Mesostructured Block Copolymer Nanoparticles: Versatile Templates for Hybrid Inorganic/Organic Nanostructures

Luke A. Connal,[1] Nathaniel A. Lynd,[1] Maxwell J. Robb,[2] Kimberly A. See, [1] Se Gyu Jang,[1] Jason M. Spruell,[1] Craig J. Hawker[1,2*]

1. Materials Research Laboratory and Materials Department, University of California, Santa Barbara, California 93106
2. Department of Chemistry and Biochemistry, University of California, Santa Barbara, California 93106

SUPPORTING INFORMATION

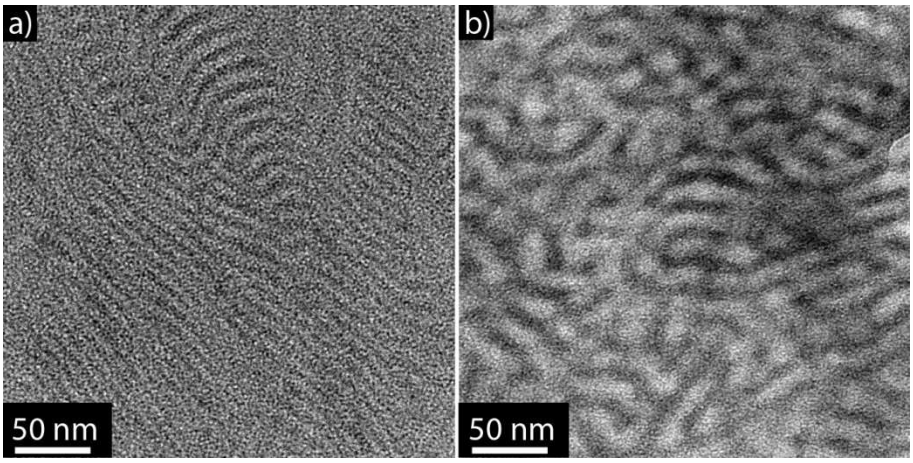

Figure S1. Bulk morphology of polymers after thermal annealing. a) diblock copolymer c) triblock copolymer

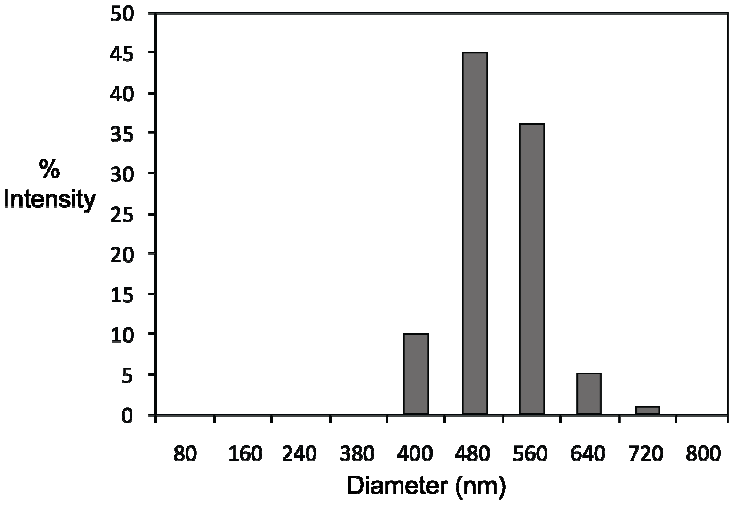

Figure S2. Typical size distribution of triblock copolymer particle assembly after 65% water addition.

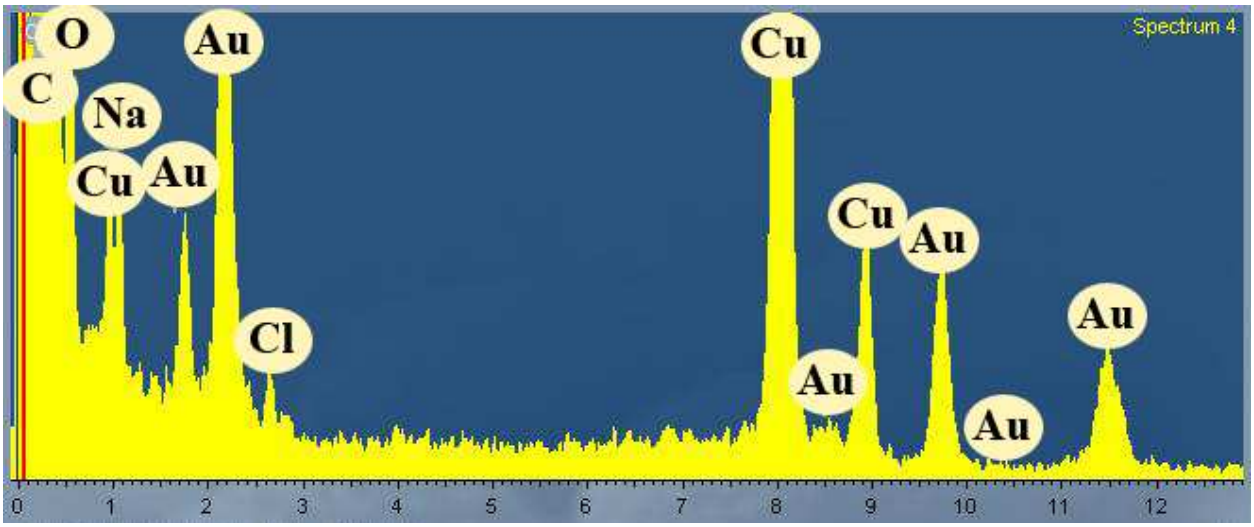

Figure S3. EDX spectra of reduced gold nanoparticles impeded in polymer colloids (as seen in figure 5c), indicating metallic gold, copper peaks are due to the background from the copper TEM grids.

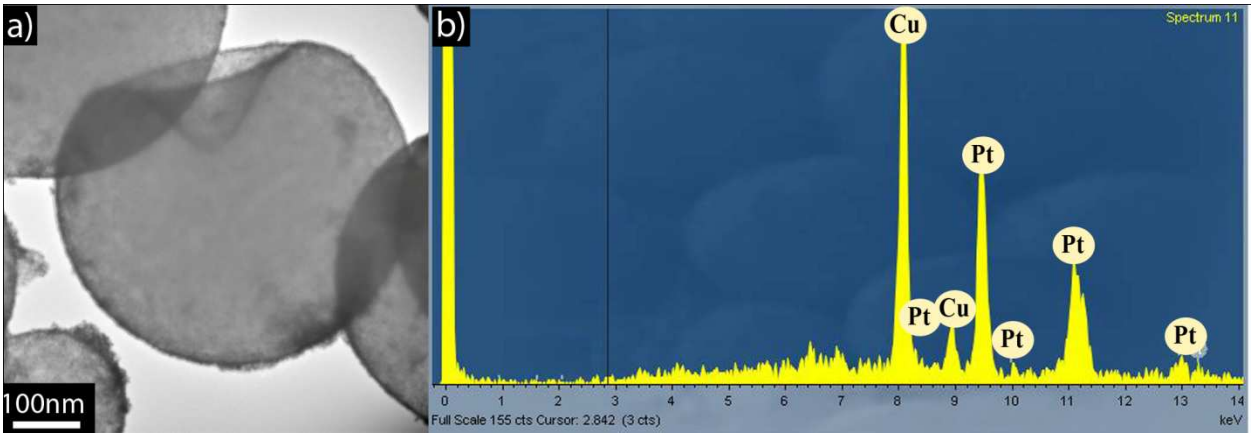

Figure S4. a) Platinum nanoparticle loaded PS-*b*-P2VP diblock copolymer particle after the adsorption and reduction of H_2PtCl_6. b) EDX spectra of composite nanoparticles with characteristic platinum peaks, the copper peaks are due to the background from the copper TEM grids.

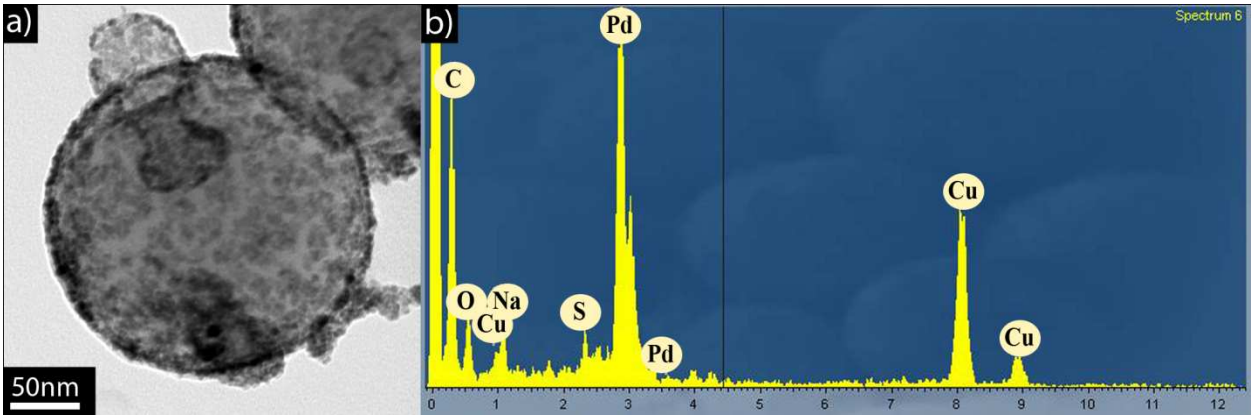

Figure S5. a) Palladium nanoparticle loaded PS-*b*-P2VP diblock copolymer particle after the adsorption and reduction of $PdCl_2$.b) EDX spectra of composite nanoparticles with characteristic Palladium peaks, the copper peaks are due to the background from the copper TEM grids.

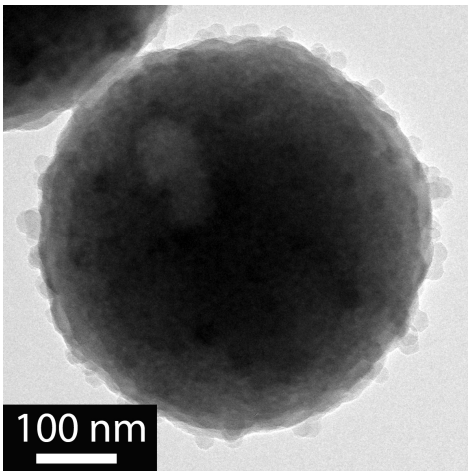

Figure S6. Hybrid BCP/silica triblock copolymer particle with silica condensed in the P2VP phase.

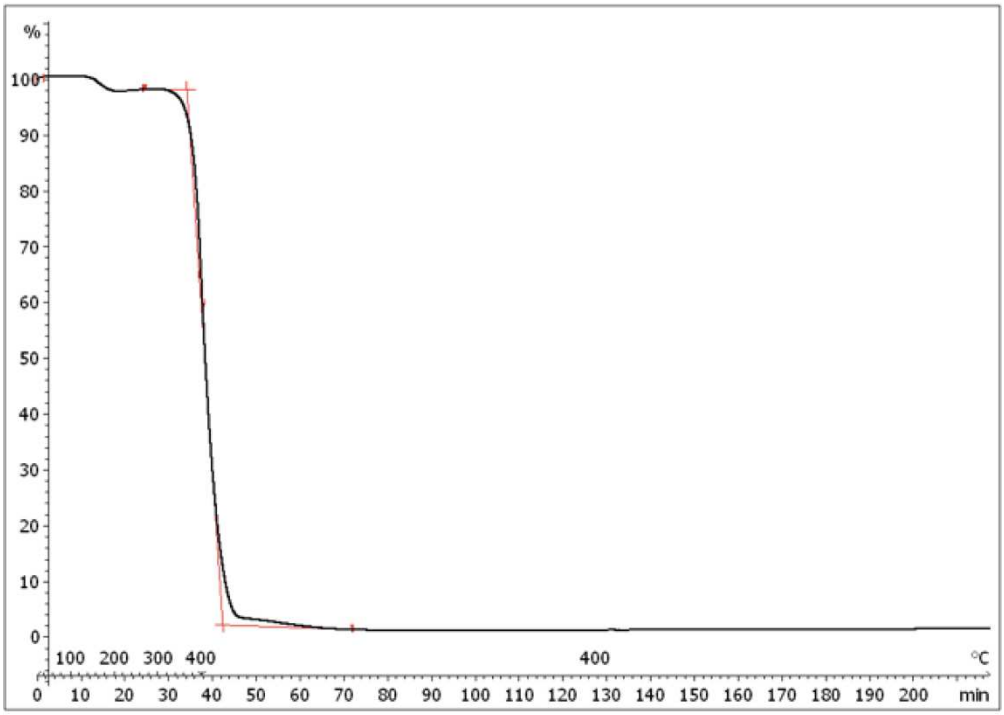

Figure S7. Thermal gravimetric analysis of polymer to test the degradation profile under calcinations conditions. The sample was heated to 400 ^{o}C and then held at this isotherm. The block copolymer was completely degraded within 1 hour at this isotherm.

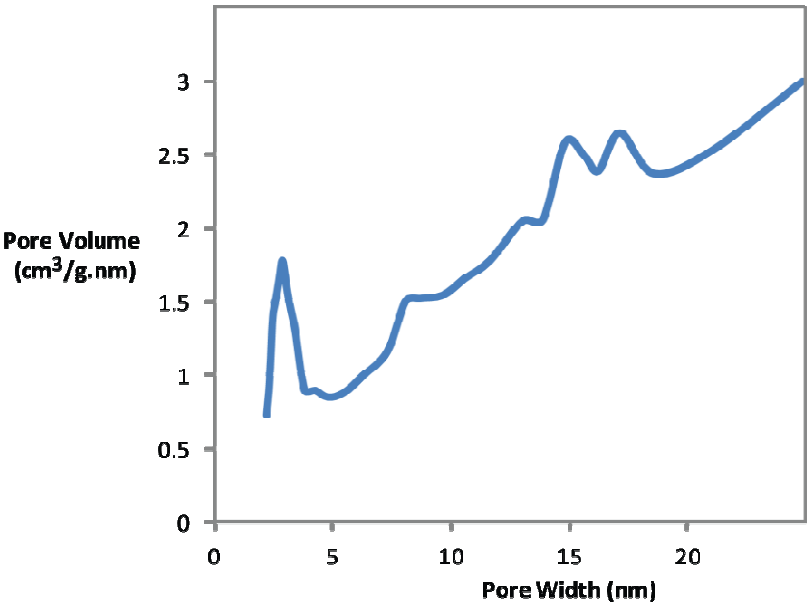

Figure S8. Pore diameters as measure by nitrogen isotherm for mesoporous silca nanoparticles after the removal of the BCP template.

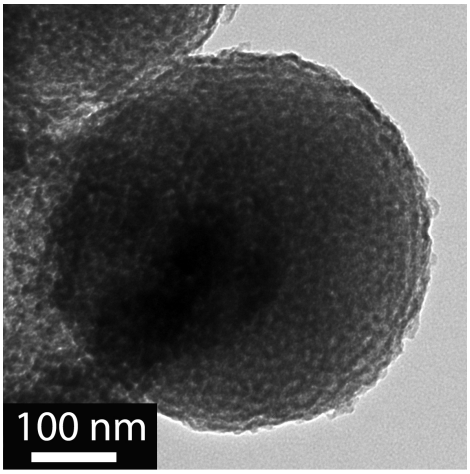

Figure S9. Titania mesoporous nanoparticle after the removal of the BCP template.

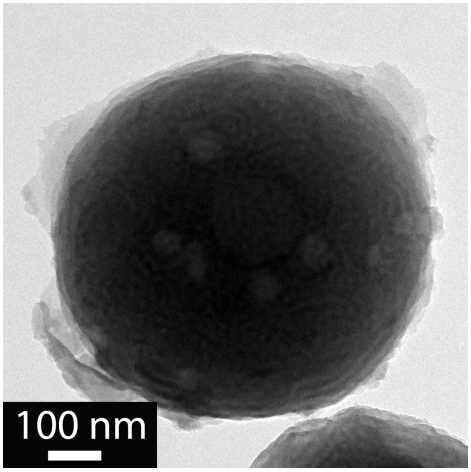

Figure S10. Hybrid BCP/Silica onion-like triblock copolymer particle with silica condensed in the P2VP phase.