Electronic Supplementary Material (ESI) for Polymer Chemistry

Supporting Information

Poly(norbornene) Block Copolymer-Based Shell Cross-linked Micelles with Co(III)-salen Cores

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Polymerization of monomer 1:

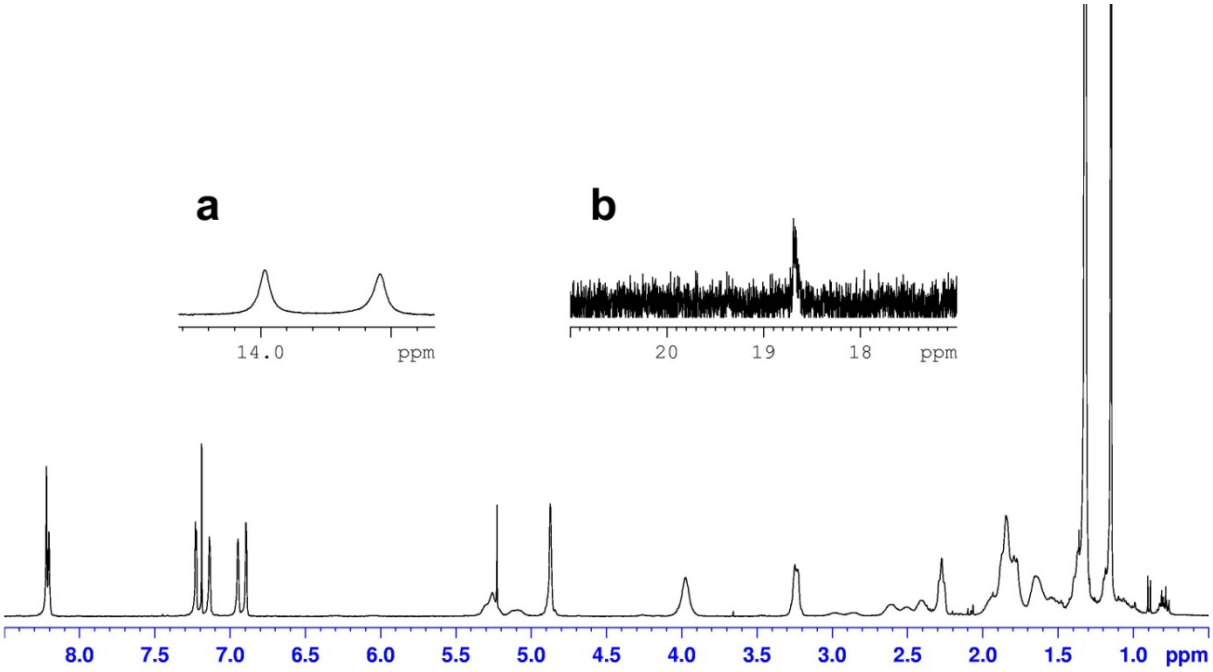

Figure 1S. ^{1}H NMR monitoring of the polymerization of monomer **1** ([M]/[I] = 40/1). **Poly1$_{40}$** was synthesized in 1.5 hour without losing the initiated carbene signal (18.64 ppm). Inset **a**: Ar-O*H* signals; inset **b**: carbene signal.

Thermogravimetric analysis (TGA) of the Co loading of Co(III)-salen SMCs. The Co(III)-salen SCM **i** was characterized by TGA with the corresponding unmetalated (salen ligand) SCM as a comparison. The TGA were conducted at a nitrogen flow of 3 mL/min and the temperature ramp of 2 ^{o}C/min. The TGA scan of the salen ligand SCM shows a smooth decay of weight percentage beginning from 250 ^{o}C. There are two stages of weight loss for the Co(III)-salen SCMs, probably associated with the decomposition of the Co-salen complex during the heating process.[1]

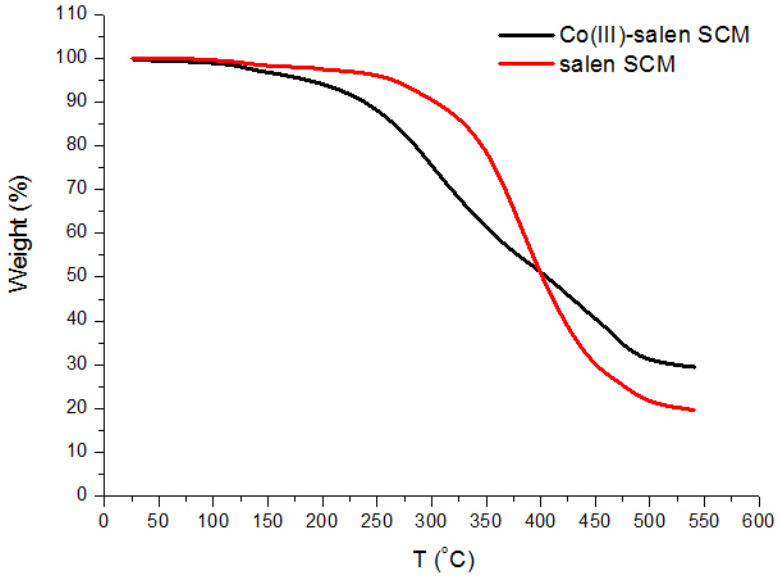

Figure S2. Thermograms of the SCMs **i** with salen ligand functionalized core (red line) and SCMs **i** with Co(III)-salen complex functionalized core (black line).

Time-course UV irradiated cross-linking of micelles monitored by DLS. Aliquots of micelle samples were taken from the reaction solution after 0 min, 0.5 min, 1.5 min, 7.5 min and 17 min irradiation. The solvents of DLS samples were removed roughly and the residual was redissolved quickly in the non-selective solvent CH_2Cl_2. All polymer blocks have good solubility in CH_2Cl_2, so if there is no cross-linking or the degree of cross-linking is not high enough to stabilize the micellar structure, smaller size dissociated polymers or much larger size aggregations will be detected by DLS. The DLS analysis showed after 7 minutes irradiation only one signal and the hydrodynamic radius was about 25 nm, which fits in the range of the micelle size. Extension of irradiation time would not change the micelle size or the polydispersity significantly, and no smaller or larger size species were detected

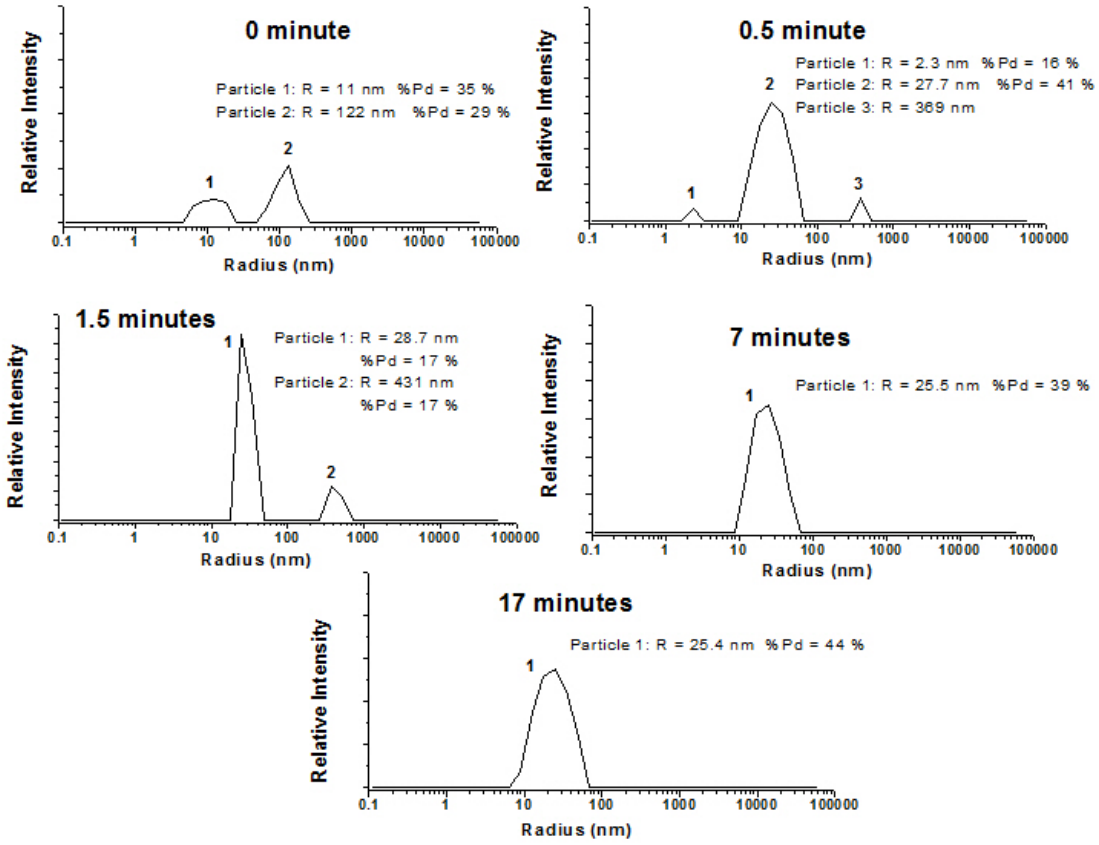

Figure S3. DLS monitoring of UV irradiated cross-linking of the micelle in CH_2Cl_2.

References

(1) Sharghi, H.; Aberi, M.; Doroodmand, M. M. *Adv. Synth. Catal.* **2008**, *350*, 2380-2390.