Supporting Information

Double in situ Preparation of Raspberry-like Polymer Particles

Jiawei Li,[a,b] Susanne Sihler,[b] Ulrich Ziener[b*]

[a]Engineering Research Center for Eco-Dyeing & Finishing of Textiles, Ministry of Education, Zhejiang Sci-Tech University, Hangzhou 310018, P. R. China

[b]Institute of Organic Chemistry III – Macromolecular Chemistry and Organic Materials, University of Ulm, Albert-Einstein-Allee 11, 89081 Ulm, Germany

* Corresponding author: ulrich.ziener@uni-ulm.de.

List of Contens

Table S1. Summary of formulations, particle sizes and PDIs for the PSt-SiO_2 NCPs prepared by the postpolymerization method using the waterborne initiator (V-057) and Eosin Y as stabilizer (2 mg/mL).

Runs	St/g	TEOS/g	4-VP/mg[a]	HD/mg	Initiator/mg	Reaction conditions	z-Diameter/nm (D_z)[b]	Polydispersity (PDI)[b]
S1[c]	2	0	0	80	80	60 °C, 5h	239	0.083
S2	0.45	0.05	50	20	20	RT, pH 9, 3 d;[d] 60 °C, 5 h	114	0.042
S3	0.45	0.05	75	20	20	RT, pH 9, 3 d;[d] 60 °C, 5 h	148	0.028
S4	0.4	0.1	75	20	20	RT, pH 9, 3 d;[d] 60 °C, 5 h	157	0.136
S5	0.35	0.15	75	20	20	RT, pH 9, 3 d;[d] 60 °C, 5 h	132	0.098

[a] After the formation of SiO_2 nanoparticles for 3 d at room temperature (RT), a certain mass fraction of 4-VP was added into the emulsion.
[b] Determined by DLS.
[c] The monomer concentration is 20 wt%.
[d] In a 0.01 M NH_3*NH_4Cl buffered aqueous solution at pH = 9.

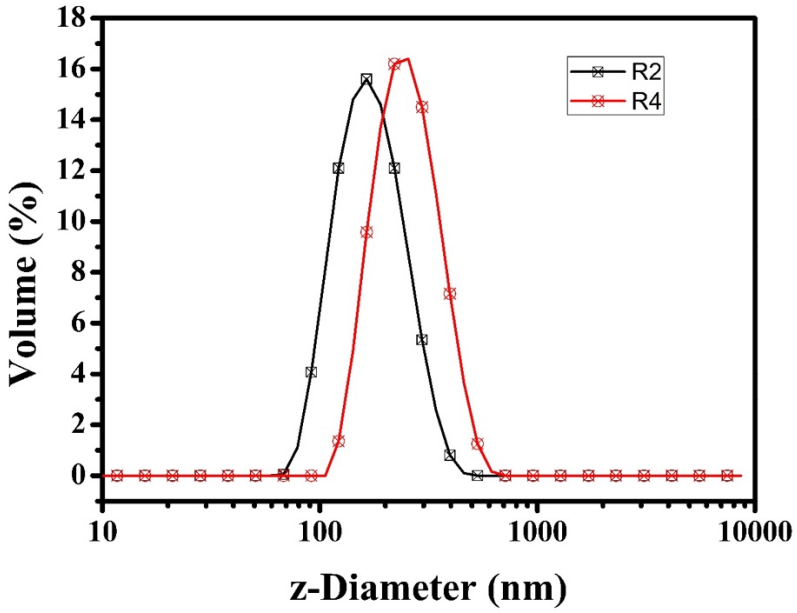

Figure S1. DLS size distribution of raspberry-like PSt-SiO_2 NCPs (see Table 1, runs 2 and 4).

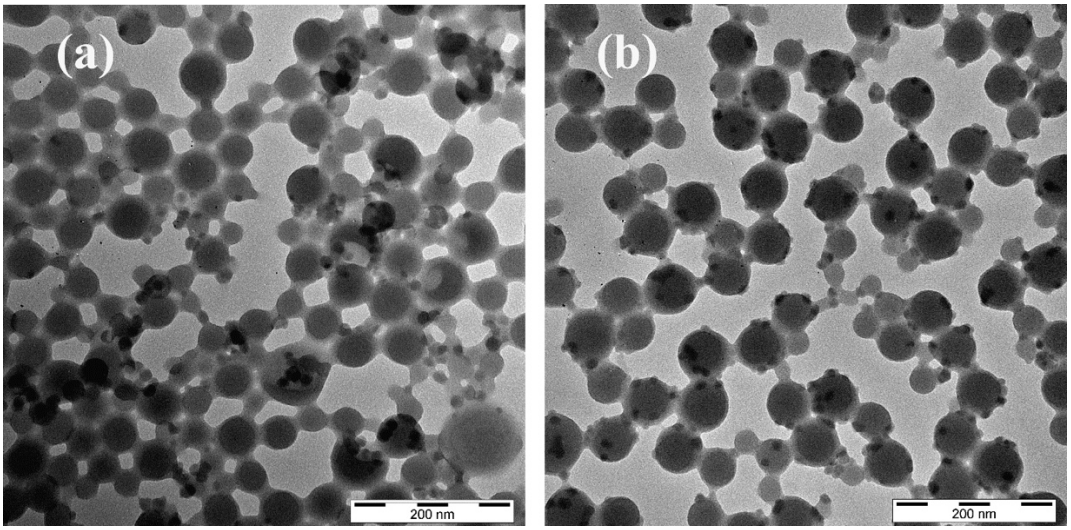

Figure S2. TEM images of the as-obtained PSt-SiO_2 NCPs prepared using SDS as stabilizer (see Table 1, runs 9 and 10).

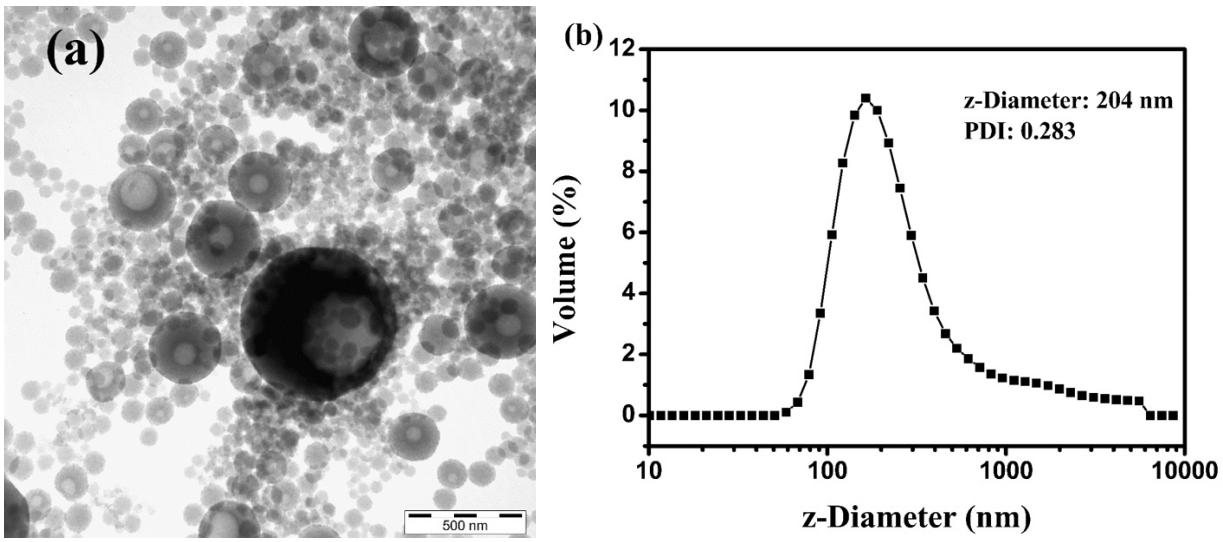

Figure S3. (a) TEM image and (b) DLS size distribution of PSt-SiO_2 NCPs (see Table 1, run 12).

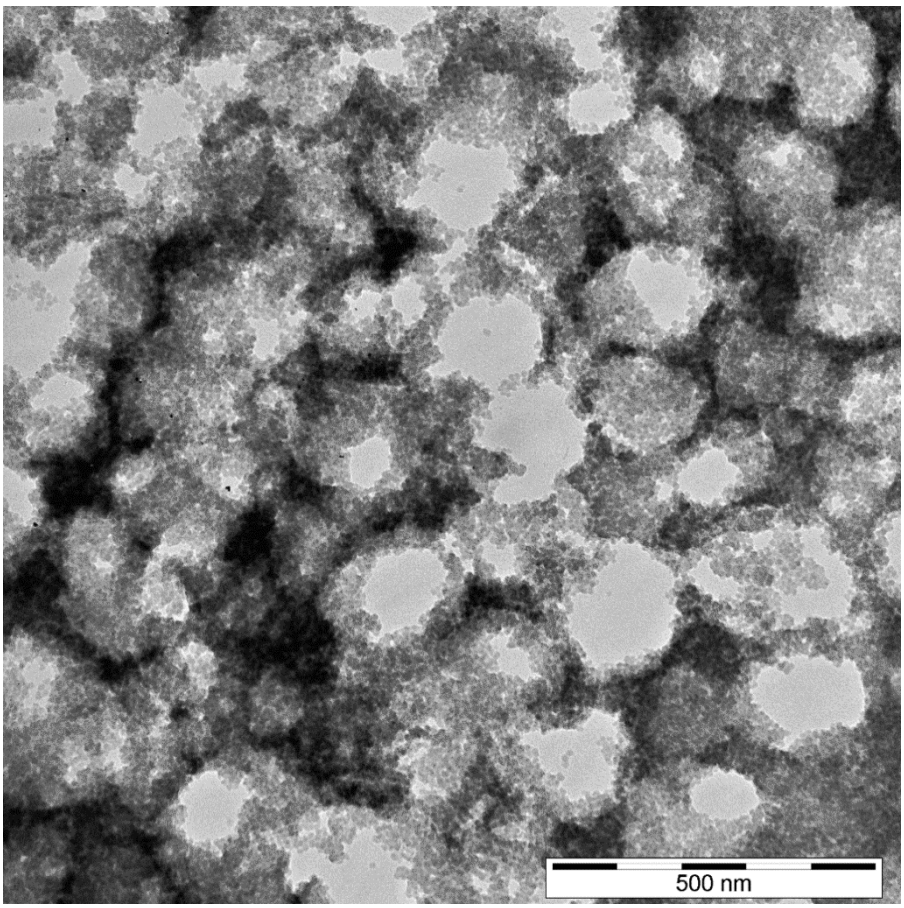

Figure S4. TEM image of the dried emulsion from run S2 (see Table S1) after the formation of SiO_2 nanoparticles for 3 d at room temperature (RT) before the polymerization.

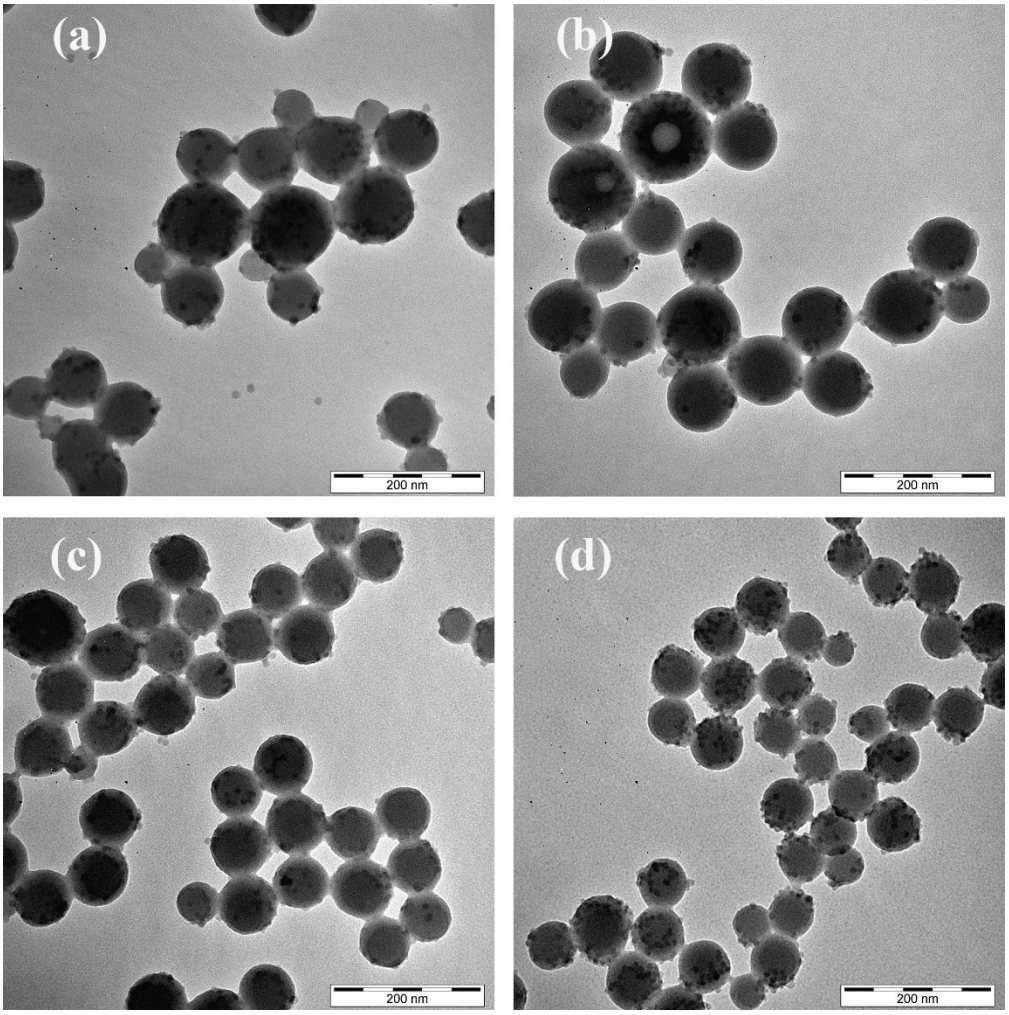

Figure S5. TEM images of the PSt-SiO_2 NCPs prepared by the postpolymerization method with different mass ratios St/TEOS and amounts of 4-VP: (a) 90/10 St/TEOS, 50 mg of 4-VP, (b) 90/10 St/TEOS, 75 mg of 4-VP, (c) 80/20 St/TEOS, 75 mg of 4-VP and (d) 70/30 St/TEOS, 75 mg of 4-VP (see Table S1, runs S2-S5).

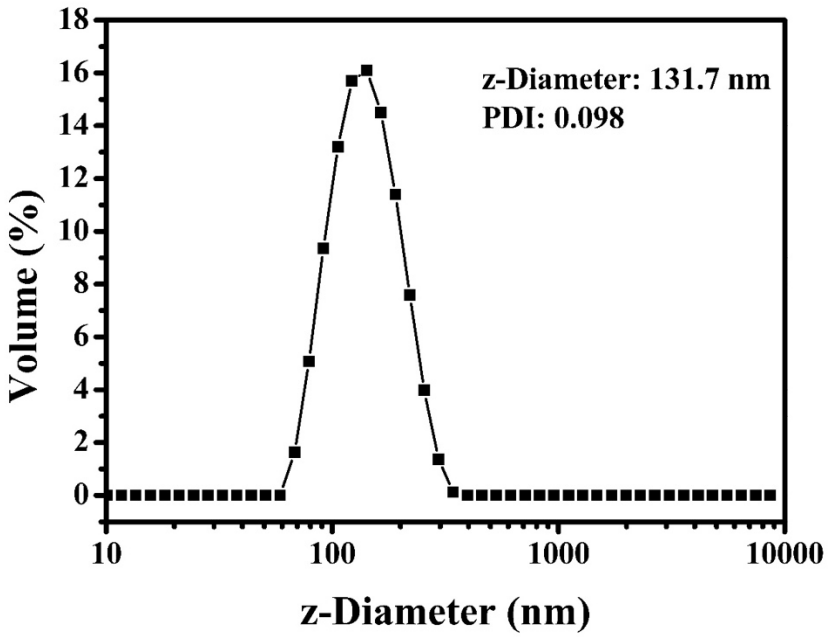

Figure S6. DLS size distribution of PSt-SiO_2 NCPs (see Table S1, run S5).

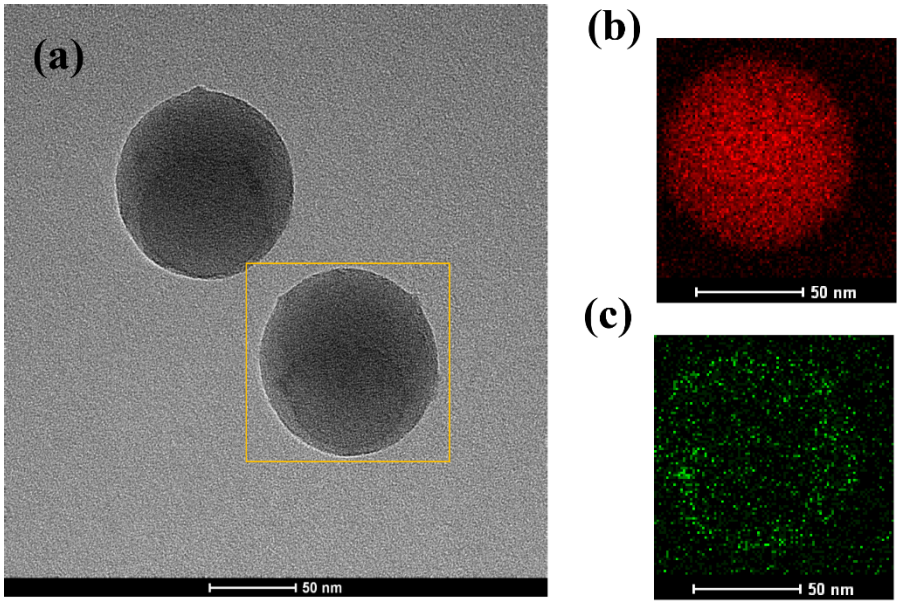

Figure S7. TEM micrograph (a) and EDX element mappings of C (b) and Si (c) of PSt-SiO_2 NCPs at a polymerization time of 5 h with an initial ratio of St/TEOS of 70/30 and 25 mg of 4-VP (Table 1, run 2).

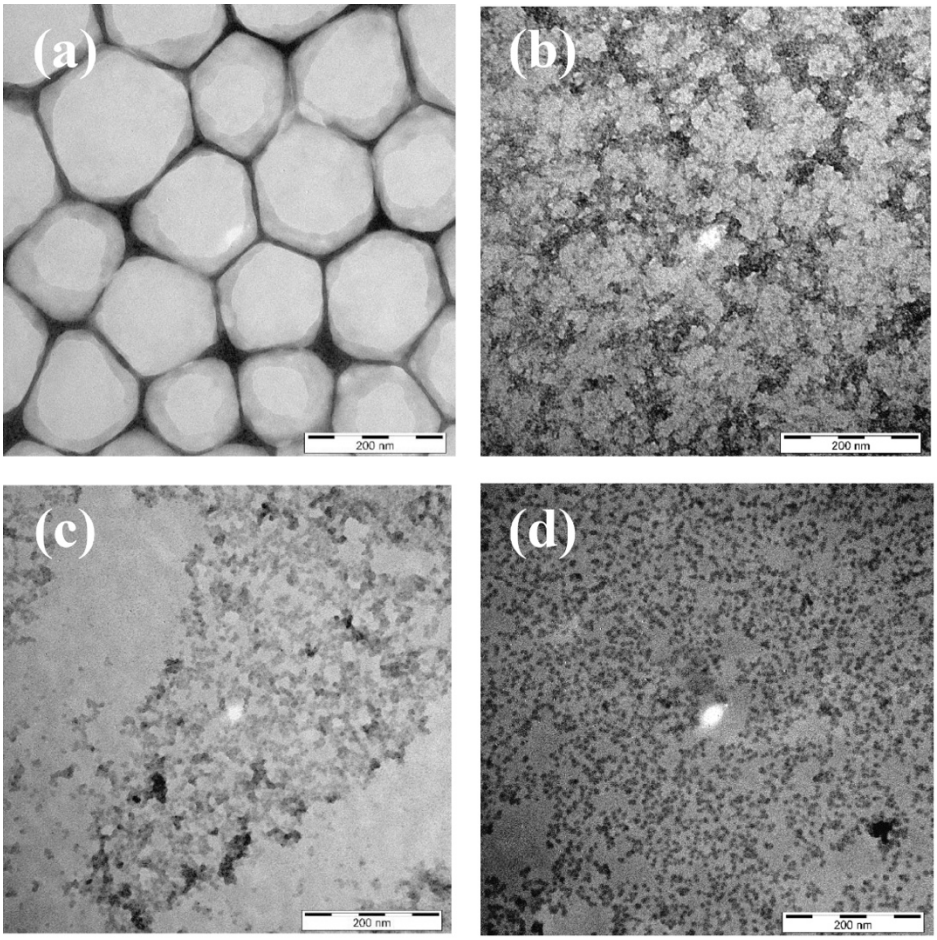

Figure S8. TEM images of SiO_2 particles after different times of the sol-gel process from emulsions with TEOS and toluene as dispersed phase: (a) 5 h, (b) 12 h, (c) 18 h and (d) 24 h.