Supporting Information

Converse Transitions between Micelles and Vesicles of Pyrrolidone Based AIE Amphiphilic Copolymers in Polar and Apolar Solvents

Xiaolong He, Beibei Wang, Xuefeng Li*, Jinfeng Dong*

Engineering Research Center of Organosilicon Compounds & Materials, Ministry of Education, College of Chemistry and Molecular Sciences, Wuhan University, Wuhan 430072, P. R. China

*Corresponding author: lixuefeng@whu.edu.cn (Xuefeng Li)
jfdong@whu.edu.cn (Jinfeng Dong)
Figure S1. (a) Representative $^1$H NMR and (b) DMF GPC of PNMP macro-CTAs.

Table S1. Summary of monomer conversions, mean degrees of polymerization and GPC molecular weights for two PNMP macro-CTAs.

<table>
<thead>
<tr>
<th>Target DP</th>
<th>$^1$H NMR Conversion %</th>
<th>Actual DP by $^1$H NMR</th>
<th>GPC $M_n$ (g/mol)</th>
<th>$M_w/M_n$</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNMP$_{37}$</td>
<td>99</td>
<td>35</td>
<td>5000</td>
<td>1.03</td>
</tr>
<tr>
<td>PNMP$_{55}$</td>
<td>98</td>
<td>50</td>
<td>7100</td>
<td>1.03</td>
</tr>
</tbody>
</table>
Scheme S1 Synthesis of TPE.

Figure S2. $^1$H NMR of TPE (δ, CDCl$_3$): 5.20 and 5.68 (2H, CH$_2$=CH-), 6.63 (1H, CH$_2$=CH-), 6.96-7.20 (19H, benzene ring skeleton).

Figure S3. Mass spectrum of TPE. MS (EI), $m/z$: 358 (calcd. for C$_{28}$H$_{22}$ 358).
Figure S4. (a) Representative $^1$H NMR and (b) GPC of PNMP$_{35}$-b-P(LMA$_{y}$-co-TPE$_{z}$).

Figure S5. TEM images of 1 wt% PNMP$_{35}$-b-P(LMA$_{18}$-co-TPE$_{1.9}$) (a) and PNMP$_{35}$-b-P(LMA$_{38}$-co-TPE$_{4.7}$) (b) aqueous solutions, respectively.
Figure S6. TEM images of 1 wt% PNMP$_{35}$-$b$-P(LMA$_{24}$-$co$-TPE$_{2.7}$) (a) and PNMP$_{35}$-$b$-P(LMA$_{38}$-$co$-TPE$_{4.7}$) (b) in n-dodecane, respectively.
Figure S7. (a) Representative $^1$H NMR and (b) chloroform GPC of PNMP$_{50}$-b-PLMA$_{10}$. TEM image of 1 wt% PNMP$_{50}$-b-PLMA$_{10}$ (c) and DLS result of 0.1 wt% PNMP$_{50}$-b-PLMA$_{10}$ (d) in water at 25 °C, respectively.
Figure S8. TEM images of 1 wt% PNMP_{35-}\text{-}b\text{-}P(LMA_{y}\text{-}co\text{-}TPE_{z})/PNMP_{50-}\text{-}b\text{-}PLMA_{10} binary system in aqueous solution with a constant PNMP_{35-}\text{-}b\text{-}P(LMA_{y}\text{-}co\text{-}TPE_{z}) content of 40 wt%, and images (a) ~ (c) correspond to PNMP_{35-}\text{-}b\text{-}P(LMA_{24}\text{-}co\text{-}TPE_{2.7}), PNMP_{35-}\text{-}b\text{-}P(LMA_{38}\text{-}co\text{-}TPE_{6.7}) and PNMP_{35-}\text{-}b\text{-}P(LMA_{55}\text{-}co\text{-}TPE_{6.3}), respectively. Bars represent 100 nm.