

Supporting Information

***Cylindrical Micelles of a POSS Amphiphilic Dendrimer
as the Nano-reactors for Polymerization***

*Jing-Ting Weng,[†] Tso-Fan Yeh,[†] Ashok Zachariah Samuel,[‡] Yi-Fan Huang,[†] Jyun-Hao Sie,[†]
Kuan-Yi Wu,[†] Chi-How Peng,[§] Hiro-o Hamaguchi,[‡] Chien-Lung Wang^{*,†}*

[†]Department of Applied Chemistry and [‡]Department of Applied Chemistry and Institute of Molecular Science, National Chiao Tung University, No. 1001 Ta-Hsueh Road, Hsinchu 30010, Taiwan

[§]Department of Chemistry and Frontier Research Center on Fundamental and Applied Sciences of Matters, National Tsing Hua University, No. 101, Section 2, Kuang-Fu Road, Hsinchu 30013, Taiwan

*Corresponding author: kclwang@nctu.edu.tw

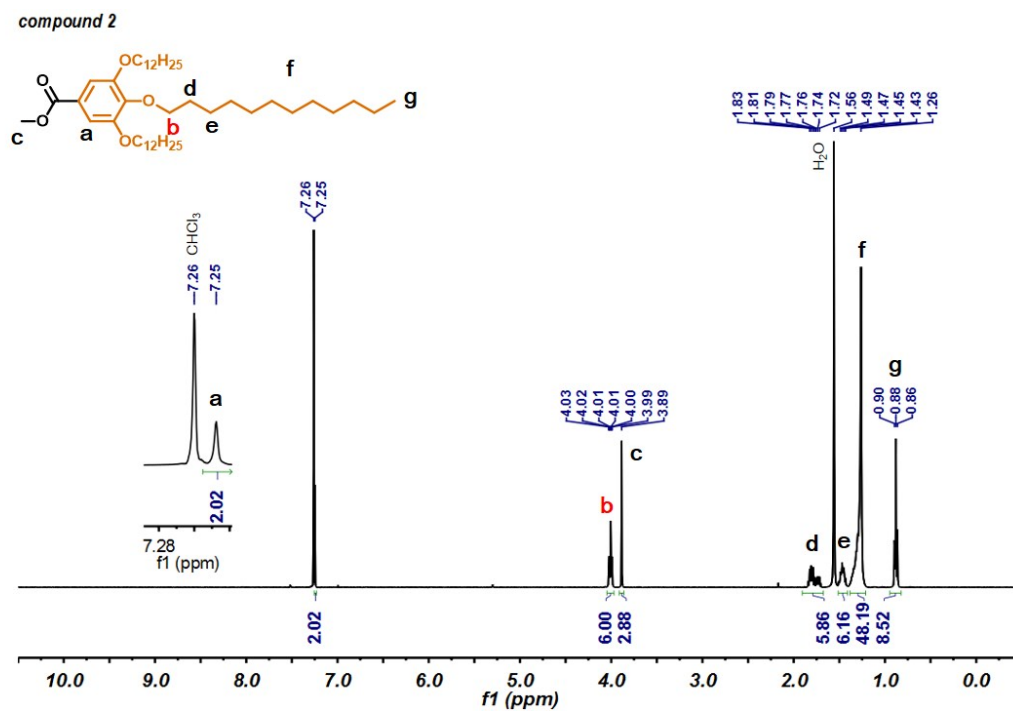


Figure S1: ¹H-NMR spectra of **compound (2)** (400 MHz in CDCl₃)

compound 3

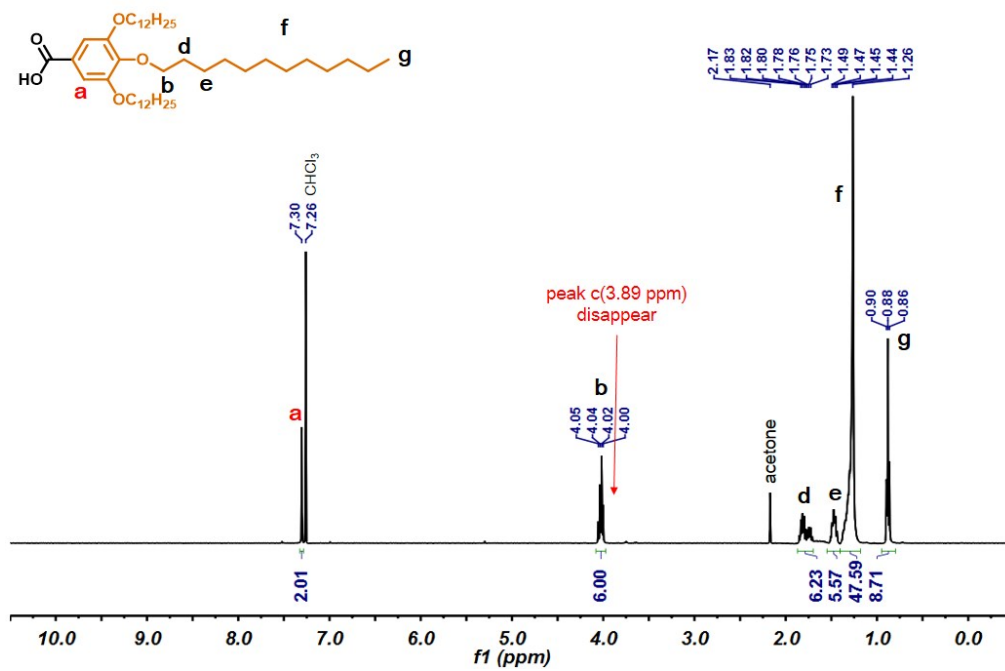


Figure S2: ^1H -NMR spectra of compound (3) (400 MHz in CDCl_3)

compound 4

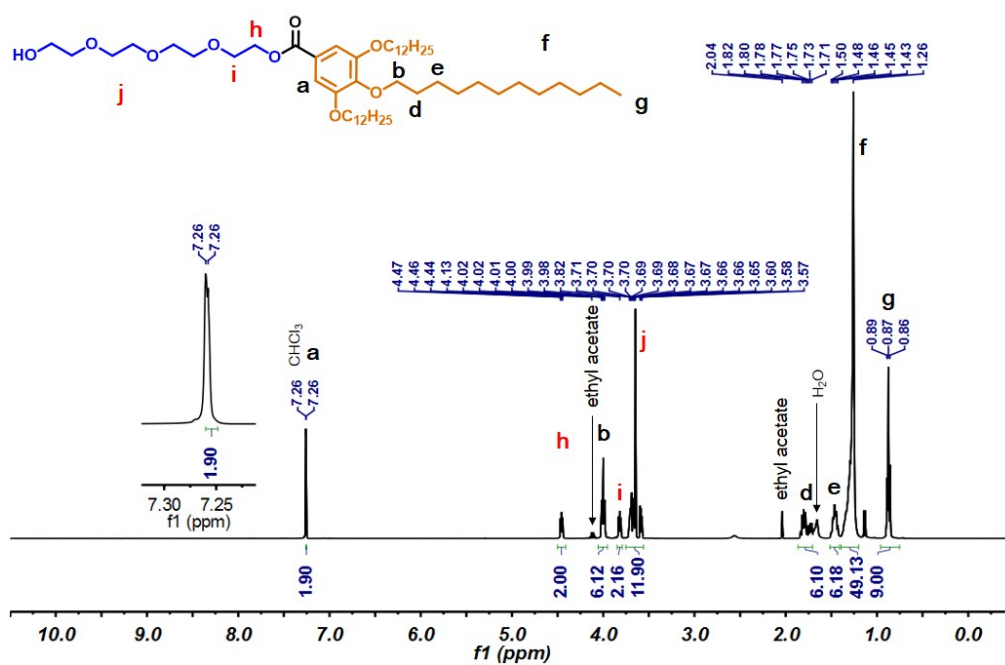


Figure S3: ^1H -NMR spectra of compound (4) (400 MHz in CDCl_3)

compound 5

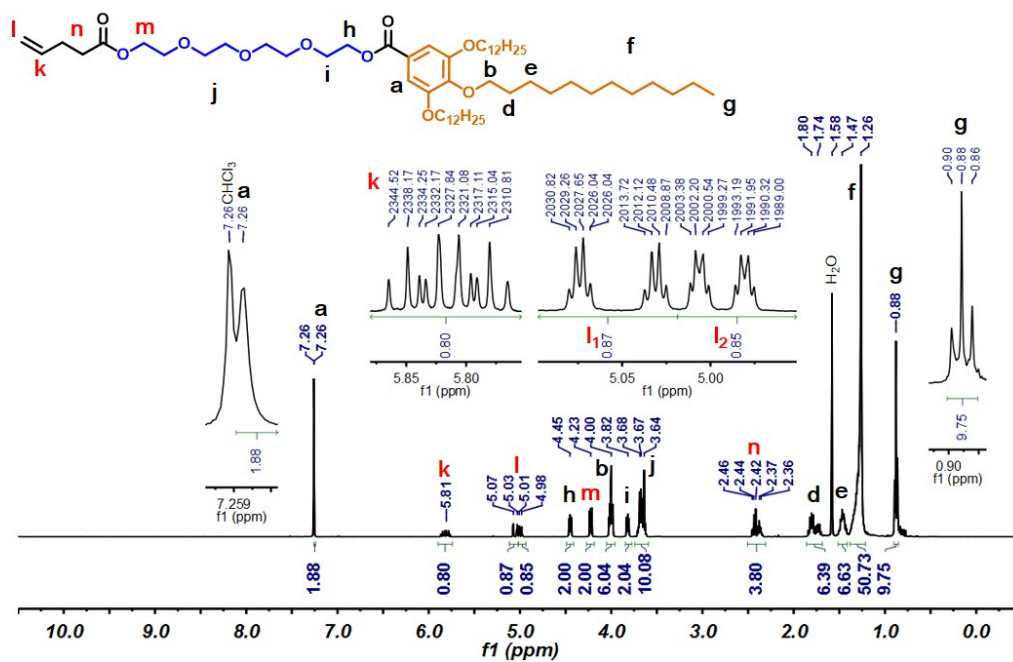


Figure S4: ¹H-NMR spectra of compound (5) (400 MHz in CDCl₃)

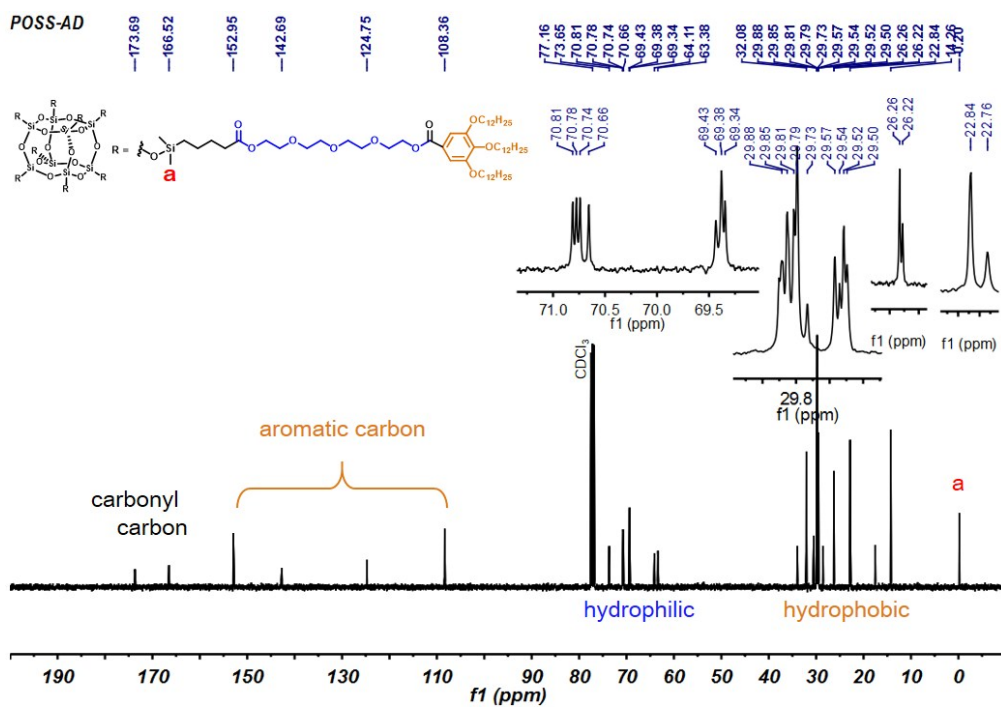


Figure S6: ¹³C-NMR spectra of **POSS-AD** (101 MHz in CDCl₃)

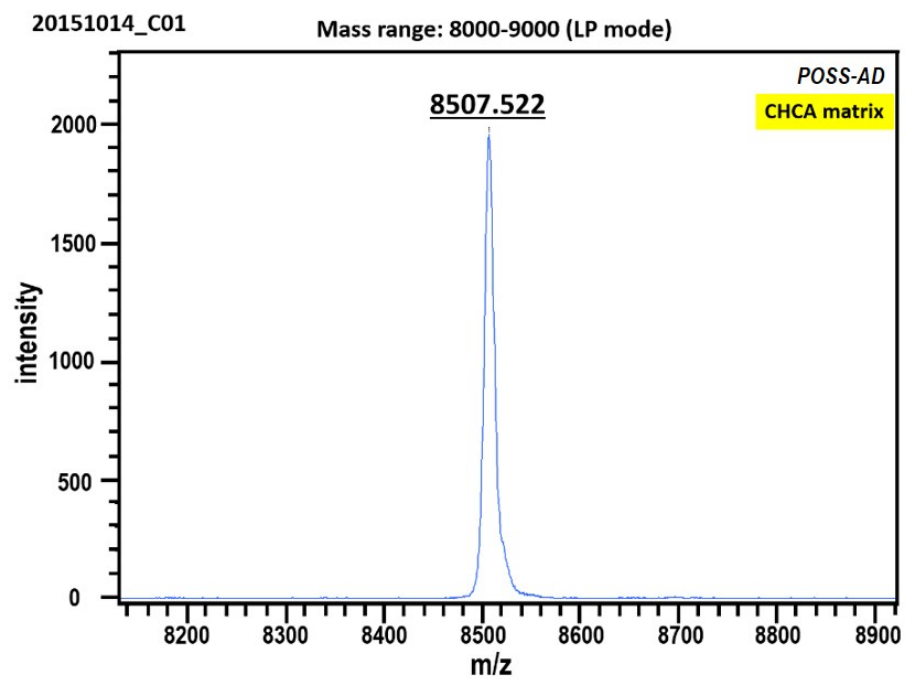


Figure S7: MALDI-TOF mass spectra of **POSS-AD**

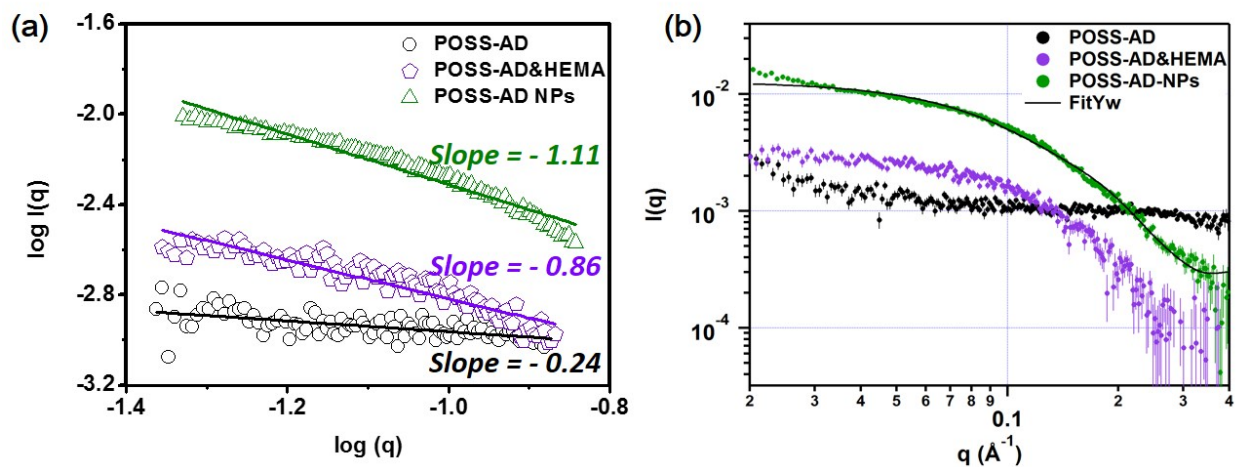


Figure S8: (a) power analysis of SAXS scattering curve (b) SAXS scattering curve $I(q)$ of the hexane solutions for **POSS-AD** (black, 4.93×10^{-5} mol/L), **POSS-AD** and 2.74×10^{-2} mol/L HEMA (purple, 4.93×10^{-5} mol/L), and **POSS-AD NPs** (green, 4.93×10^{-5} mol/L).

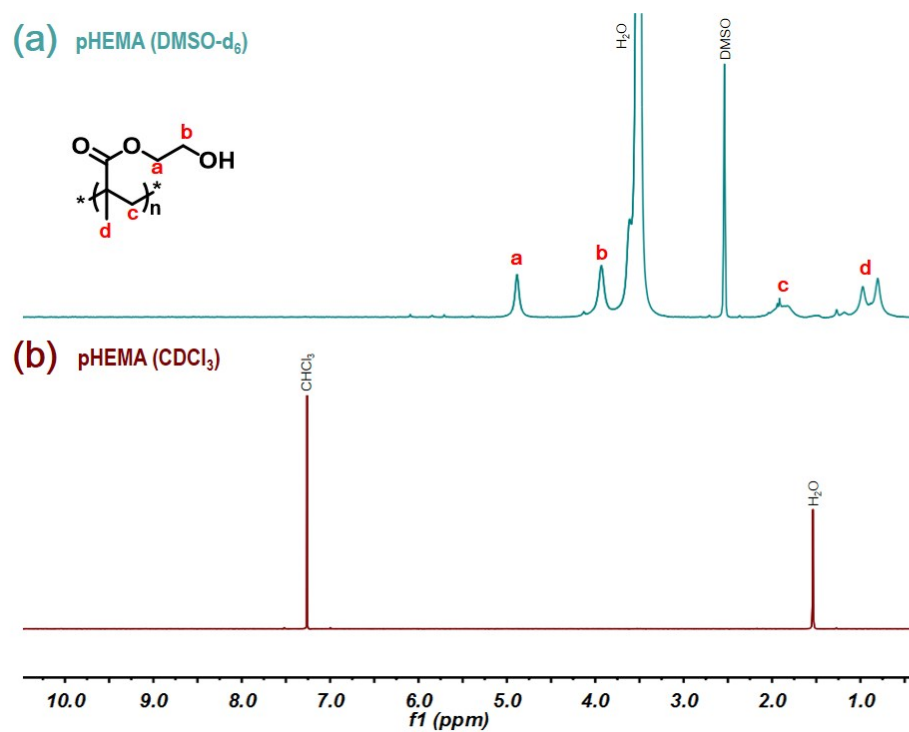


Figure S9 ^1H NMR spectra of p(HEMA) in (a) DMSO- d_6 and (b) CDCl_3 . The p(HEMA) was prepared from the precipitation polymerization. (400 MHz in CDCl_3)

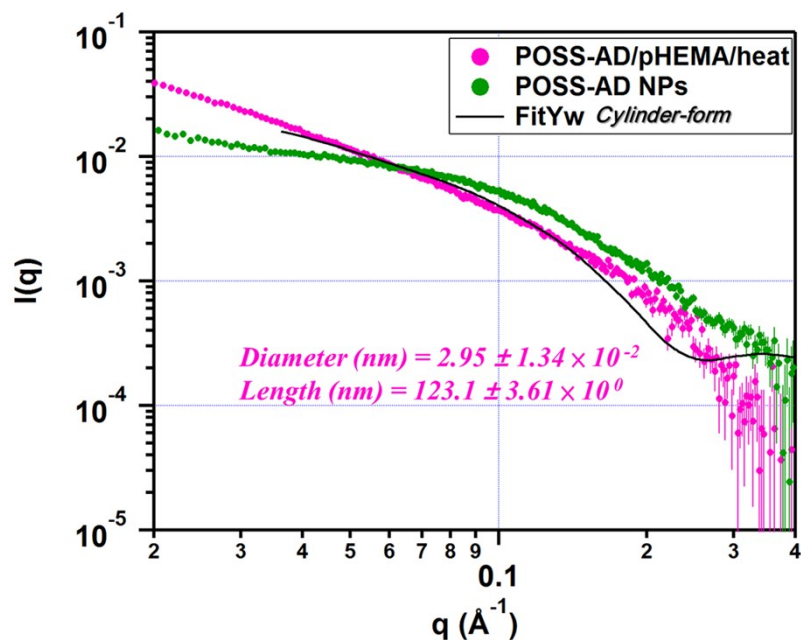


Figure S10. SAXS profiles of the hexane solutions of **POSS-AD** and p(HEMA) that were mixed at 90 °C for 45 hr (pink, 0.42 mg/mL), and **POSS-AD NPs** (green, 0.42 mg/mL). The scattering profile of the **POSS-AD**/p(HEMA) mixture cannot be fitted well with a monodispersed cylindrical model, so the fitting results did not match with the dimensions of the **POSS-AD** molecule or the **POSS-AD** micelles.