

Supporting information

One-step fabrication of porous polymeric microcage via electrified jetting

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Preparation of PDMS/PS Solutions: We dissolved a measured amount of PS (Acros Organics, Mw 250 000) granules in DMF and THF at room temperature and obtained a transparent solution. Then we add a calculated amount of prepolymer of PDMS (Sylgard 184, Dow corning) into PS solution to achieve a designed weight ratio of PDMS: PS. The mixture was shaken vigorously for at least 3 h at room temperature to obtain a homogenous emulsion solution.

Electrified Jetting (EJ): We employed a DC high-voltage generator (Teslaman, TXR1020) to produce voltages ranging from 0 to 30 kV. The solution was contained in a 2 mL syringe with a flat metal needle. The syringe is placed vertically so the solutions could flow out under the force of gravity. A sheet of aluminum foil acting as collector was placed under the syringe. The anode was connected with the needle and the cathode with the aluminum foil.

Scanning Electron Microscopy (SEM): We used SEM (FEI, Quanta 400 FEG) to observe the morphology of the EJ mats. All samples were sputter-coated with gold for 60 s at 30 mA (resulting in an Au coating of about 10 nm) prior to observation with SEM.

Transmission Electron Microscopy (TEM): TEM samples were prepared by collecting the microcages on TEM copper grids coated with a layer of amorphous carbon. Images were obtained using a TEM (FEI, Tecnai G2 F20 S-Twin) operated at 200 kV.

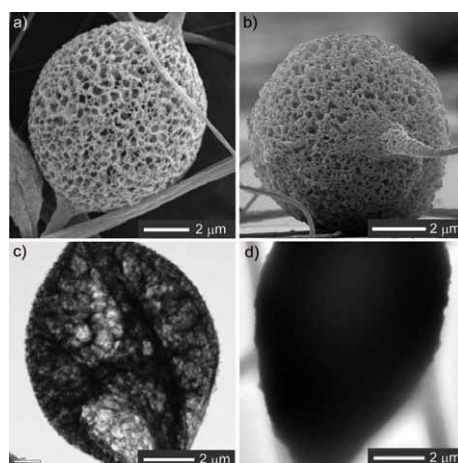


Fig. S1 a, b) SEM images of microcages. c) TEM image of microcages. d) TEM image of pure PS EJ mats as a control.

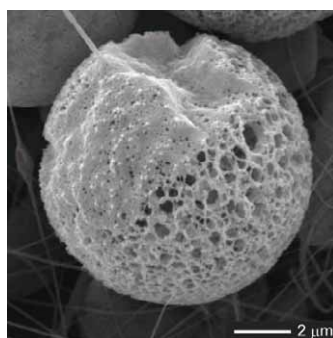


Fig. S2 The highly enlarged SEM image of janus particle.

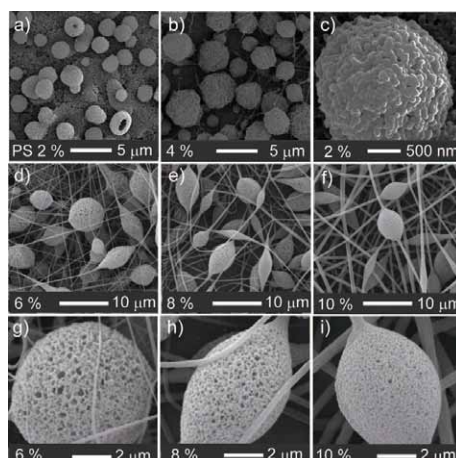


Fig. S3 The influence of PS concentration on the formation of microcages. a-i) SEM images of EJ mats with different PS concentration (the concentrations are marked on the corresponding SEM images). The other experimental parameters are: PDMS/PS=1:2, DMF/THF=1:1, voltage 20 kV, and work distance 16 cm.

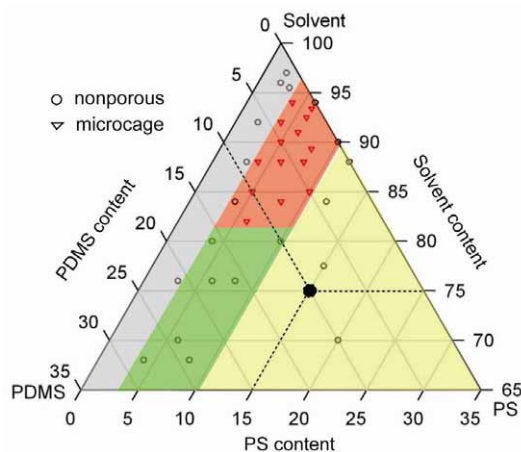


Fig. S4 Ternary phase diagram between the relative content of PDMS/PS/solvent and morphology of EJ mats. For example, at the black dot, the ingredient of the solution is: PS 15 %, PDMS 10 %, solvent 75 %.