Electronic Supplementary Material (ESI) for Materials Chemistry Frontiers.

Supporting information

Janus hollow polymeric hairy microspheres as efficient adsorbents and catalyst scaffolds

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Table S1. Summary of synthetic conditions for the preparation of SiO_2@PHS, SiO_2@SPHS and HSPHS.

Sample	DVB (wt%)	$BF_3 \cdot Et_2O$ (wt%)	Span 80 (wt%)	Polymerization time (min)	Sulfonation time (h)	HF etching
SiO_2@PHS-1	1.5	0.18	0.168	1	—	—
SiO_2@PHS-2	1.5	0.18	0.168	8	—	—
SiO_2@PHS-3	1.5	0.18	0.24	8	—	—
SiO_2@SPHS-1	1.5	0.18	0.168	1	1	—
SiO_2@SPHS-2	1.5	0.18	0.24	8	1	—
SiO_2@SPHS-3	1.5	0.18	0.24	8	12	—
HSPHS-1	1.5	0.18	0.168	8	1	+
HSPHS-2	1.5	0.18	0.24	8	1	+
HSPHS-3	1.5	0.18	0.24	8	12	+
HSPHS-4	1.5	0.18	0.168	1	1	+

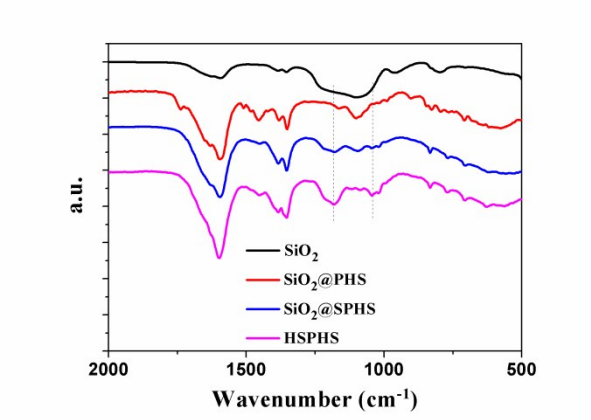

Figure S1 FT-IR spectra of SiO_2, SiO_2@PHS, SiO_2@SPHS and HSPHS.

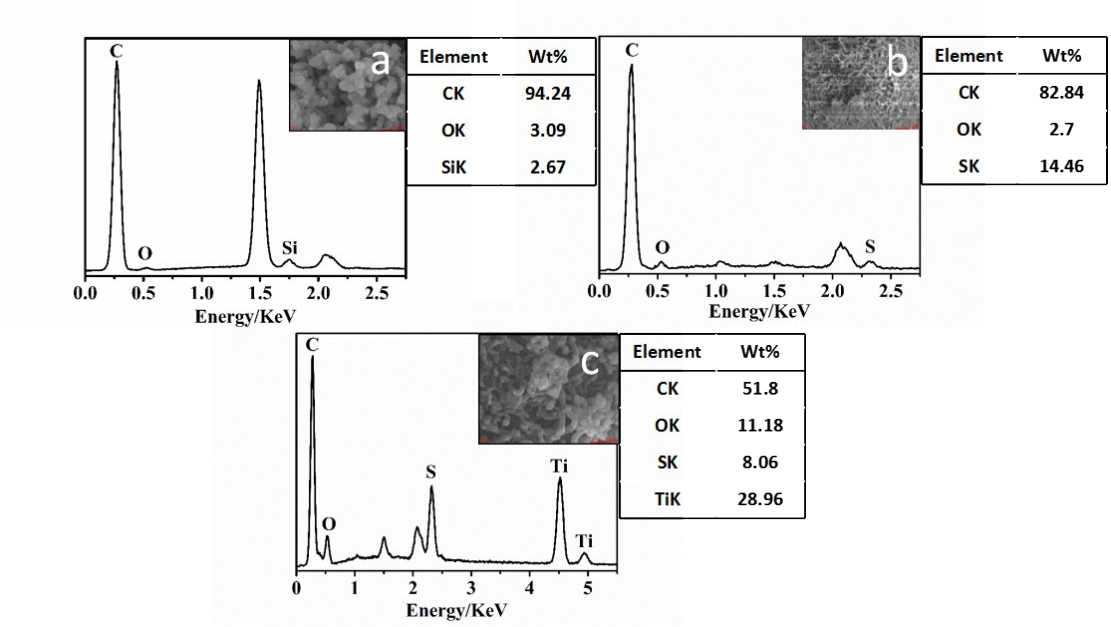

Figure S2 EDX spectra of the selected area (inset) of SiO_2@PHS (a), HSPHS (b) and HSPHS@TiO_2 (c).

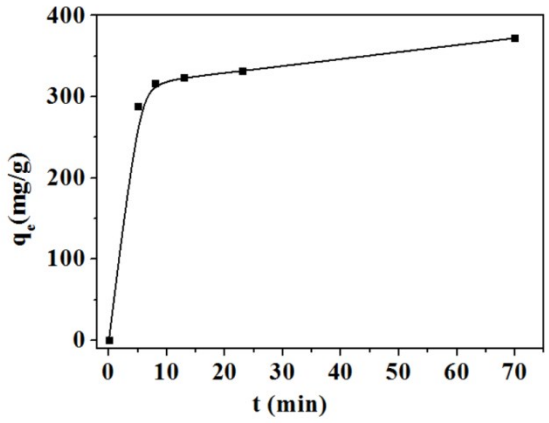

Figure S3 Adsorption kinetics of RB with HSPHS at room temperature. HSPHS-3: 1 mg, RB aqueous solution: 4 mL, 100 mg L^{-1}.

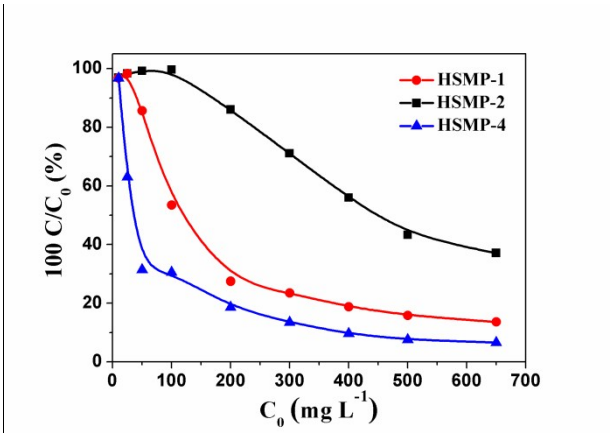

Figure S4 Adsorption percentage of RB by the Janus HSPHS with different morphologies under different initial RB concentrations. (HSPHS: 1 mg, RB aqueous solution: 4 mL).

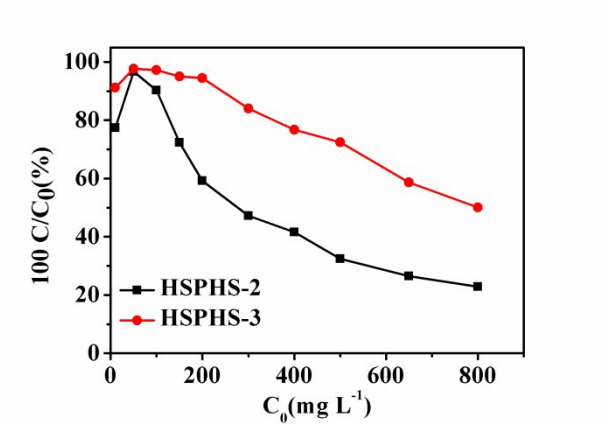

Figure S5 Adsorption percentage of RB by the Janus HSPHS with different sulfonation degree under different initial RB concentrations. (HSPHS: 1 mg, RB aqueous solution: 4 mL)

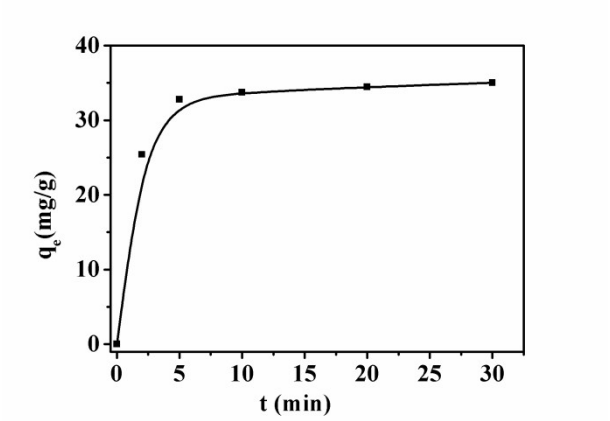

Figure S6 Adsorption kinetics of DMY with HSPHS at room temperature. HSPHS-3 aqueous

dispersion: 1 mL, 1 mg mL^{-1}, DMY solution in hexane: 1 mL, 20 mg L^{-1}.

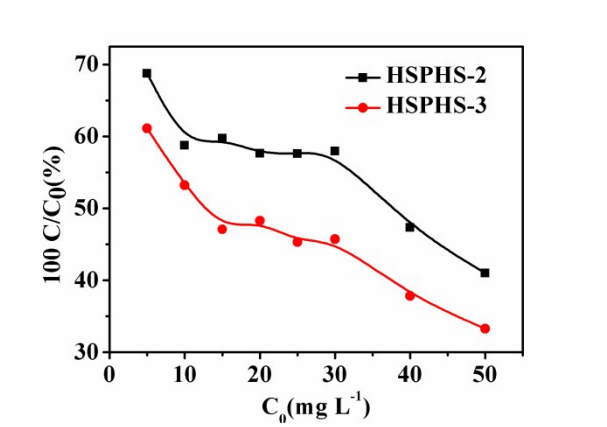

Figure S7 Adsorption percentage of DMY by various HSPHS under different initial MY concentrations. HSPHS aqueous dispersion: 1 mL, 1 mg mL^{-1}, DMY solution in hexane: 1 mL, 20 mg L^{-1}.

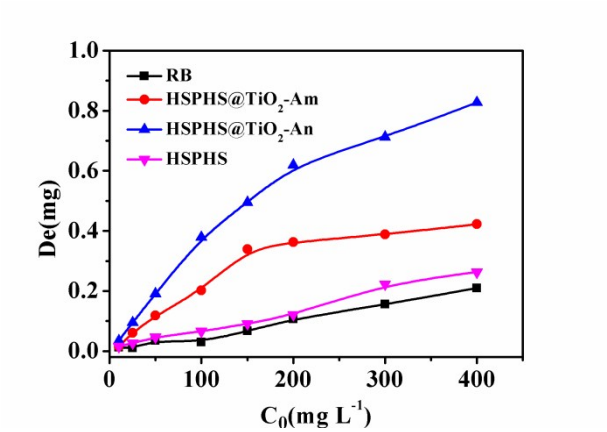

Figure S8 Photocatalytic degradative capacity of RB on various catalysts under different initial RB concentration. Catalysts 1 mg, RB solution 4 mL.