Supplementary Material (ESI) for *Soft Matter*

Supplementary Information

Magnetic Hierarchical Porous SiO_2 Microparticles from Droplet Microfluidics for Water Decontamination

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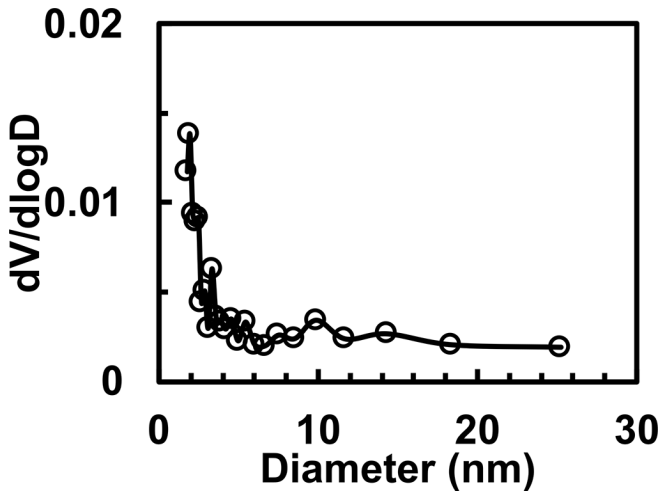

Figure S1. Pore size distribution of hierarchical porous SiO_2 microparticles with 40 s homogenization as measured by N_2 adsorption analyzer.

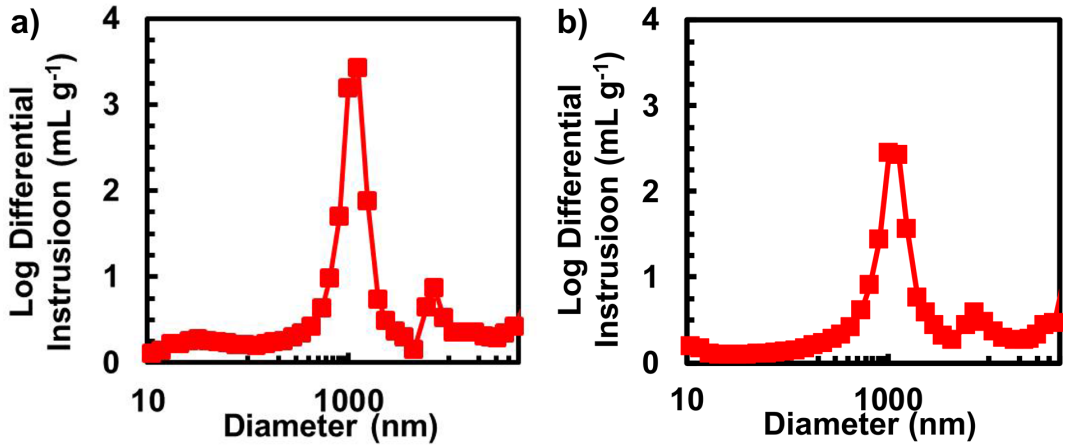

Figure S2. Pore size distribution of hierarchical porous SiO_2 microparticles with 40 s (a) and 60 s (b) homogenization. The average pore diameter (4V/A) of hierarchical porous SiO_2 microparticles with 40 s and 60 s homogenization are ~355 nm and ~273 nm, as measured by mercury intrusion porosimetry.

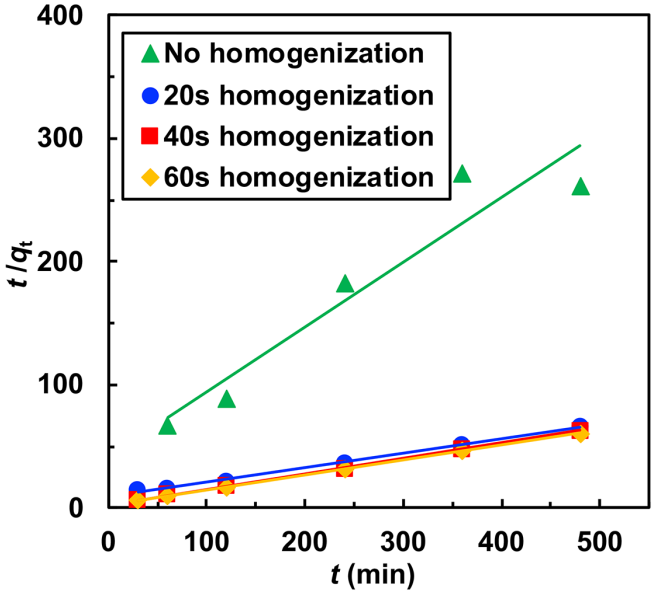

Figure S3. Pseudo-second order plot for adsorption of methylene blue by mesoporous SiO_2 microparticles from W/O_2 emulsions (no homogenization) and hierarchical porous SiO_2 microparticles with 20 s, 40 s, and 60 s homogenization.

The equation of pseudo-second order kinetic model can be expressed as follows:

$$\frac{t}{q_t} = \frac{1}{K\,q_e^{\,2}} + \left(\frac{1}{q_e}\right)t$$

where K is the rate constant (g mg^{-1} min^{-1}), and q_e and q_t are respectively the amounts of methylene blue adsorbed at equilibrium and at time t.

Table S1. Kinetic parameters for the adsorption of methylene blue.

Sample*	K (g mg^{-1} min^{-1})	$q_{e,cal}$ (mg g^{-1})	$q_{e,exp}$ (mg g^{-1})	R^2
No homogenization	0.0067	1.8965	1.8361	0.9087
20s homogenization	0.0014	8.5324	7.2240	0.9970
40s homogenization	0.0052	8.0257	7.5847	0.9996
60s homogenization	0.0051	8.2508	7.8579	0.9996

*Mesoporous SiO_2 microparticles from W/O_2 emulsions (no homogenization) and hierarchical porous SiO_2 microparticles with 20 s, 40 s, and 60 s homogenization are used as samples.

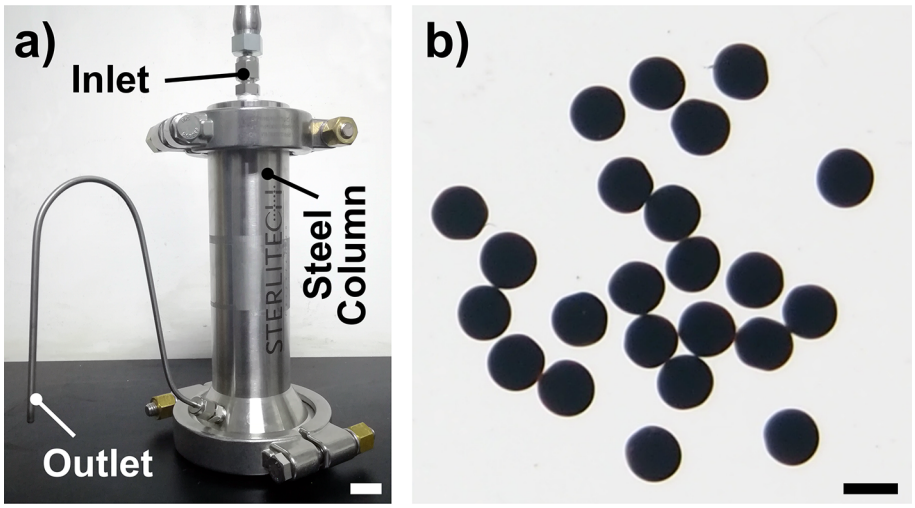

Figure S4. Optical images of steel packed column used for packing SiO_2 microparticles (a) and the released SiO_2 microparticles from the steel packed column after pumping water with pressure of 3 MPa (b). Magnetic hierarchical porous SiO_2 microparticles with 40 s homogenization (diameter: 1 mm) were used. Scale bars are 2 cm in (a) and 1 mm in (b).