## **Supplemental Information for**

## Kinetic Control of Multicompartment and Multigeometry Nanoparticle Assembly

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## 1. Supplemental information



Figure S1: TEM images of diblock copolymer blend nanoparticles formed from a 1:1 molar ratio blend of  $PAA_{75}$ -*b*- $PB_{104}$  and  $PAA_{99}$ -*b*- $PS_{76}$  in the *absence* of EDDA. Nanoparticles formed via slow water titration (left) and fast water addition (right) all in a final 1:4 volume ratio of THF and water mixture. The PB phase of the nanoparticles is stained by  $OsO_4$ . While discrete compartments of PB and PS are visible in the particles, all control of the relative amounts of PB vs. PS in the nanostructures is lost as is the control over the formation of multigeometry particles in the slow water titration.



Figure S2: Scattered light intensity for  $PAA_{75}$ -*b*- $PB_{104}$  and  $PAA_{99}$ -*b*- $PS_{125}$  blend THF solutions with different amount of diamine. Growth in intensity with addition of diamines shows the growth of inverse-like micelles with the complexation of PAA with the diamines to form cores and the unlike PB and PS blocks forming soluble shells in the THF solution.



Figure S3: Small angle neutron scattering profile series generated from  $PAA_{75}$ -*b*-PB<sub>104</sub> and  $PAA_{99}$ -*b*-PS<sub>125</sub> blend TDF solution during slow addition of different amount of D<sub>2</sub>O. Polymer blending molar ratio is 1:1, amine to acid molar ratio is 0.5:1.0. Polydisperse aggregates are clearly evident in pure TDF organic solution while micelles are clearly evident in the final 1:4 ratio of TDF:D2O. In the two intermediate solutions, low q scattering results from very large structures (characteristic size scale >> several hundred nanometers) with a clear, repeating structure giving rise to the Bragg reflection centered around q - 0.022.