

Supporting Information

Dual Roles of Polymeric Capping Ligands in the Surface-Protected Etching of Colloidal Silica

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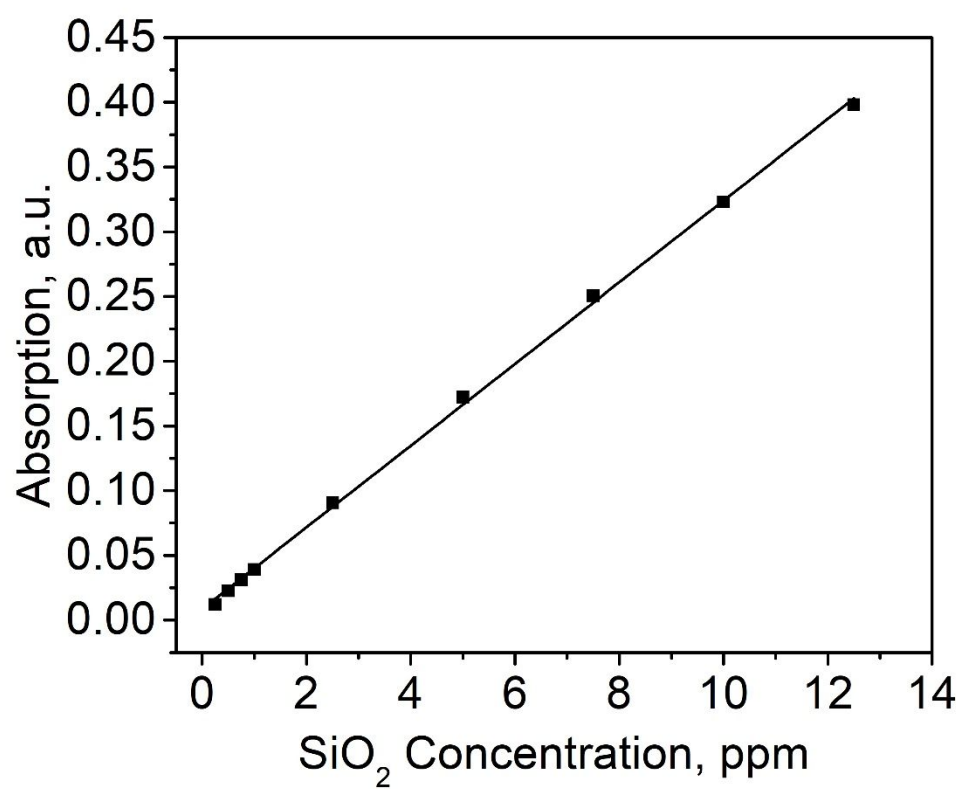


Figure S1. Standard calibration curve of SiO₂ concentration.

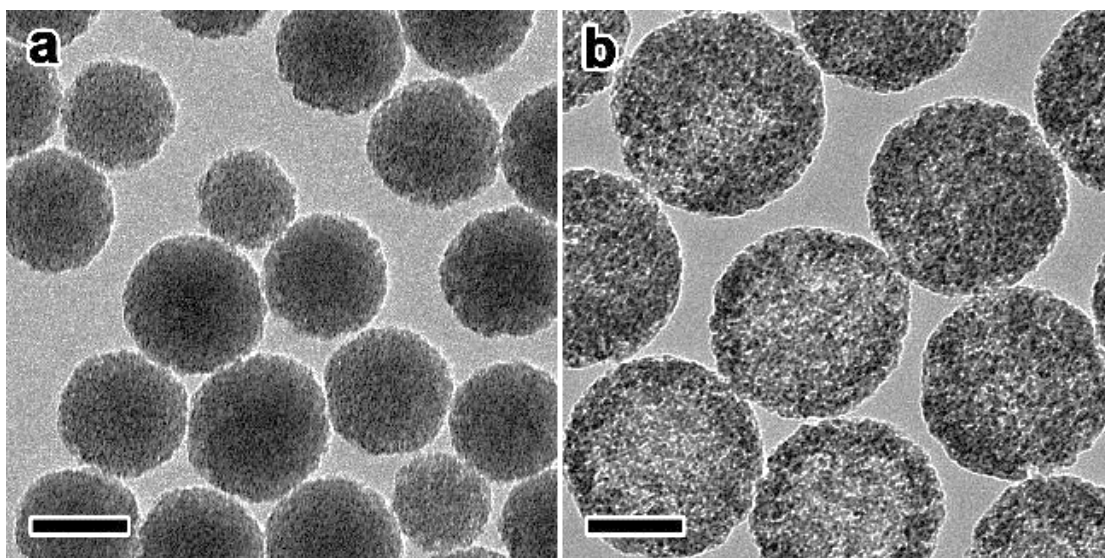


Figure S2. TEM images of (a) as-synthesized Stöber silica nanospheres and (b) PVP-capped silica nanospheres after being etched in 0.33 M NaOH for 5 hrs. The scale bars represent 100 nm.

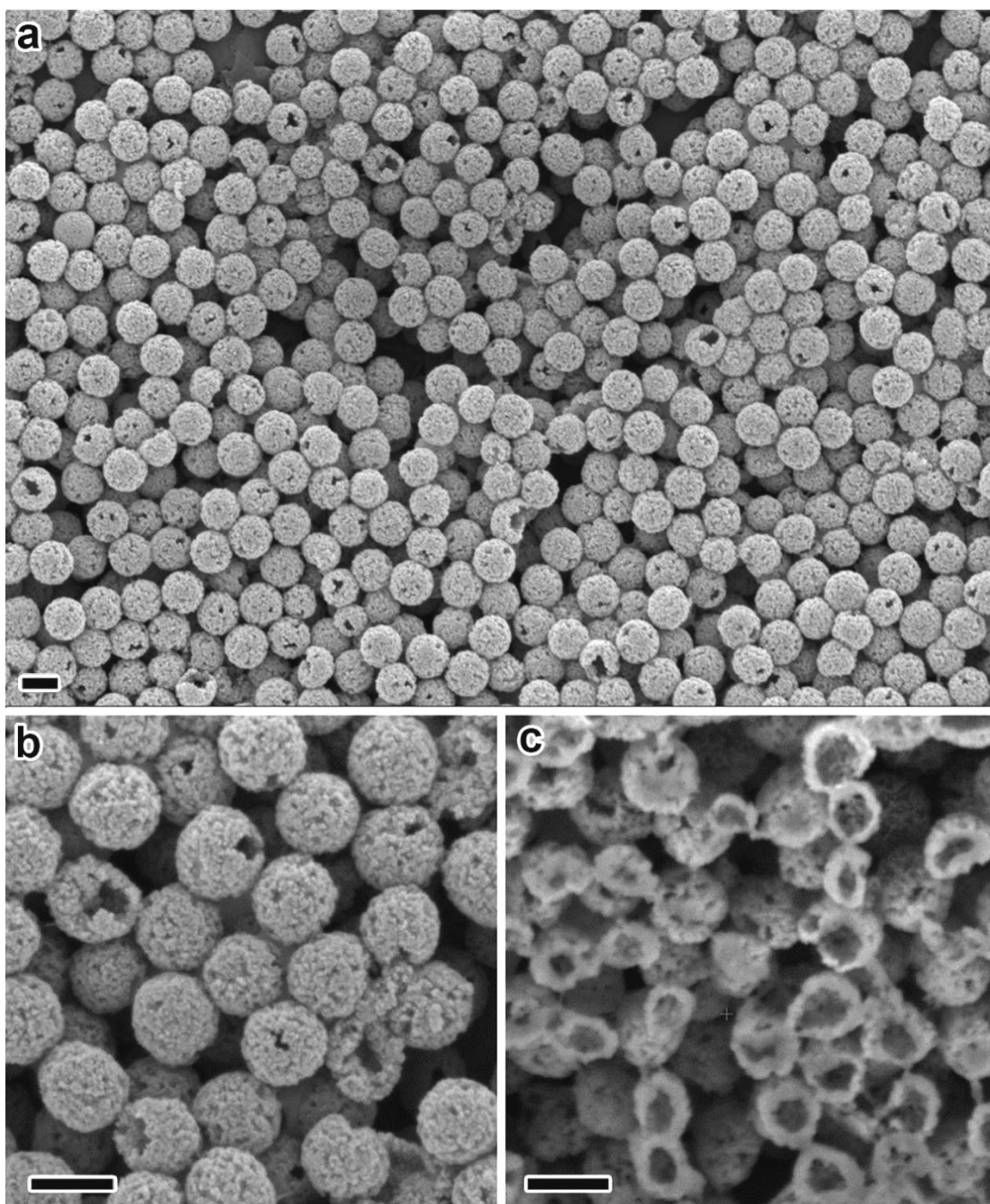


Figure S3. (a, b) SEM images of PVP-capped silica nanospheres being etched in 0.33 M NaOH for 5 hrs. (c) SEM image of the same sample after ablated by FIB. The scale bars are 200 nm in (a) and 100 nm in (b,c).

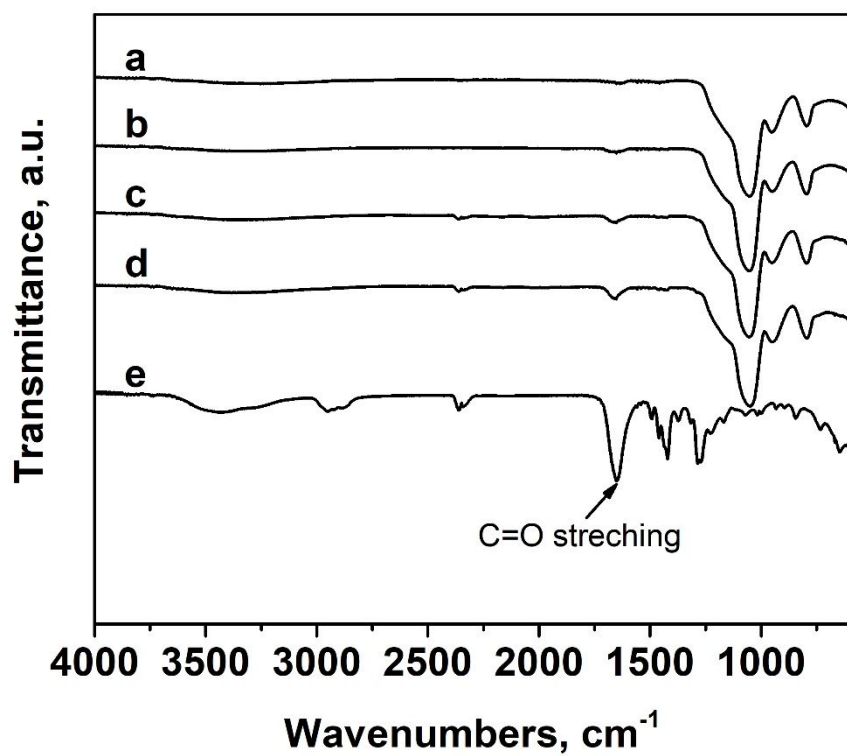


Figure S4. FTIR spectra of (a-d) SiO₂ nanospheres being heated at 100 °C for 3 h with different molar ratio of PVP/Si and (e) pure PVP. The molar ratio of PVP/Si are (a) 0, (b) 1, (c) 5 and (d) 10.

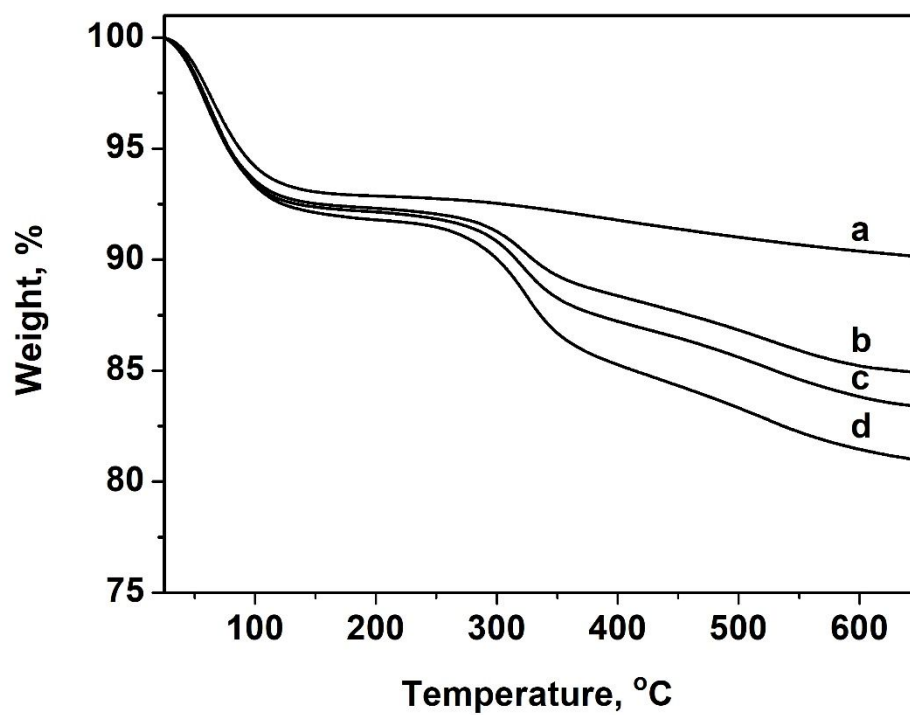


Figure S5. TGA curves of SiO₂ nanospheres being heated at 100 °C for 3 h with different molar ratio of PVP/Si: (a) 0, (b) 1, (c) 5 and (d) 10.

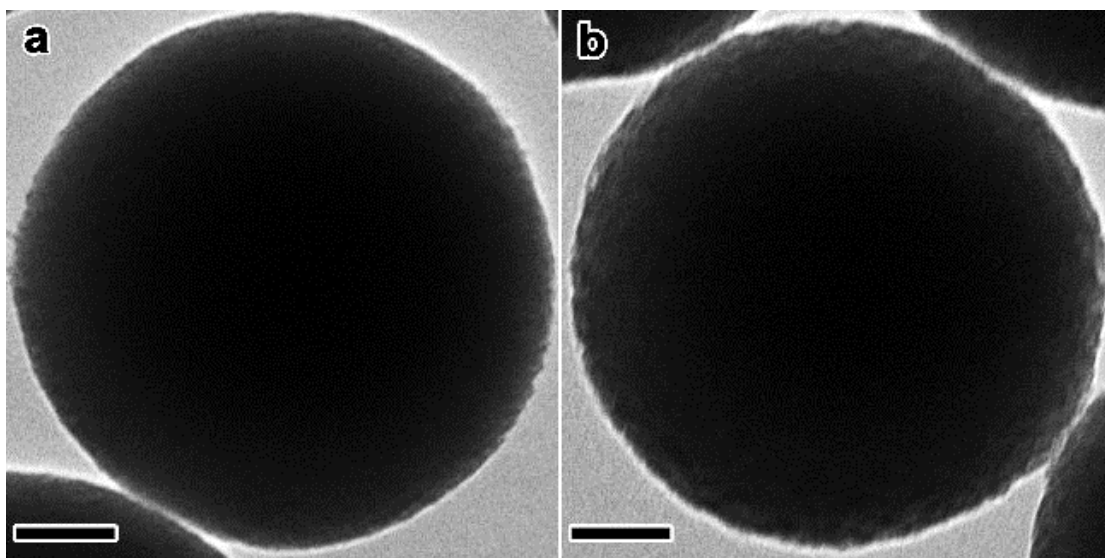


Figure S6. TEM images of silica nanospheres being heated at 100 °C (a) with PVP and (b) without PVP. The scale bars represent 50 nm.

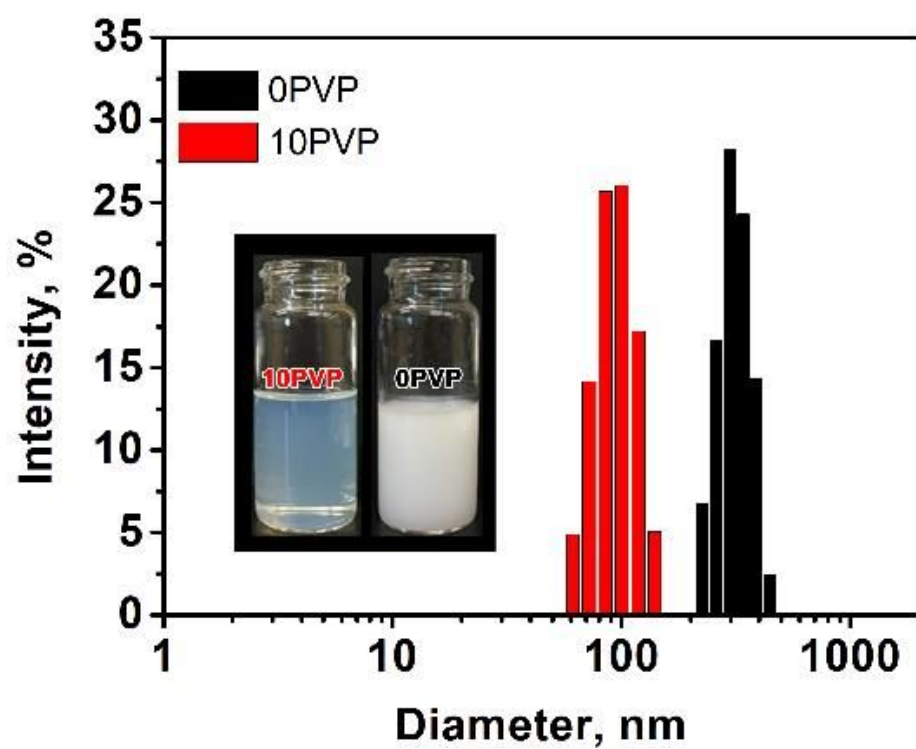


Figure S7. Size distribution of silica nanospheres synthesized with and without PVP. The inset digital image shows the appearance of the nanospheres after synthesis.