Electronic Supplementary Material (ESI) for RSC Advances.

Electronic Supporting Information

Dendrimer like star polymer based on β-cyclodextrin with ABC type miktoarms

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A dendrimer like star polymer based on β-cyclodextrin, in which the primary alchoholic arms of β-cyclodextrin core linked to ABC type miktoarm star polymers, was synthesized through the combination of ATRP, ROP, RAFT polymerization and click reaction methodologies.

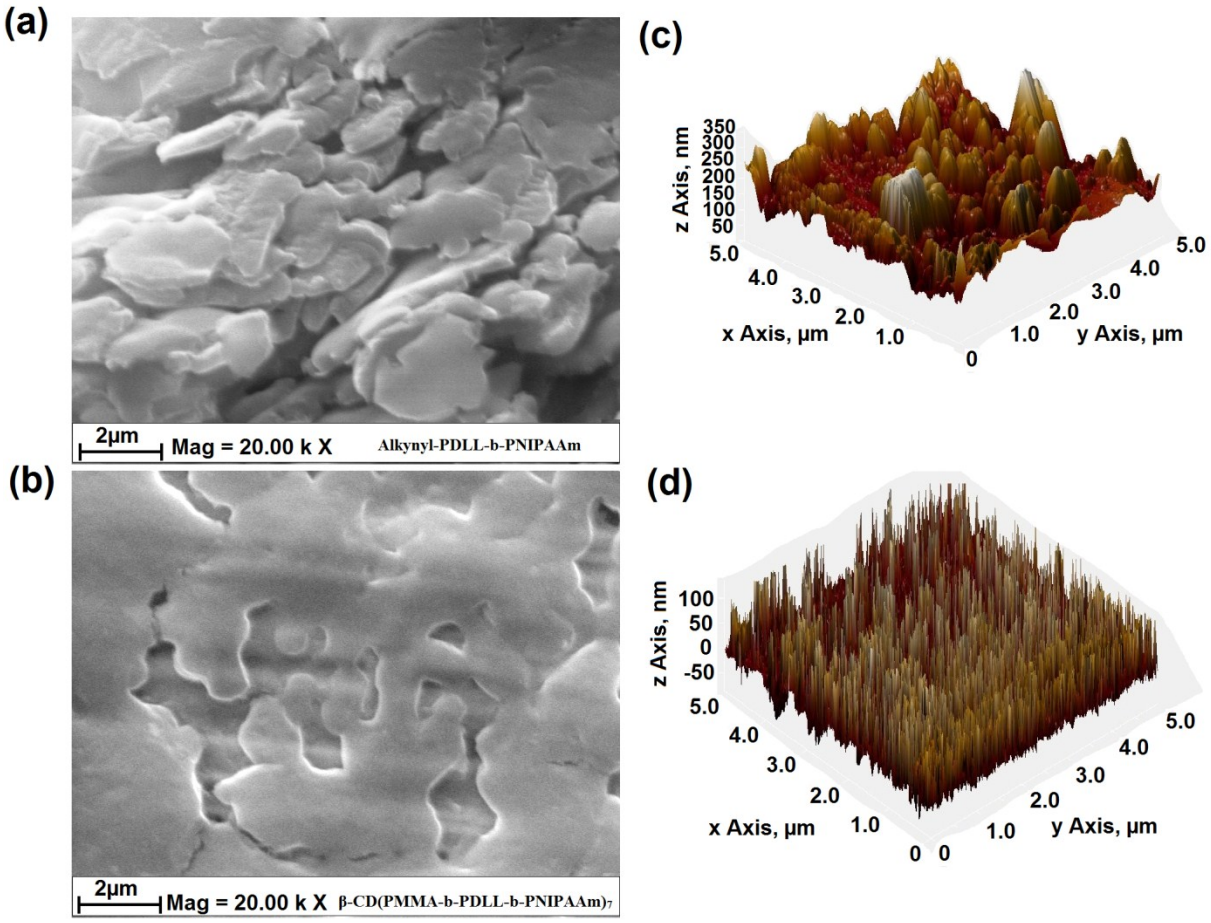

Figure S1. Scanning electron mocrographs of (a) Alkynyl-PDLL-b-PNIPAAm and (b) β-CD(PMMA-b-PDLL-b-PNIPAAm)$_7$, and atomic force microscopic images of (c) Alkynyl-PDLL-b-PNIPAAm and (d) β-CD(PMMA-b-PDLL-b-PNIPAAm)$_7$.

Fluorescence spectroscopy was used, with pyrene as the probe, in order to determine the critical micellar concentration (cmc) of both polymers i.e., Alkynyl-PDLL-b-PNIPAAm and β-CD(PMMA-b-PDLL-b-PNIPAAm)$_7$ in water. **Figure S2(a)** and **S2(b)** show the excitation fluorescence spectra, from 300 to 360 nm, of pyrene (6×10^{-7} M) at different concentrations of Alkynyl-PDLL-b-PNIPAAm and β-CD(PMMA-b-PDLL-b-PNIPAAm)$_7$ respectively recorded at an emission wavelength of 394 nm. **Figure S2(c)** and S2**(d)** show the corresponding plots of the ratio of the peak intensities of the excitation spectra of pyrene at 337.07 nm (I_3) and 333.07 nm

(I_1) vs concentration of the amphiphilic block copolymer and star polymer concentration (mg/mL) respectively, in water. The cmc value was taken from the intercepting point of two straight lines connecting the resultant points. The observed cmc of Alkynyl-PDLL-b-PNIPAAm and β-CD(PMMA-b-PDLL-b-PNIPAAm)$_7$ were 0.0082 and 0.0573 mg/mL, respectively. The lower cmc value of Alkynyl-PDLL-b-PNIPAAm compered with that of β-CD(PMMA-b-PDLL-b-PNIPAAm)$_7$ was due to the smaller hydrophobic block segment in the amphiphilic block copolymer.

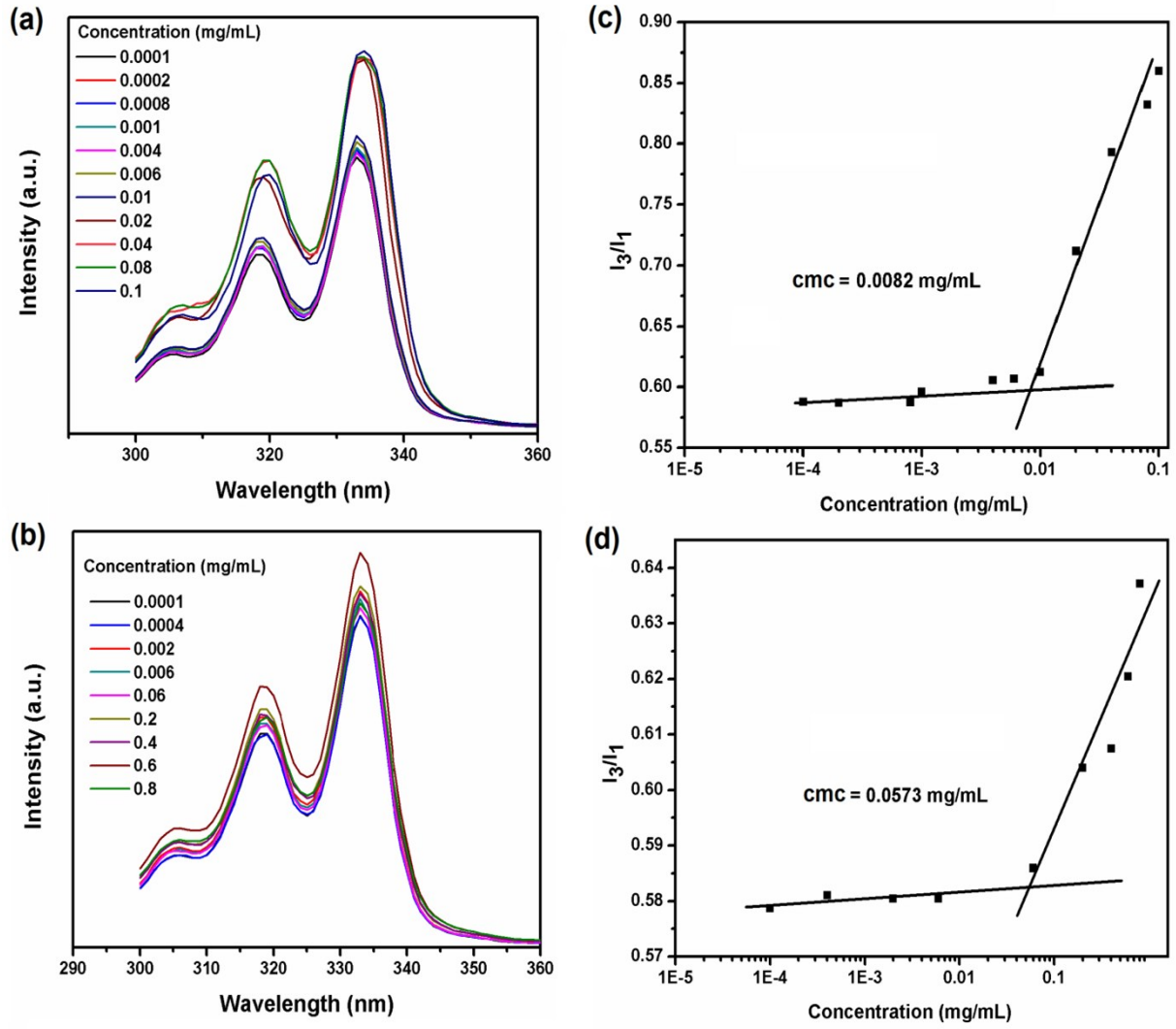

Figure S2. Fluorescence excitation spectra (λ_{em} = 394 nm) of pyrene (6×10^{-7} M) in the presence of progressively higher concentration (C) (mg/mL) of (a) amphiphilic block copolymer, Alkynyl-PDLL-b-PNIPAAm and (b) star polymer, β-CD(PMMA-b-PDLL-b-PNIPAAm)$_7$, and semilogarithmic plot of the fluorescence excitation intensity ratio ($I_{337.07}/I_{333.07}$) of pyrene (6×10^{-7} M) monitored at λ_{em} = 394 nm vs the concentration of (c) Alkynyl-PDLL-b-PNIPAAm and (d) β-CD(PMMA-b-PDLL-b-PNIPAAm)$_7$ in water.