Electronic Supplementary Material (ESI) for RSC Advances.

Facile Route to Synthesize and Morphology Control of Anionic Waterborne Polyurethane Hollow Microspheres via Self-crosslinking Reaction

W. H. Guo,[a] W. S. Wang,*[a] X. K. Yu,[a] X. M. Peng,[a] and N. Y. Ma[a]

[a] College of Chemistry and Chemical Engineering, Anhui University, Hefei 230601, People's Republic of China.

Introductions for Figure S1 and S2.

Figure S1 shows the images of WPU hollow microspheres with different morphologies, which were synthesized by self-crosslinking reaction of WPU prepolymer. The size of microspheres can be tuned from micrometer to nanometer with hydrophilic groups and APTES increases (Figure S1A and S1B). The microspheres with single holes structure were prepared by self-crosslinking reaction when the diol was changed to diethylene glcol (Figure S1C). The micrometer rod-like hollow particles can be fabricated with high-speed shear environment when the concentration of hydrophilic groups was kept in an appropriate range (Figure S1D).

Figure S2 shows the images of hollow microspheres dried at different temperature. The average size of holes on the surface of microspheres is strongly dependent on the diffusion rate of methylbenzene droplets. It can be observed that the average size of holes increased when the drying temperature was increases.

Figure S1. WPU hollow microspheres with different morphologies: (A) micrometer; (B) nanometer; (C) single holes; (D) rod-like

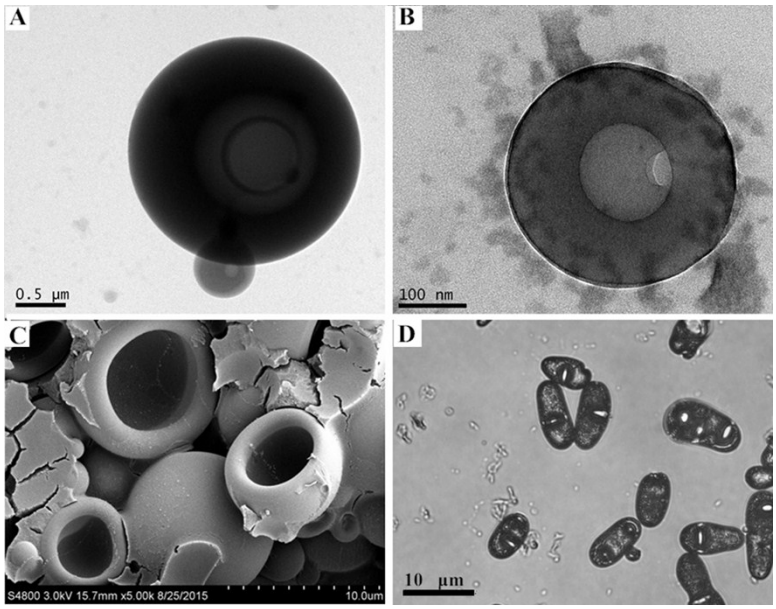

Figure S2. WPU hollow microspheres with different drying temperature: (A) SEM image of hollow dried at room temperature; (B) TEM image of hollow dried by infrared lamp.