Supporting Information

Thermally Stable Azobenzene Dyes through Hybridization with POSS

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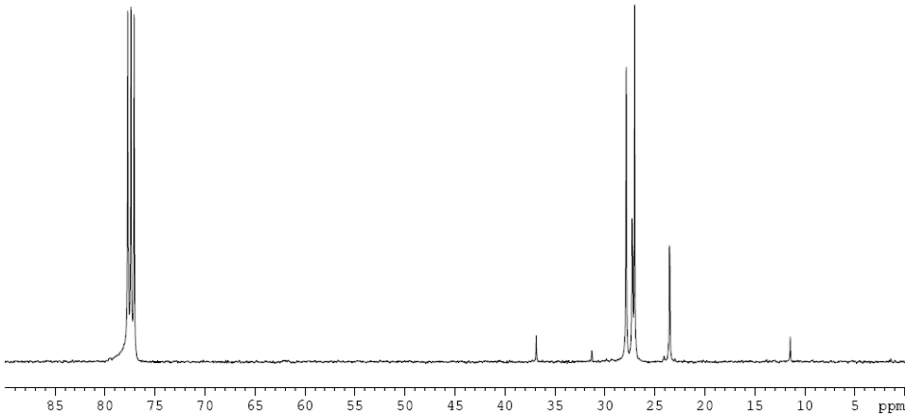
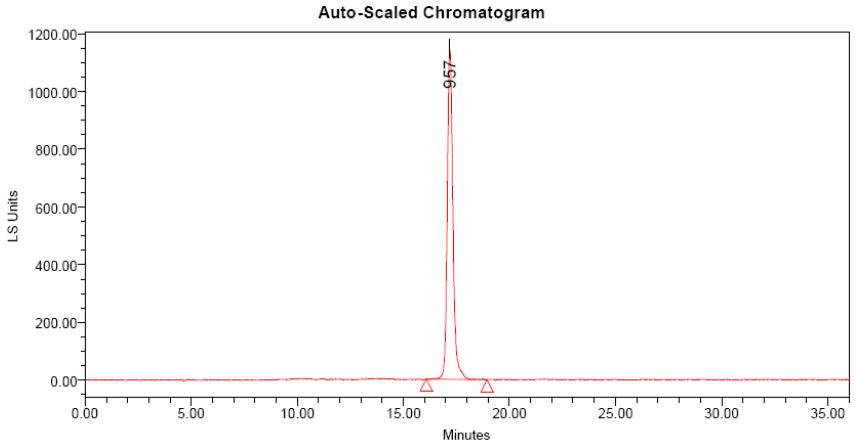


Fig. S1 ^{13}C NMR of POSS-Br in D-chloroform.



GPC Results

	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	981	1004	957	1034	1079	1.023594

Fig. S2 Molecular weight measured by Agilent 1100 gel permeation chromatography (GPC) with PMMA as the standard and THF as the eluent.

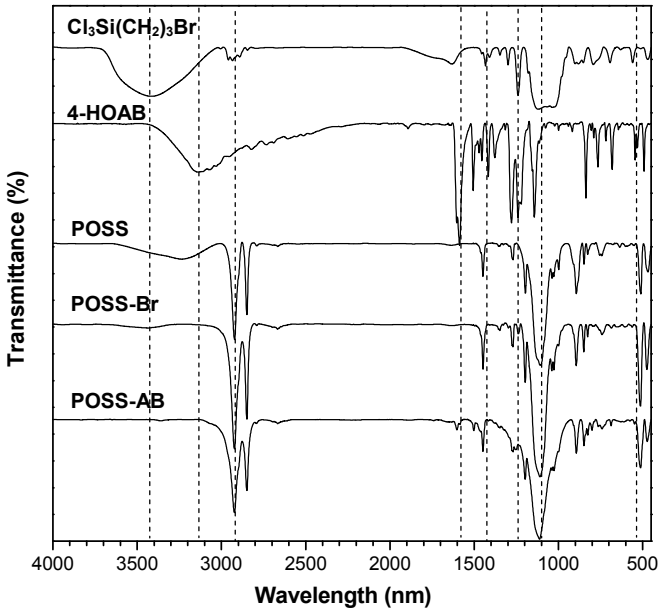


Fig. S3 FTIR spectra of 3-Bromopropyl trichlorosilane, 4-HOAB, POSS, POSS-Br and POSS-AB.

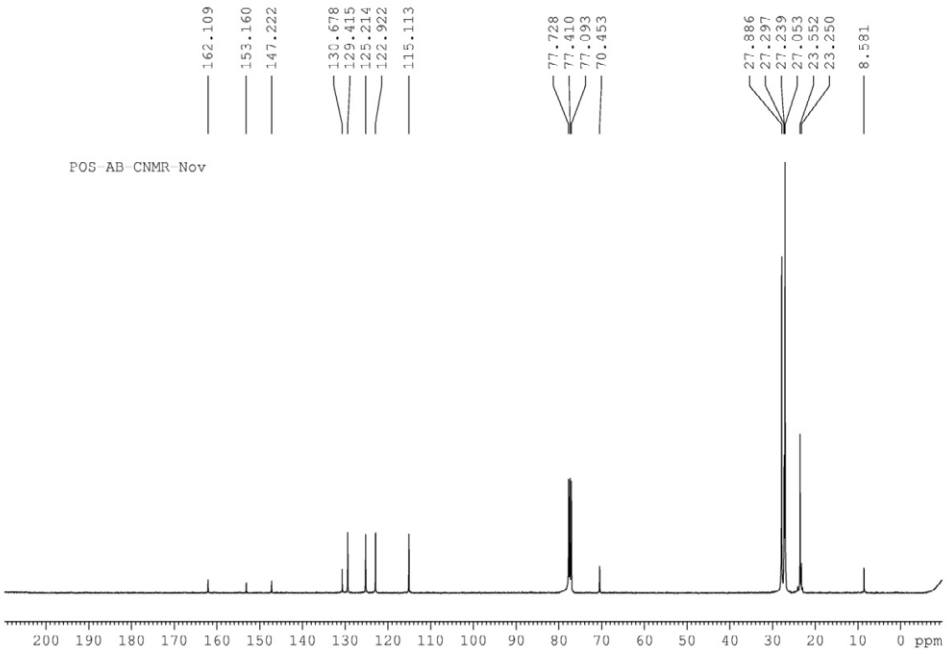


Fig. S4. ^{13}C NMR of POSS-AB in D-chloroform.

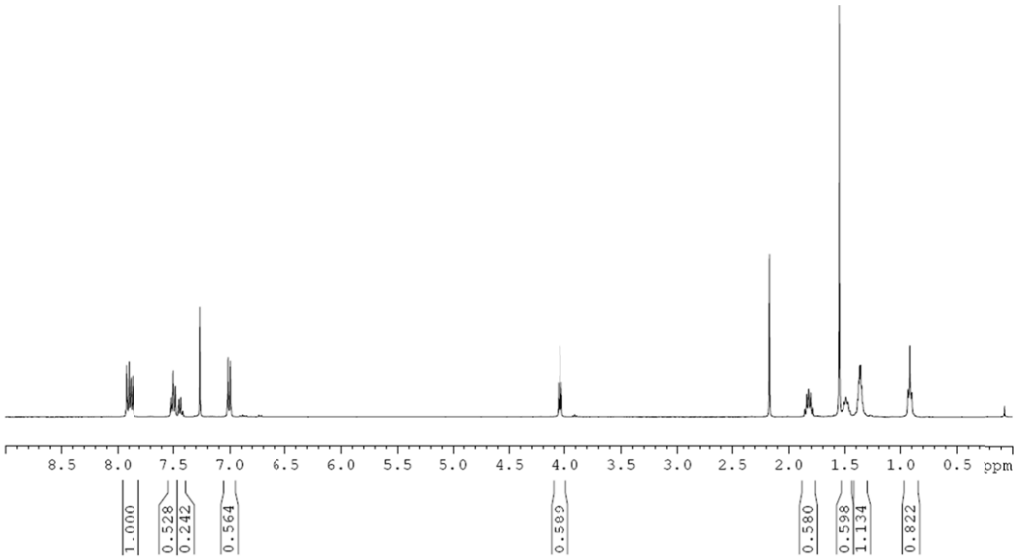


Fig. S5 ^{1}H NMR of Hex-AB in D-chloroform.

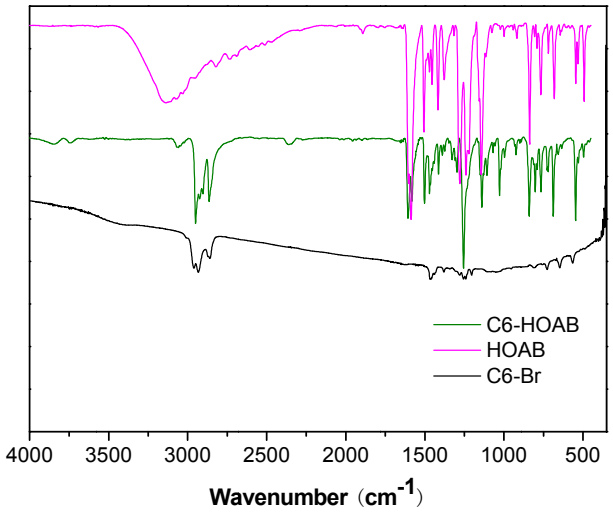


Fig. S6 FTIR of Hex-HOAB, HOAB and Hex-Br.

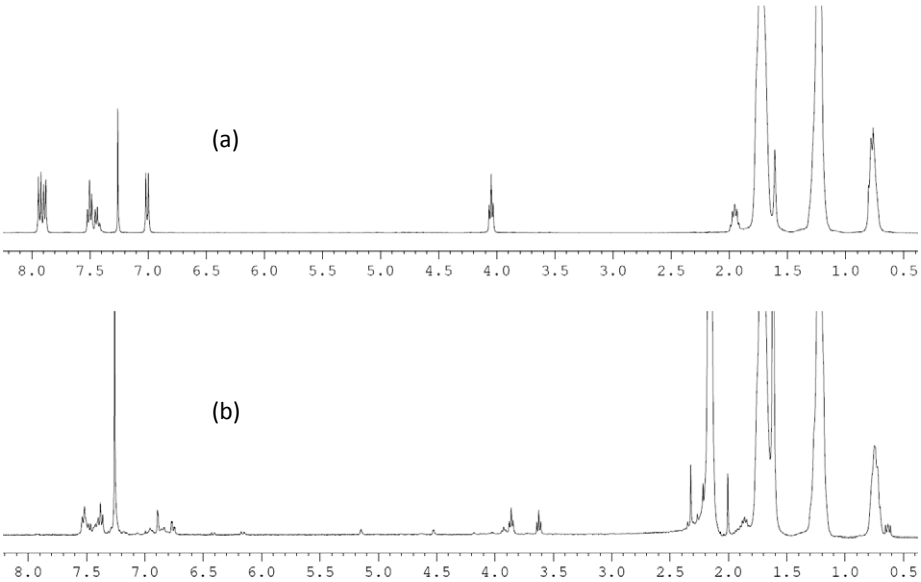


Fig. S7 ^{1}H-NMR shift before (a) and after (b) UV irradiation.

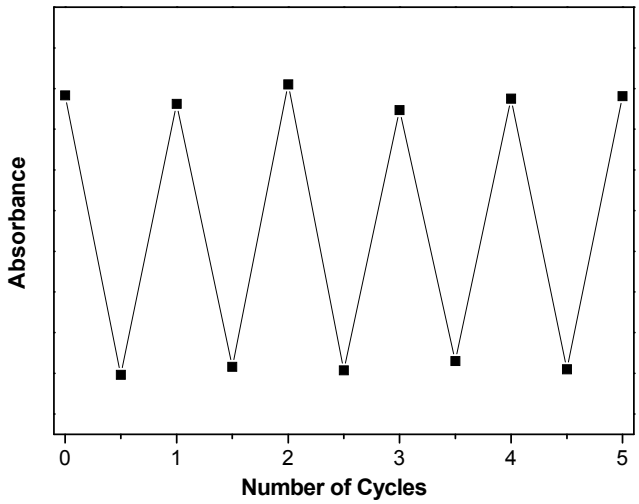


Fig. S8 Multiple rounds of switching of absorbance at λmax of POSS-AB by alternating UV light irradiation and thermal incubation in chloroform at 25□.

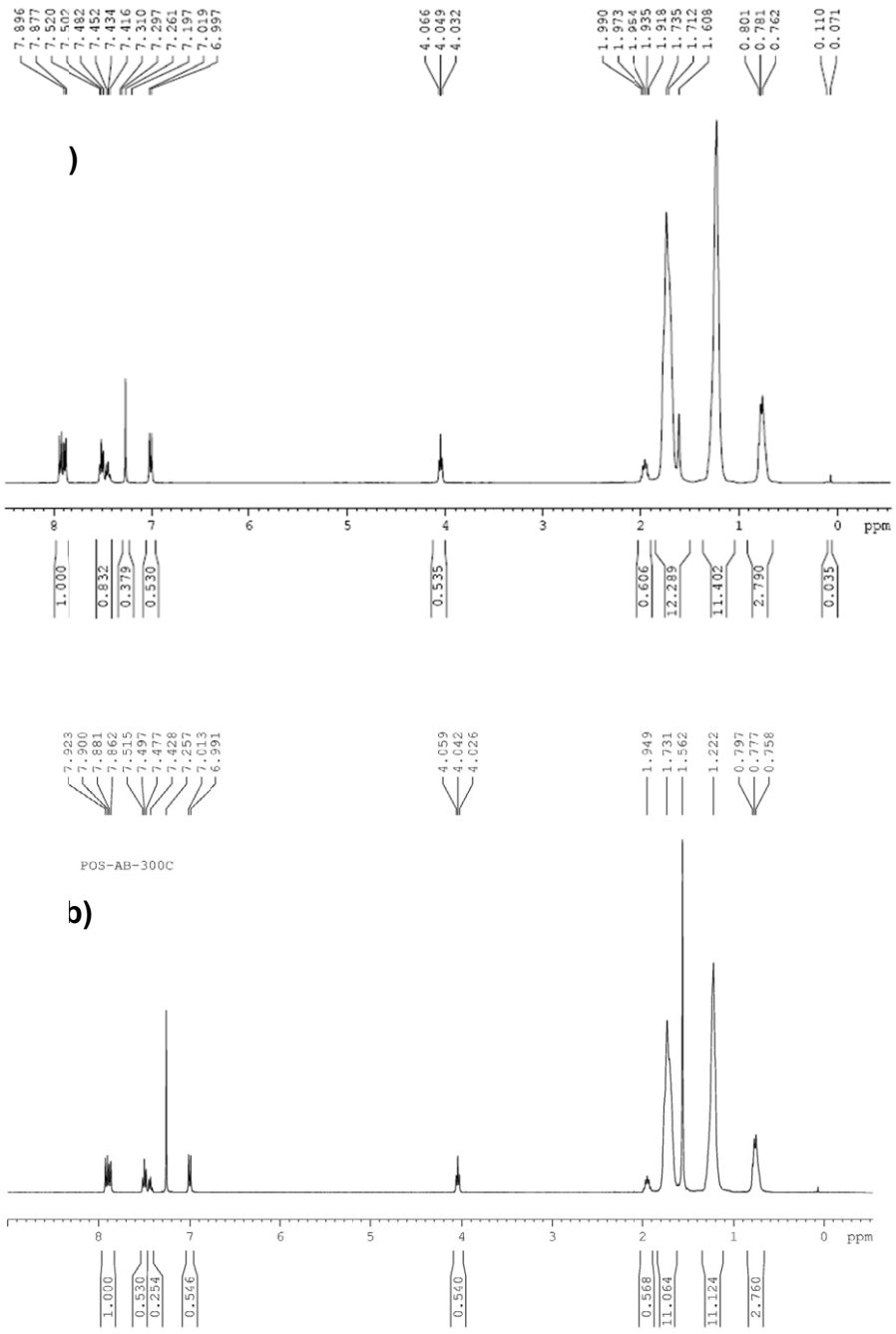


Fig. S9 1H NMR of POSS-AB before (a) and after (b) 300 °C treatment.

Fig. S10 Photo images of yellow free standing polymer films produced from PS/POSS-AB and PS/4- HOAB.

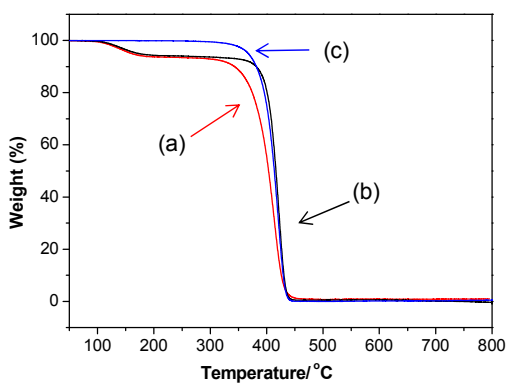


Fig. S11 TGA analysis of (a) PS/4-HOAB (2wt %) in N_2 (b) PS/POSS-AB (2wt %) in N_2 (c) PS (MW=280,000) in N_2.

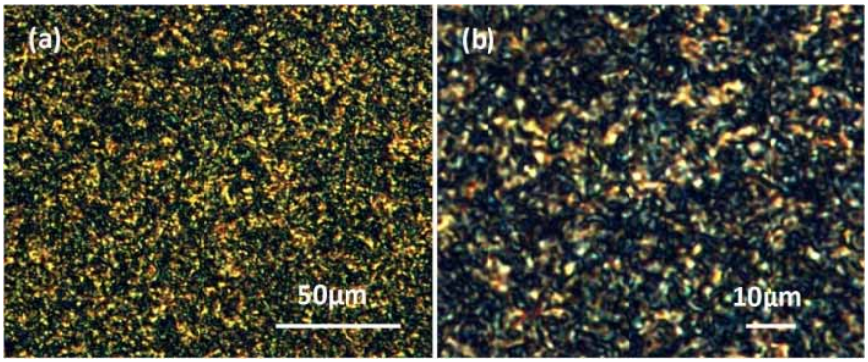


Fig. S12 Polarizing optical micrographs for POSS-AB (aged at 246.6 ℃) at magnification (a) 500× and (b) 1000×.

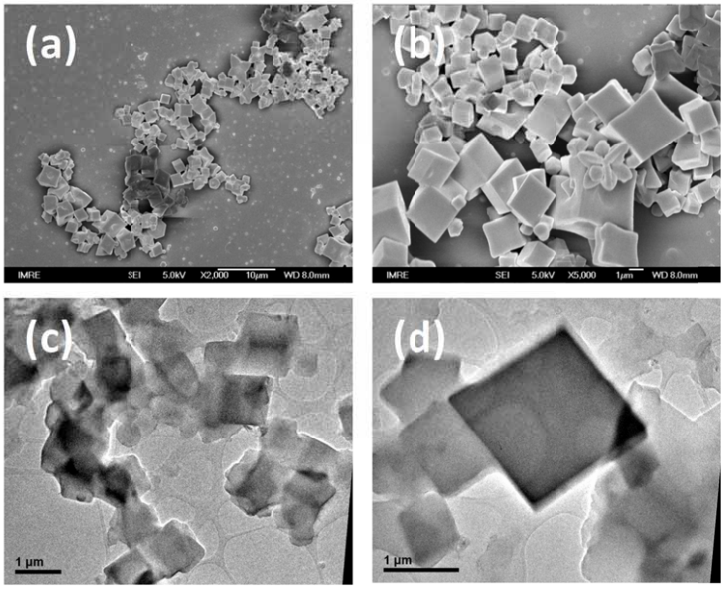


Fig. S13 SEM (a), (b) and TEM (c), (d) of POSS-Br with the addition of 0.8ml methanol to 2.5mg/ml POSS-Br in THF.