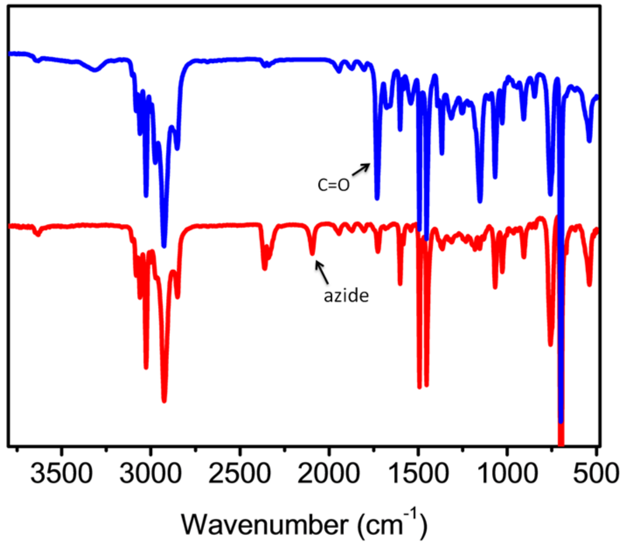

Figure S3. FT-IR spectra of PS_N-N_3 (red) and PS_N-*t*D (blue). The results are based on the samples with $N = 19$.

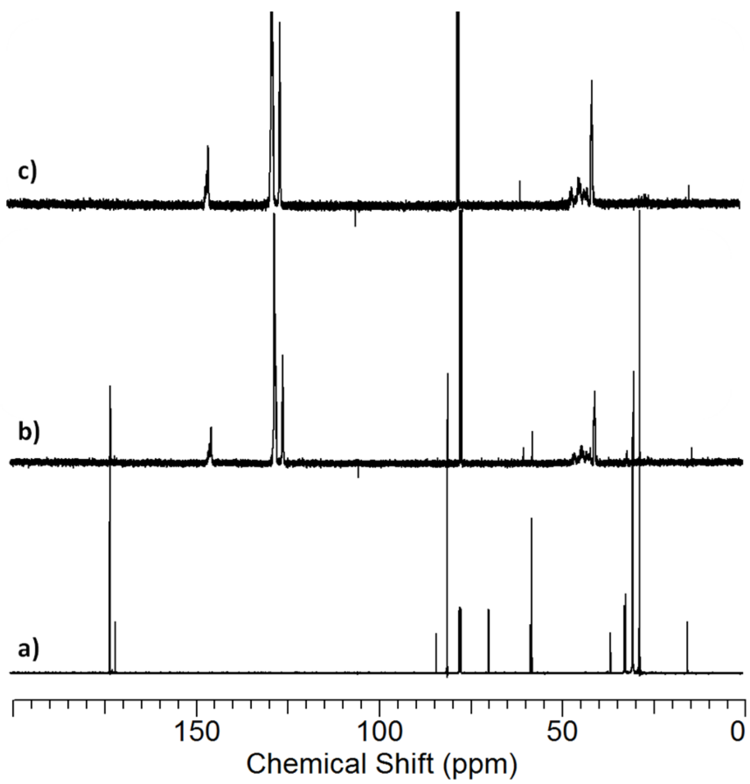

Figure S4. ^{13}C NMR spectra of (a) Alkyne Functionalized, *t*-Butyl-protected Dendron; (b) PS_N- *t*D; and (c) PS_N-D. The results are based on the samples with $N = 19$.

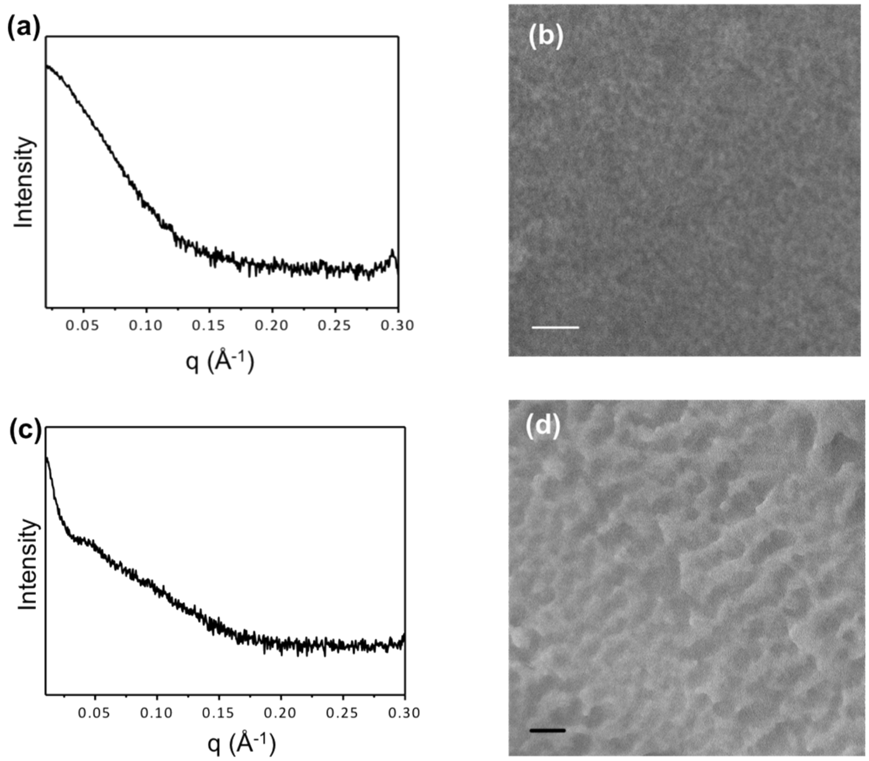

Figure S5. Small angle X-ray scattering pattern (a, c) and TEM bright field image (b, d) of PS_{80}-*t*D and PS_{150}-D, respectively. The scale bar is 50 nm.

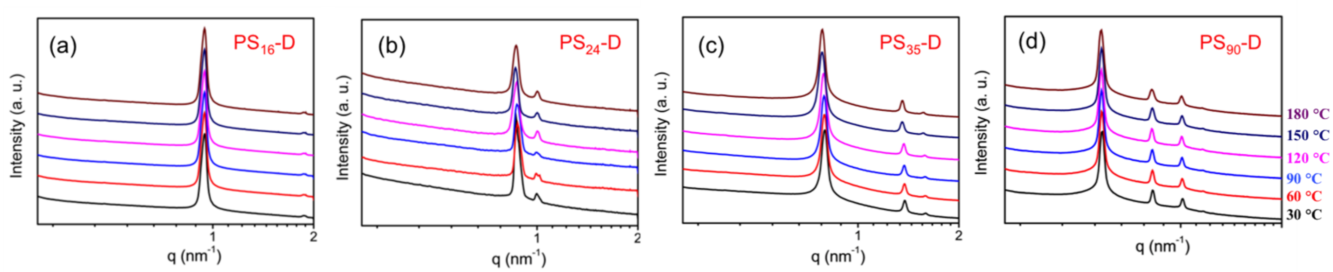

Figure S6. Temperature dependent SAXS patterns for PS_{16}-D, Lam (*a*); PS_{24}-D, DG (*b*); PS_{30}-D, Hex (*c*); and PS_{90}-D, BCC (*d*).

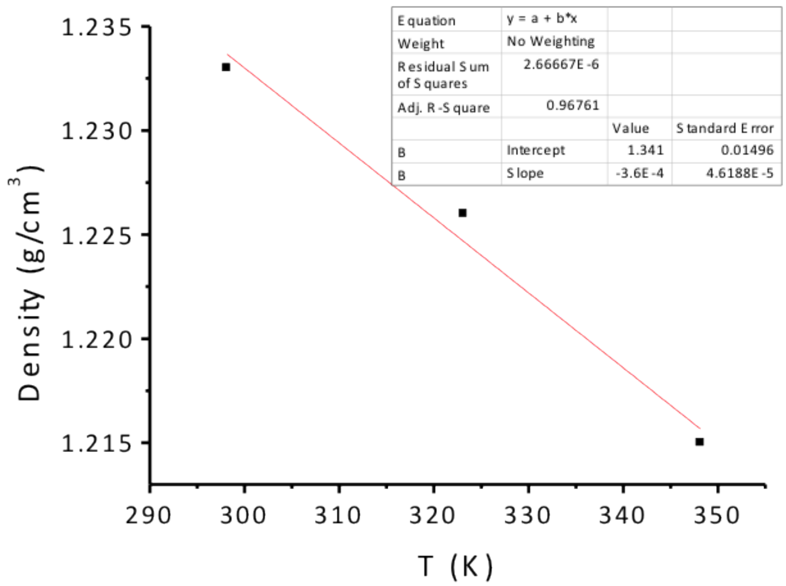

Figure S7. Temperature dependence of density of alkyne-functionalized dendron (Alkyne-D).

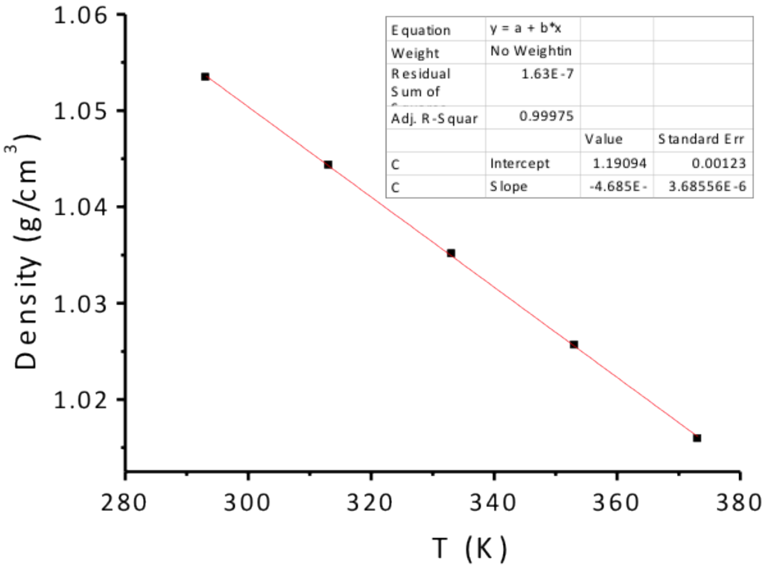

Figure S8. Temperature dependence of density of polystyrene.

Table S1. Temperature dependence of volume fraction f_{PS}.

	PS_{16}-D	PS_{19}-D	PS_{24}-D	PS_{28}-D	PS_{35}-D	PS_{60}-D	PS_{80}-D	PS_{82}-D	PS_{91}-D	PS_{150}-D
20 °C	0.65236	0.69025	0.73786	0.76657	0.80411	0.87558	0.90369	0.90581	0.91433	0.94622
40 °C	0.653	0.69085	0.73841	0.76708	0.80456	0.87588	0.90393	0.90606	0.91455	0.94636
60 °C	0.65367	0.69149	0.73898	0.76761	0.80502	0.87621	0.90419	0.90631	0.91478	0.94651
80 °C	0.65442	0.69219	0.73962	0.7682	0.80554	0.87656	0.90448	0.90659	0.91504	0.94668
100 °C	0.65523	0.69295	0.74031	0.76883	0.8061	0.87695	0.90478	0.90689	0.91532	0.94686
140 °C	0.65703	0.69464	0.74184	0.77024	0.80734	0.87781	0.90547	0.90756	0.91593	0.94726
180 °C	0.65909	0.69658	0.74359	0.77186	0.80876	0.87879	0.90625	0.90833	0.91664	0.94771