

Supporting information

Topology-Enhanced Oil Adsorption by Flower-Like Mesoporous Silica Nanoparticles for Advanced Cosmetic Oil Control

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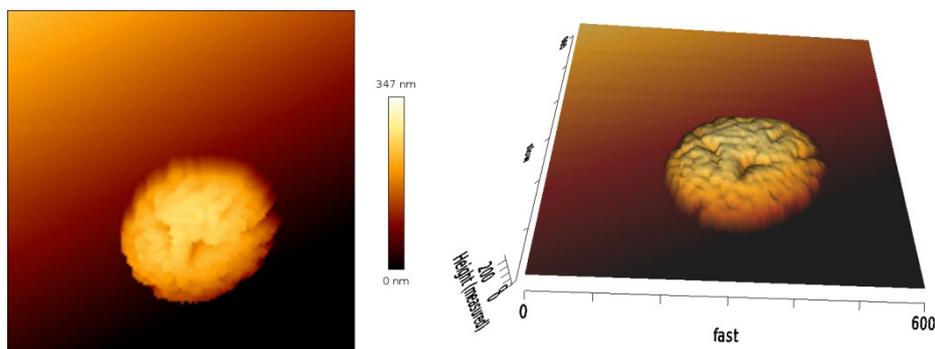


Figure S1. Atomic force microscopy (AFM) images of FLS, including two-dimensional (2D) height map and three-dimensional (3D) representation surface topography representations, revealing the characteristic petal-like surface morphology of the FLS.

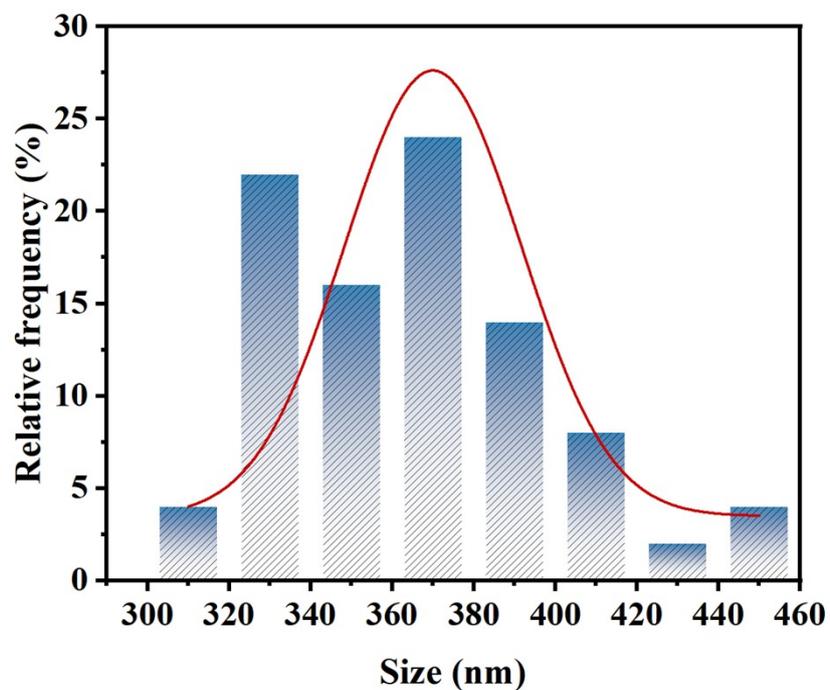


Figure S2. Particle size histograms of the obtained FLS particle.

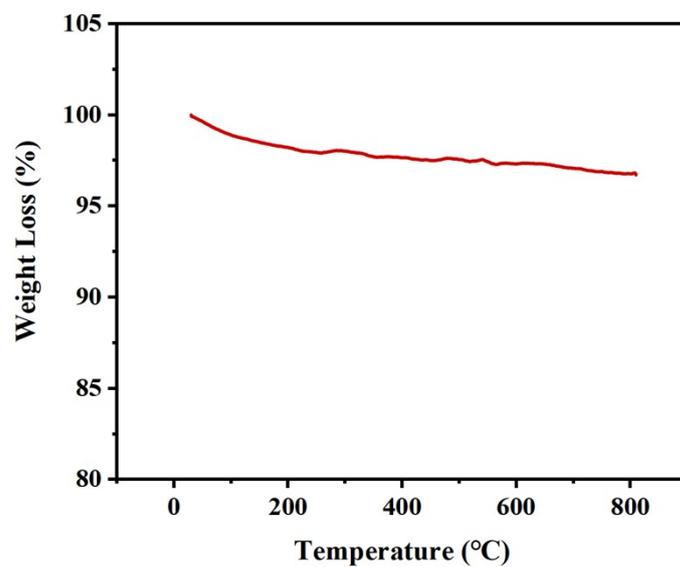


Figure S3. TG analysis of FLS.

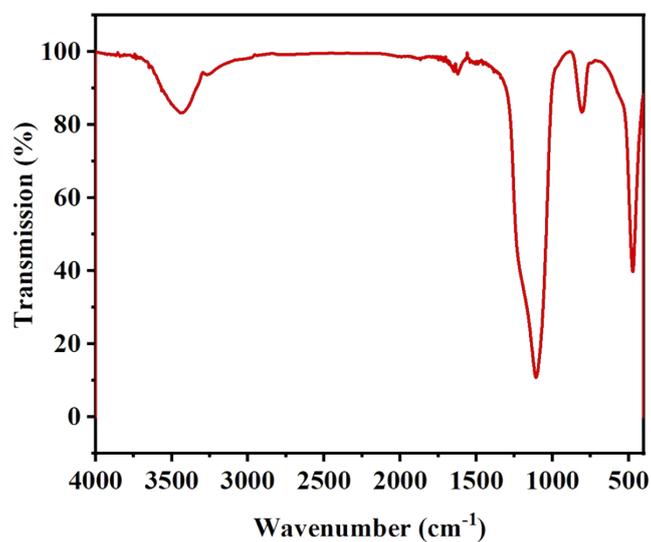


Figure S4. Fourier-transform infrared spectroscopy (FTIR) of FLS. FTIR shows key characteristic peaks of FLS of 1093 cm⁻¹ (asymmetric stretching vibration of Si-O-Si), 799 cm⁻¹ (surface Si-OH groups), and 467 cm⁻¹ (bending vibration of Si-O).

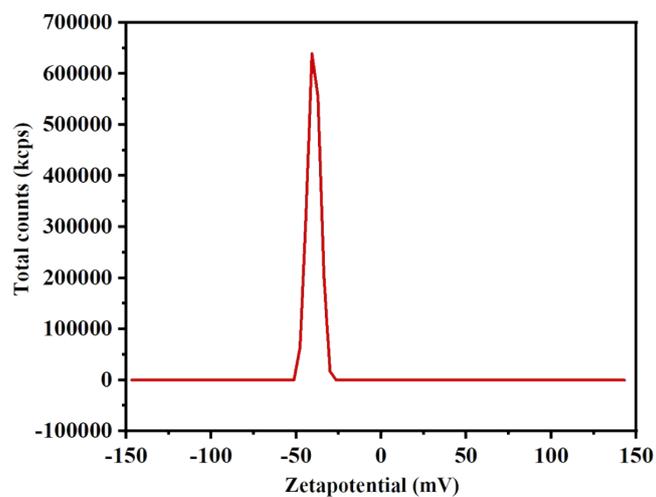


Figure S5. The zeta potential of FLS. The zeta potential of FLS is -39.58 mV, which can be attributed by abundant surface Si-OH groups.

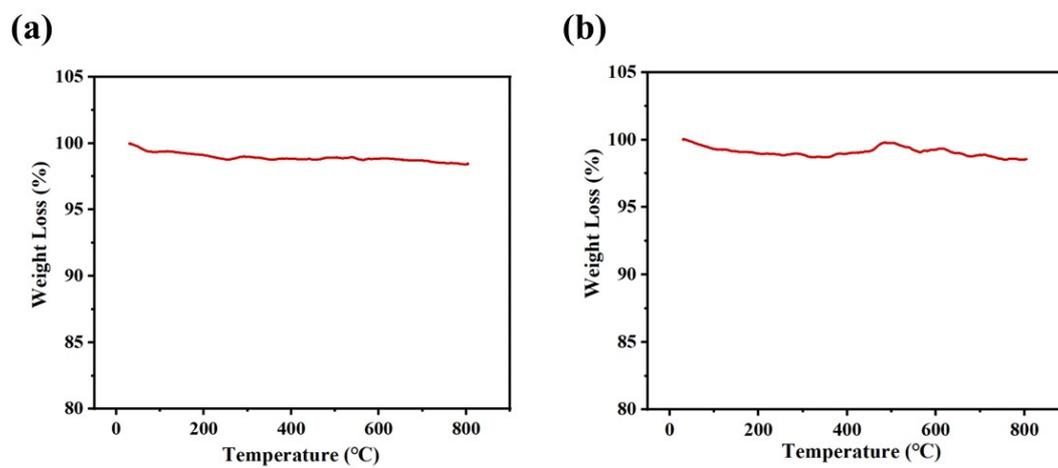


Figure S6. TG analysis of (a) MSN-271 and (b) MSN-504.

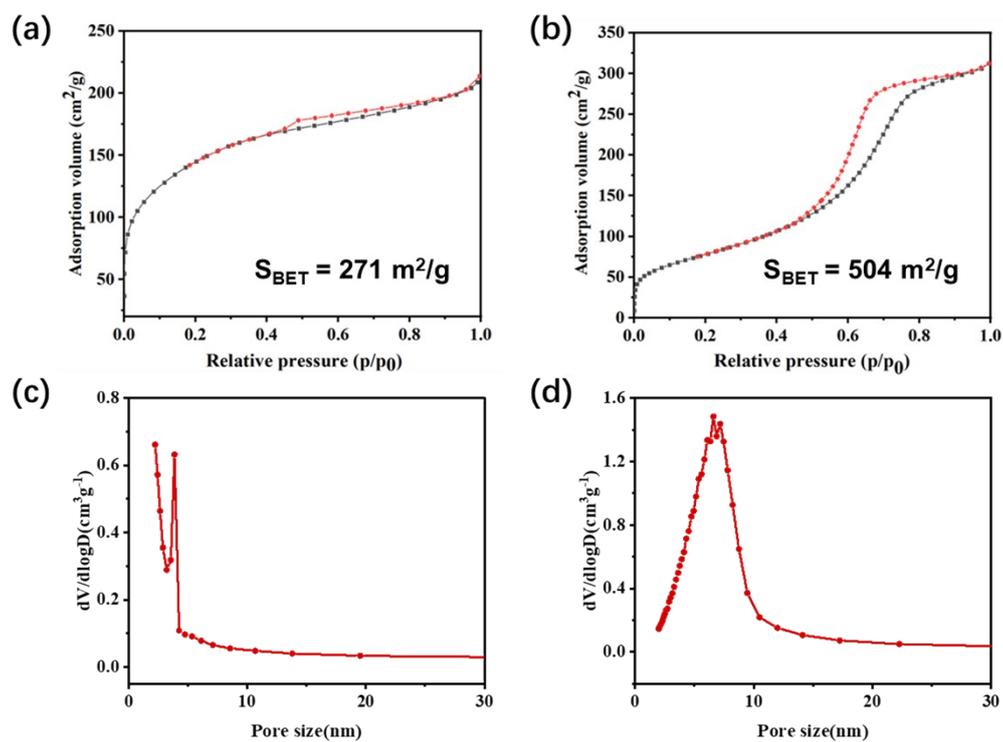


Figure S7. N₂ sorption isotherm and the corresponding pore size distribution of (a, c) MSN-271 and (b, d) MSN-504. The surface area of MSN-271 is approximately 271 m²/g, which is similar to that of FLS, while the specific surface area of MSN-504 is approximately 504 m²/g, which is much larger than that of FLS.