Supplemental Information for

Chemical Doping-Assisted Shape Transformation of Block Copolymer Particles

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Table S1. The summary of average values of domain spacing (D), major axis (L), minor axis (S), and AR (= L/S) for pristine spherical particles and I_2-doped anisotropic particles (e.g., oblates, ellipsoids or inverse oblates) for PS_{35k}-b-PB_{11k} and PS_{34k}-b-PB_{25k} BCPs. Average values were determined by measuring more than 100 particles ranging from 0.2 to 2 µm.

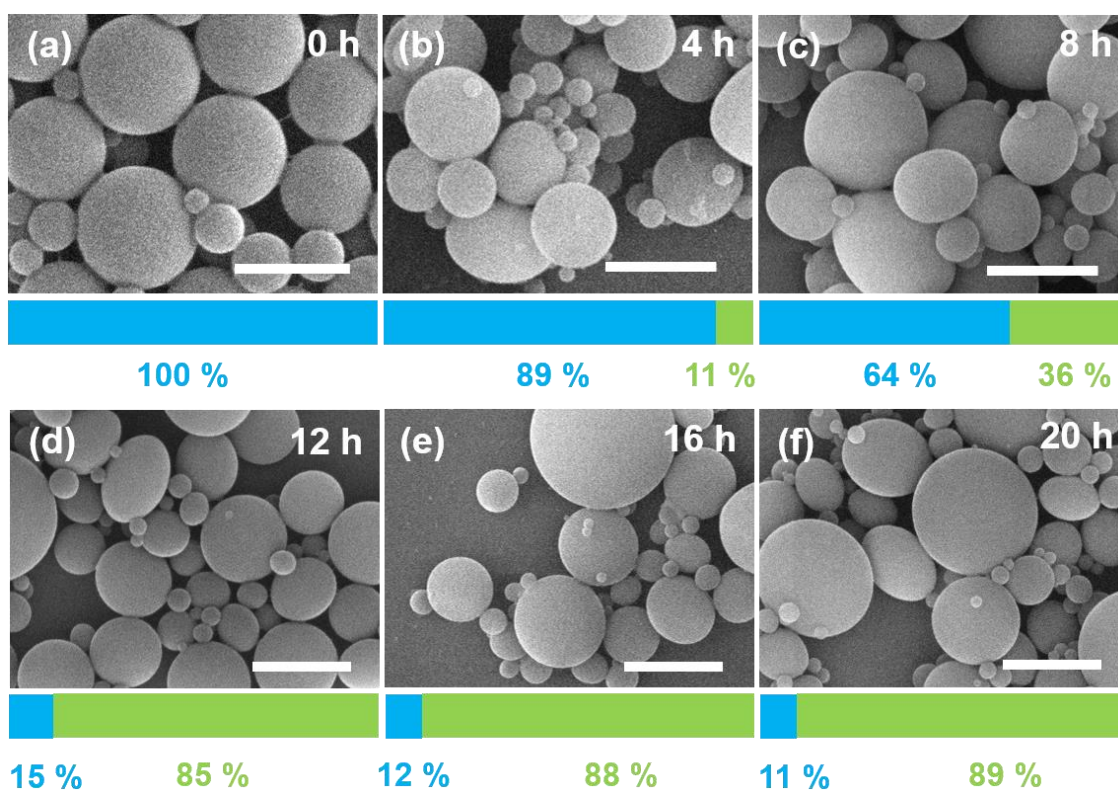| BCP particles	D (nm)	L (nm)	S (nm)	AR
PS_{35k}-b-PB_{11k} spheres	33 ± 2.3	1121 ± 256	1122 ± 248	1.0
PS_{35k}-b-PB_{11k} oblates	39 ± 1.5	958 ± 212	743 ± 128	1.29
PS_{34k}-b-PB_{25k} spheres	36 ± 1.9	1021 ± 326	1020 ± 313	1.0
PS_{34k}-b-PB_{25k} ellipsoids	42 ± 2.5	1132 ± 208	744 ± 197	1.52

Figure S1. SEM images of PS_{35k}-b-PB_{11k} particles at different redox reaction time in DCM/I_2. (a) 0 h; (b) 4 h; (c) 8 h; (d) 12 h; (e) 16 h; (f) 20 h. Bar charts indicate the percent frequency of the particle shapes, including sphere (blue) and oblate (green) during different reaction time. More than 100 particles were counted for statistics. Scale bars are 1 µm.
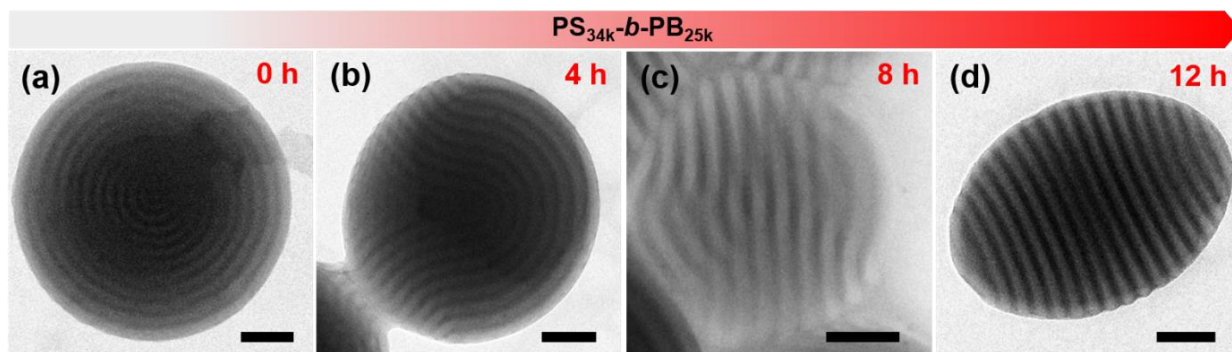
Figure S2. TEM images showing the morphology transitions from PS_{34k}-*b*-PB_{25k} spherical particles to ellipsoids at different reaction times in DCM/I_2. Scale bars are 100 nm.
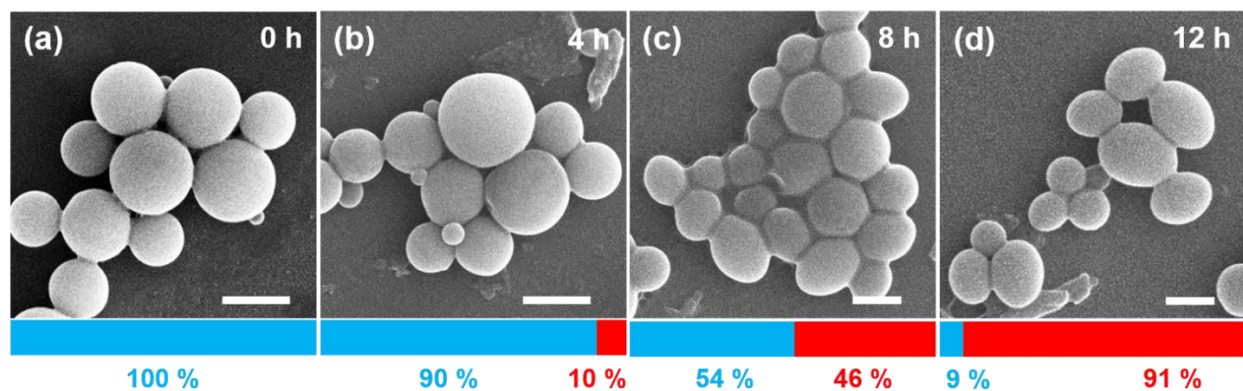

Figure S3. SEM images of PS_{34k}-*b*-PB_{25k} particles at different reaction times in DCM/I_2. (a) 0 h; (b) 4 h; (c) 8 h; (d) 12 h. Bar charts indicate the percent frequency of the particle shapes, including sphere (blue) and ellipsoid (red) during different reaction times. More than 100 particles were counted for statistics. Scale bars are 1 µm.

Table S2. Conversion of the double bonds in PB (R, %) by I_2 at different redox reaction times (h) as calculated based on the NMR data in Figure 2e.

Time (h)	Integral of B	Normalized integral of A	R^a
0.0	1.45	5.0	0.0
4.0	1.30	5.0	10.3
8.0	1.23	5.0	15.2
12.0	1.19	5.0	17.9
16.0	1.13	5.0	22.0
20.0	1.01	5.0	31.0

a: The conversion of double bond in PB can be calculated based on the NMR as shown in Figure 2e. The integration value of aromatic signals (6.4–7.2 ppm) was marked as A and the signals from vinylic protons in PB (4.9–5.5 ppm) were marked as B while both of them were compared to obtain the conversion of double bond (R): $100 \times (1-1.45/B)$
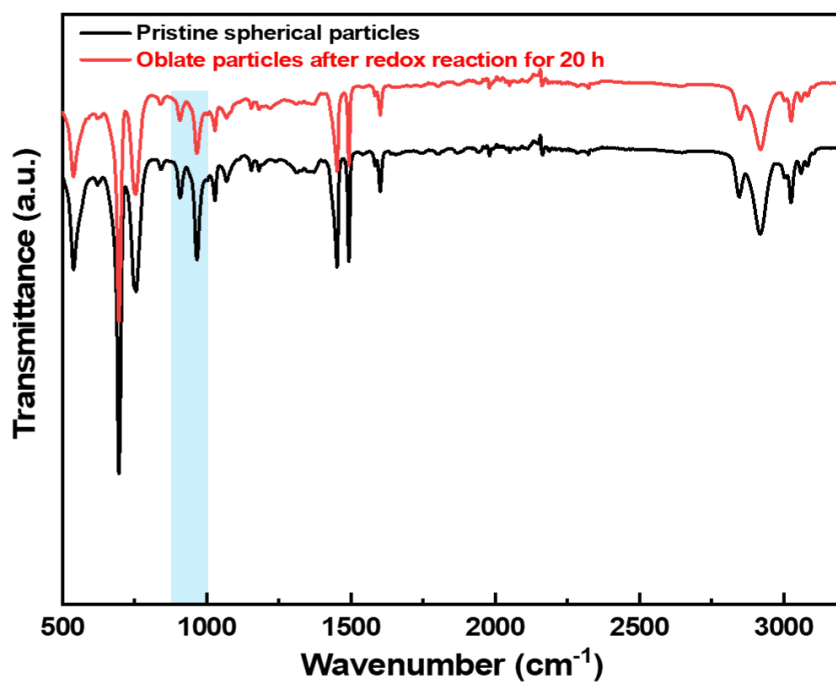

Figure S4. FT-IR spectra of pristine spherical and oblate PS_{35k}-b-PB_{11k} particles before and after the reaction for 20 h. Blue area indicates the alkene =C–H bend.

Table S3. Interfacial tension (γ, mN m^{-1}) between the polymer solution (*i.e.*, PS$_{30k}$, PB$_{11k}$, in DCM, 10 mg mL^{-1}) with varying reaction time in DCM/I$_2$ and the aqueous surfactant solution (*i.e.*, CTAB, 10 mg mL^{-1}).

Reaction time (h)	0	4	8	12	16	20
γ_{PS}	4.12 ± 0.18	4.11 ± 0.24	4.12 ± 0.28	4.12 ± 0.11	4.12 ± 0.16	4.11 ± 0.20
γ_{PB}	4.95 ± 0.12	4.63 ± 0.25	4.36 ± 0.16	4.13 ± 0.10	4.01 ± 0.23	3.96 ± 0.19
$\Delta\gamma_{PB\text{-}PS}$	0.83	0.52	0.24	0.01	-0.11	-0.15
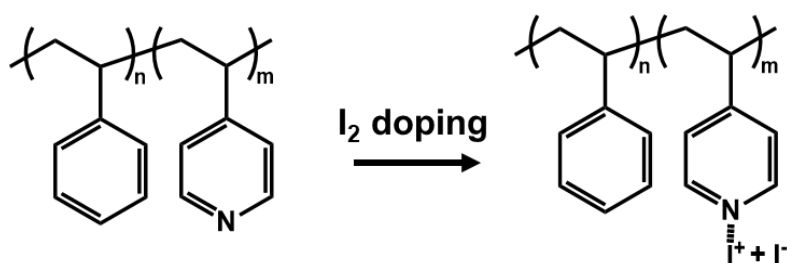
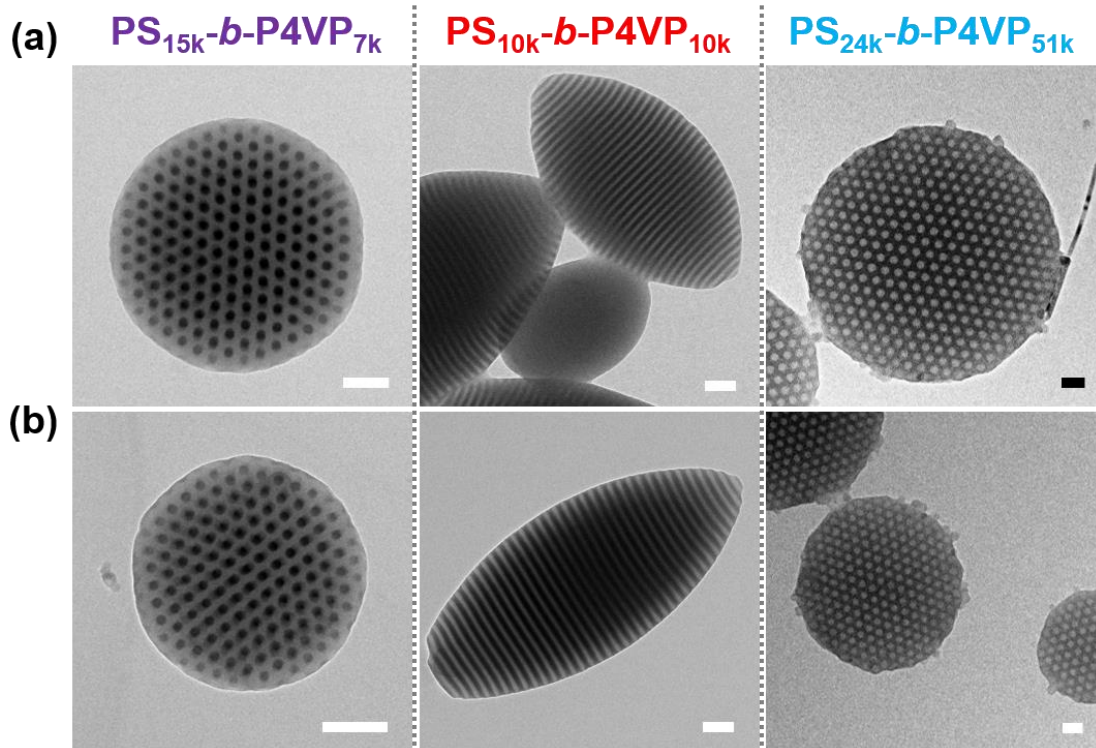**Scheme S1.** Reaction scheme for I$_2$ doping of PS-*b*-P4VP.

Figure S5. TEM images of (a) as-prepared I_2-doped PS-*b*-P4VP particles and (b) after 6 months. Scale bars are 100 nm.

Table S4. The summary of average values of domain spacing (*D*), major axis (*L*), minor axis (*S*), and AR (= *L/S*) for pristine PS$_{15k}$-*b*-P4VP$_{7k}$, PS$_{10k}$-*b*-P4VP$_{10k}$, PS$_{24k}$-*b*-P4VP$_{51k}$ spherical particles and anisotropic particles (e.g., oblates, ellipsoids or inverse oblates) obtained after I_2-doping for 12 h. Average values were obtained by measuring more than 100 particles ranging from 0.2 to 2 μm

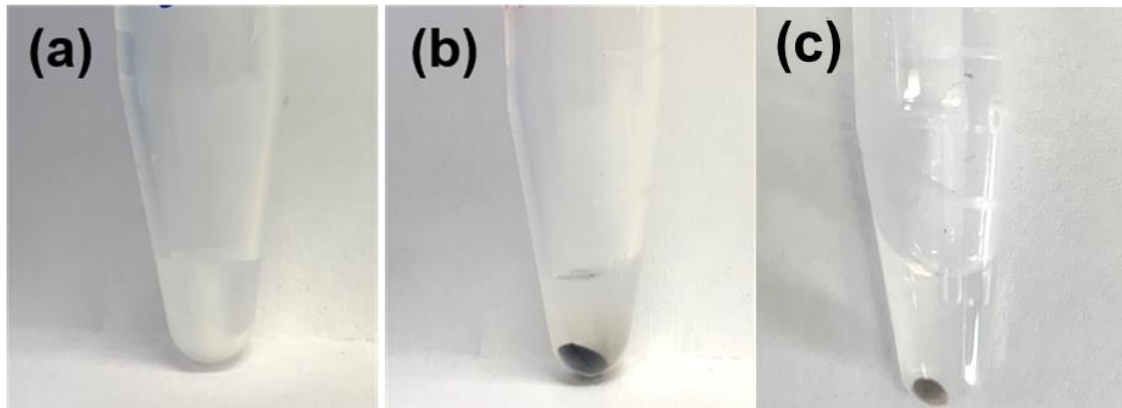| BCP	*D* (nm)	*L* (nm)	S (nm)	AR
PS$_{15k}$-*b*-P4VP$_{7k}$ spheres	21 ± 1.7	849 ± 224	850 ± 209	1.0
PS$_{15k}$-*b*-P4VP$_{7k}$ oblates	30 ± 2.4	964 ± 264	460 ± 215	2.1
PS$_{10k}$-*b*-P4VP$_{10k}$ spheres	20 ± 1.6	987 ± 118	989 ± 125	1.0
PS$_{10k}$-*b*-P4VP$_{10k}$ ellipsoids	28 ± 2.1	1156 ± 338	609 ± 252	1.9
PS$_{24k}$-*b*-P4VP$_{51k}$ spheres	60 ± 2.2	1238 ± 186	1239 ±197	1.0
PS$_{24k}$-*b*-P4VP$_{51k}$ inverse oblates	67 ± 3.1	1345 ± 202	364 ± 158	3.7

Figure S6. (a) Photograph of pristine PS-*b*-PB spherical particles; Photograph of (b) PS-*b*-PB particles and (c) PS-*b*-P4VP particles after I_2 doping.
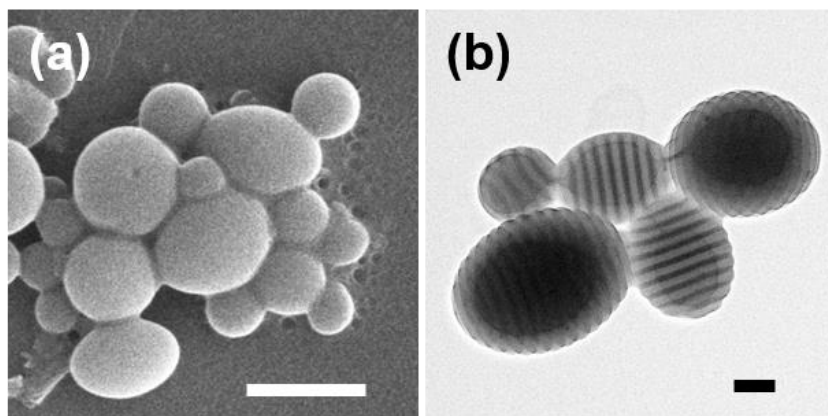

Figure S7. (a) SEM and (b) TEM images I_2 doped PS-*b*-PB particles after IR irradiation. The scale bar is 1 μm in SEM image while 100 nm in TEM image.