Supplementary Information

Improved shape memory performance of star-shaped POSS-polylactide based polyurethanes (POSS-PLAUs)

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Characterization

^{1}H NMR Characterization: ^{1}H NMR spectra were carried out using a Bruker DMX 500 NMR spectrometer with $CDCl_3$ as the solvent at room temperature (25 °C). Tetramethylsilane (TMS) was used as an internal standard for the analysis of chemical shifts. The number of repeating units of LA arm was calculated according to integral area ratio of d peak to c peak from ^{1}H NMR spectra as shown in Fig. S3.

FTIR Characterization: Fourier transform infrared spectroscopy (FTIR) spectra were obtained using a BRUKER AVATAR 360 ESP FT-IR by ART mode at room temperature (25 °C). All samples were scanned in the range of 400- 4000 cm^{-1}.

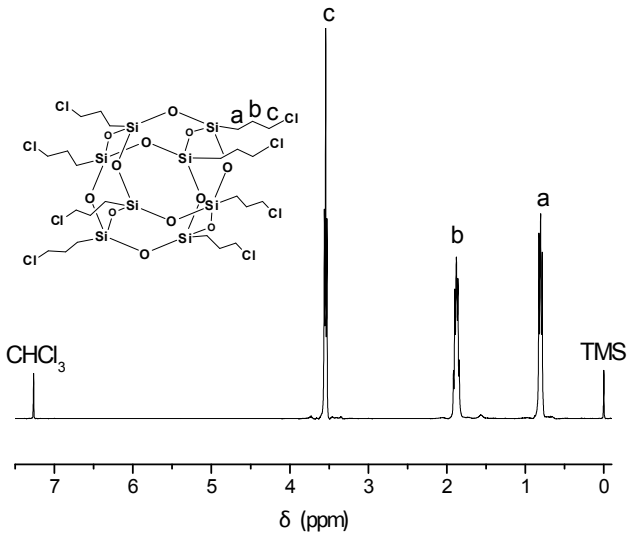

Fig. S1. The ^{1}H NMR spectrum of *octa*-(*3*-chloropropyl) polyhedral oligomeric silsesquioxane (POSS-Cl_8).

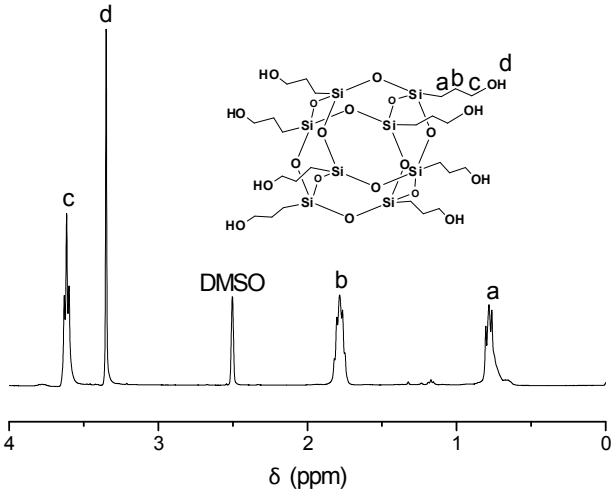

Fig S2. The ^{1}H NMR spectrum of *octa*-(*3*-hydroxypropyl) polyhedral oligomeric silsesquioxane (POSS-$(OH)_8$).

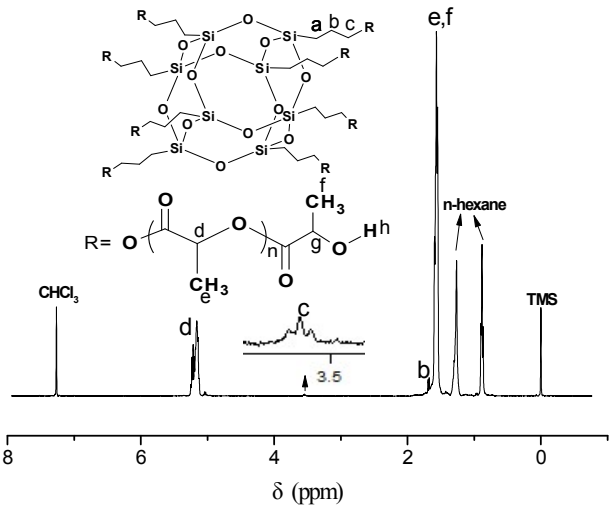

Fig S3. The ^{1}H NMR spectrum of star-shaped POSS-PLAs.

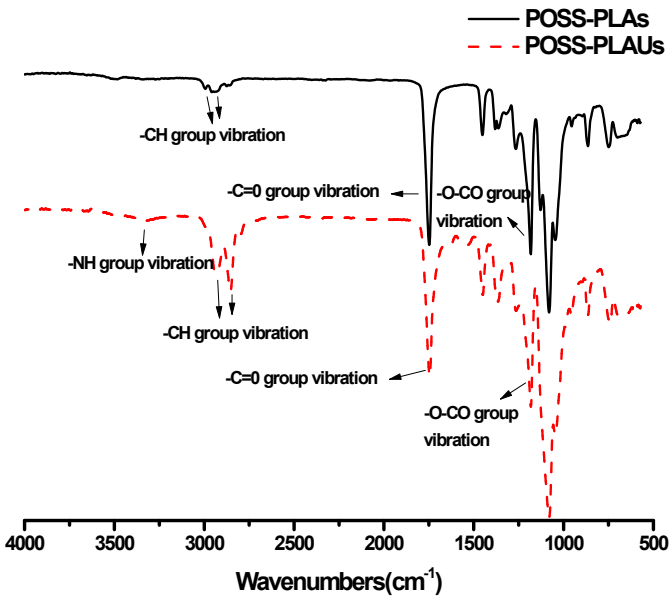

Fig S4. The FTIR spectra of star-shaped POSS-PLAs and POSS-PLAUs