Supporting Information

Nanoparticle synthesis *via* bubbling vapor precursors in bulk liquids

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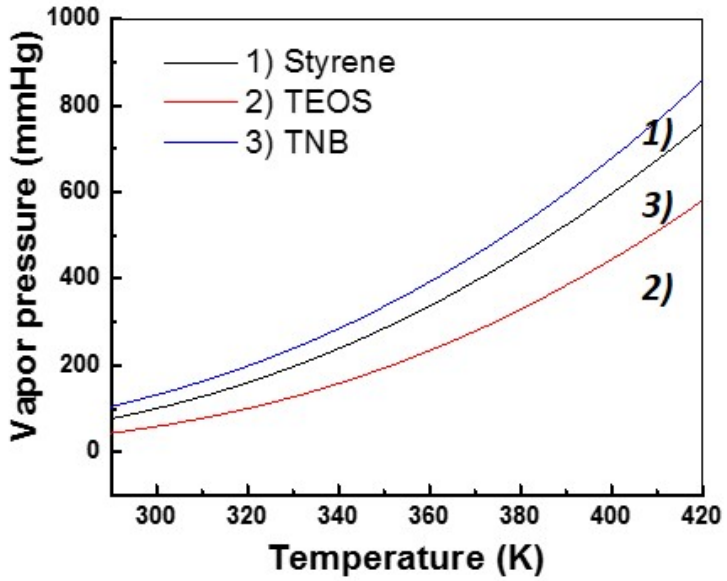


Figure S1. Vapor pressure of styrene, TEOS and TNB as function of temperature corresponding to Antoine Equation.

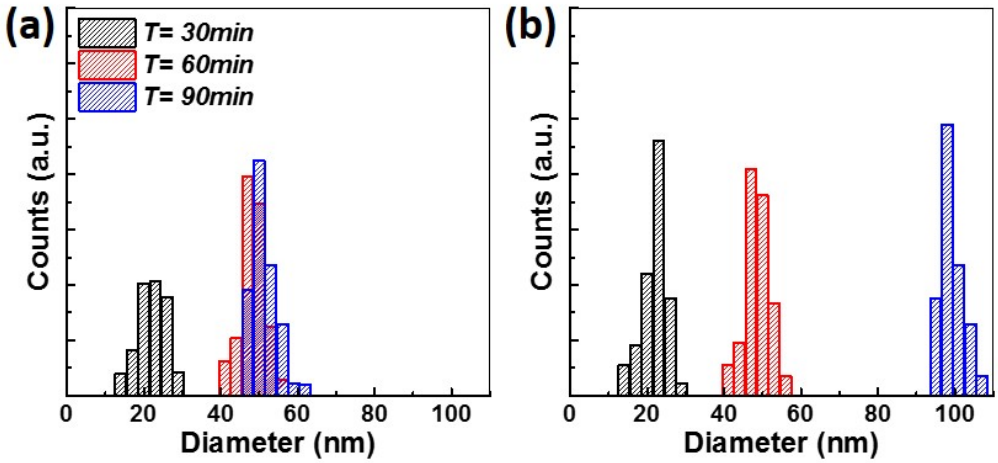


Figure S2. Size distribution and polydispersity of PS NPs as function of time and concentration of initiator. (a) 1.84×10^{-4} mol/L of initiator, (b) 1.84×10^{-5} mol/L of initiator

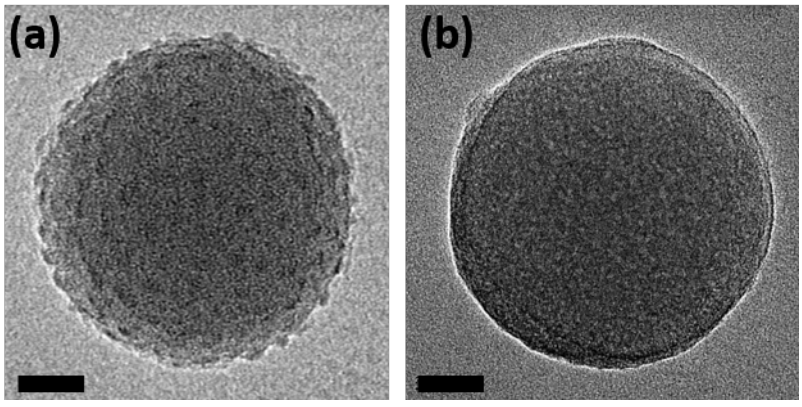


Figure S3. TEM images of SiO2@PS NP with different reaction temperature, (a) TEM image of SiO2@PS NP at 40 °C for 60 min, (b) TEM image of SiO2@PS NP at 80 °C for 60 min. The scale bar is 40 nm.

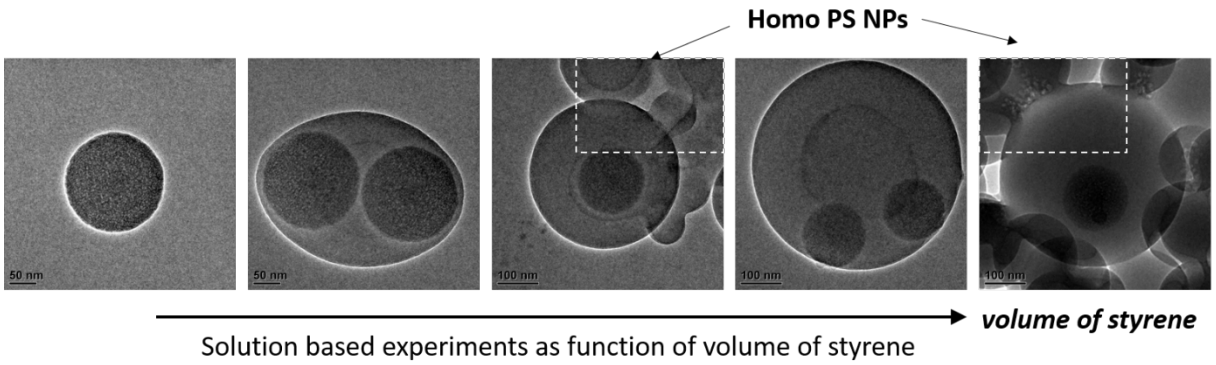


Figure S4. TEM images of solution based SiO_2@PS NP with different styrene concentration.

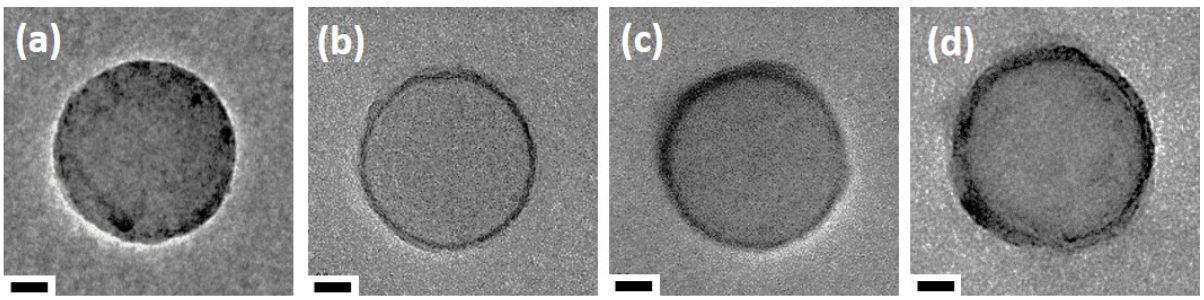


Figure S5. TEM images of PS@SiO_2 NPs with different vapor supply time corresponding in Figure 4a. The scale is 20 nm.

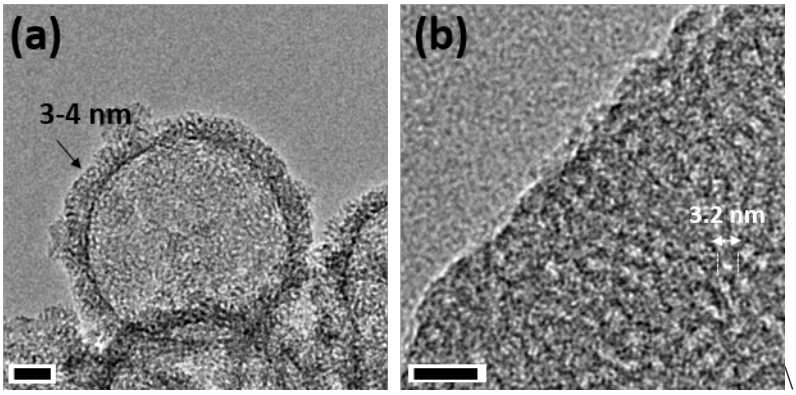


Figure S6. TEM images of HM-SiO_2 NPs and their pore size. (a) the structure of HM-SiO_2 NPs, (b) the size measurement of HM-SiO_2 NPs. The scale bar are 20 and 10 nm, respectively.

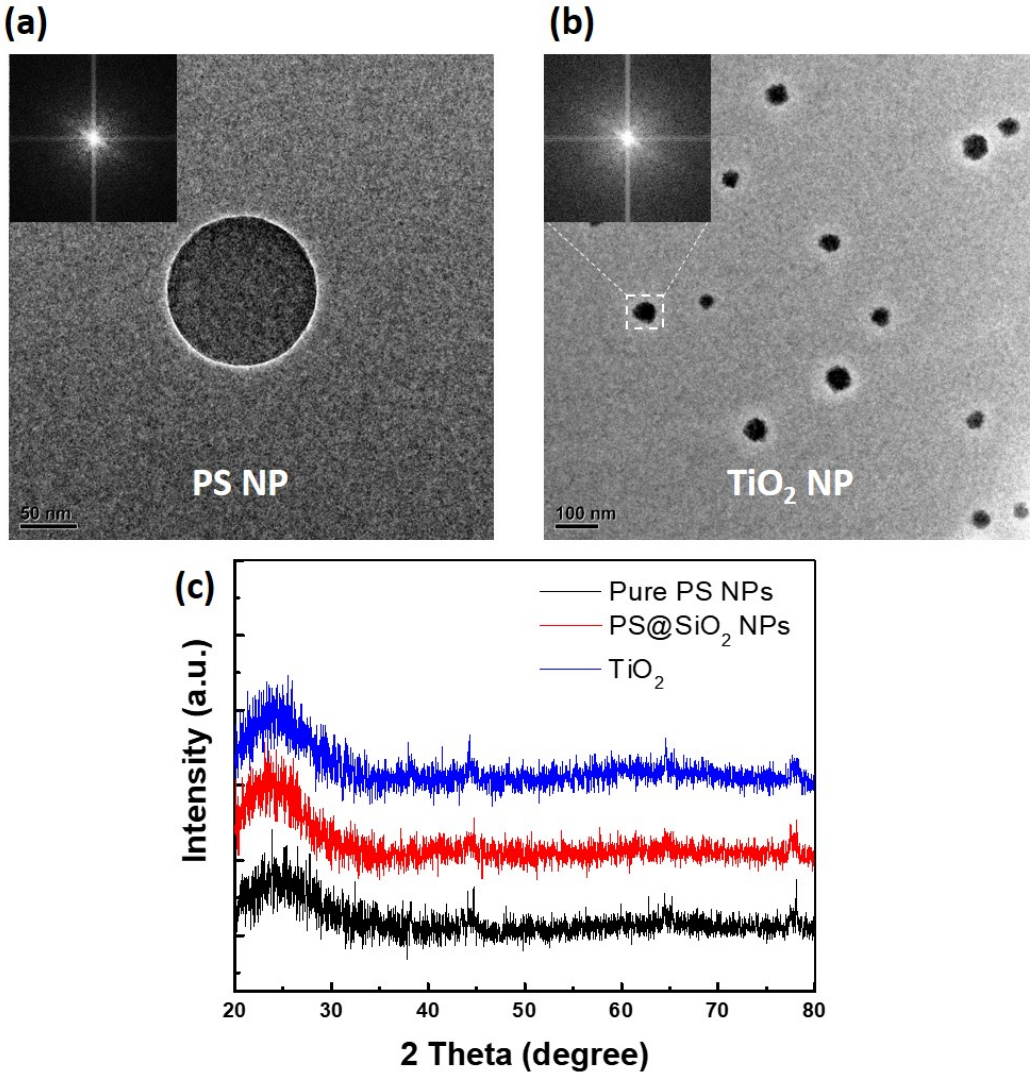
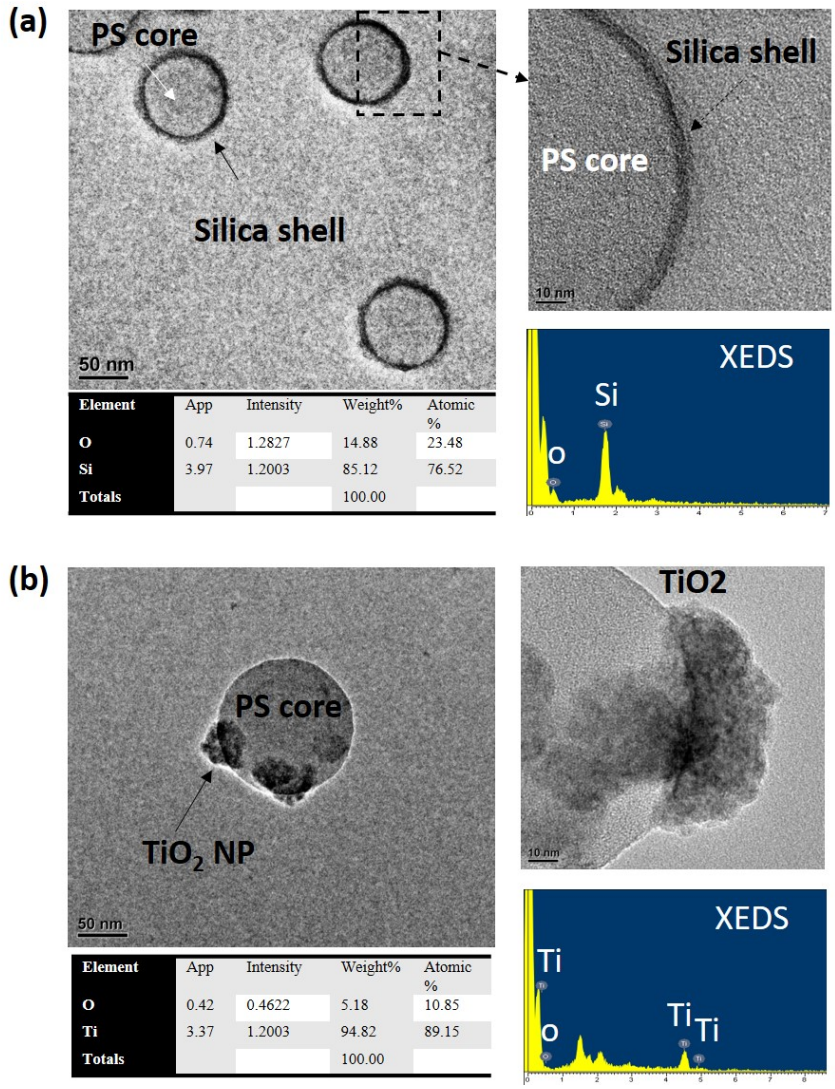


Figure S7. The TEM images of nanoparticles and its crystallography. (a) PS NP, (b) TiO_2 NPs, (c) the results of XRD.



Element	App	Intensity	Weight%	Atomic %
O	0.74	1.2827	14.88	23.48
Si	3.97	1.2003	85.12	76.52
Totals			100.00	

Element	App	Intensity	Weight%	Atomic %
O	0.42	0.4622	5.18	10.85
Ti	3.37	1.2003	94.82	89.15
Totals			100.00	

Figure S8. TEM image and the results of EDS of PS@SiO_2 and PS-TiO_2 composite NPs. TEM images indicated different color gradient because of different electron density.

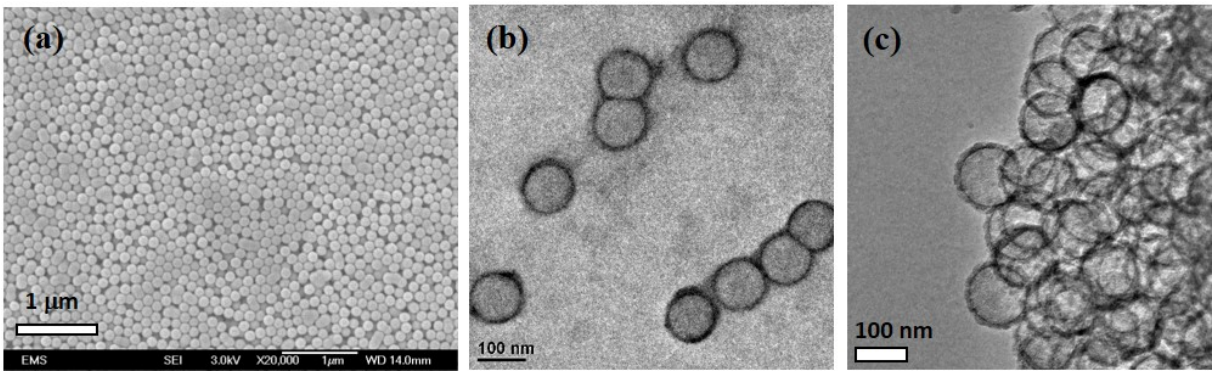


Figure S9. The low magnification of SEM and TEM images of PS NPs, PS@SiO_2 NPs, and HM-SiO_2 NPs. The scale is 1 μm and 100 nm.