Supporting Information

A novel 3D porous modified material with cage-like structure: Fabrication and its demulsification effect for efficient oil/water separation

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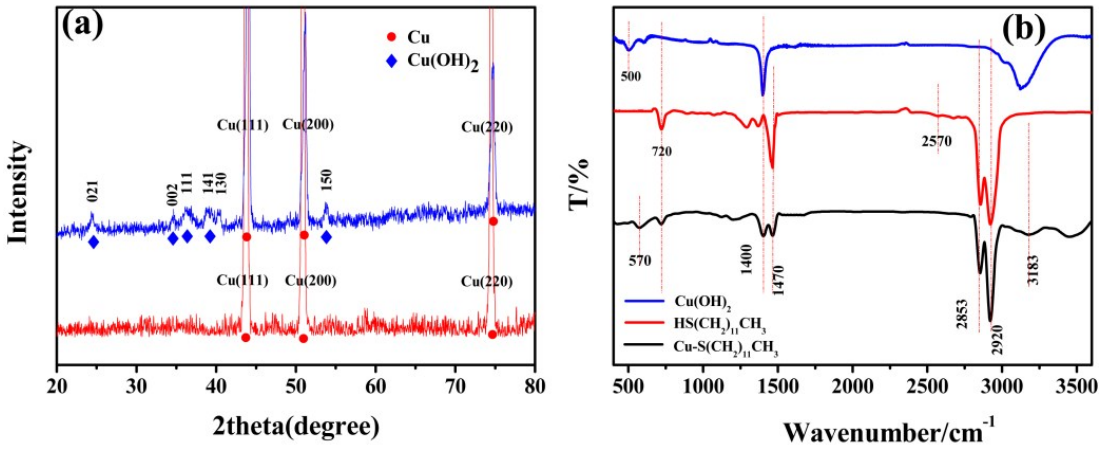

Fig.S1 (a) XRD patterns for PDCF (red line) and SICF (blue line); (b) FTIR spectrum of SICF, N-dodecyl mercaptan and SOCF.

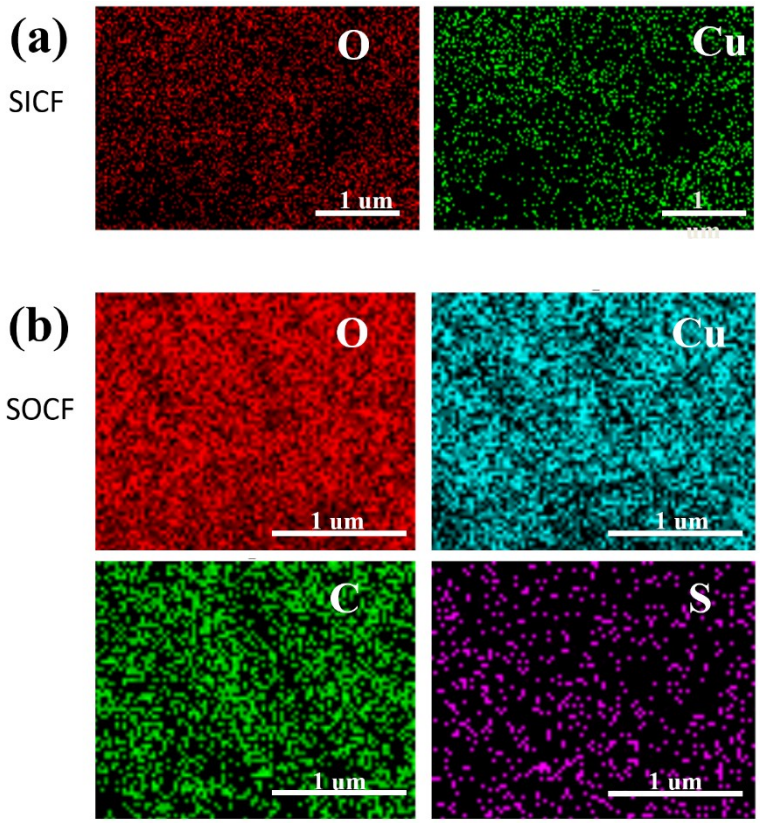

Fig. S2 Chemical element mapping images of SICF (a) and SOCF (b).

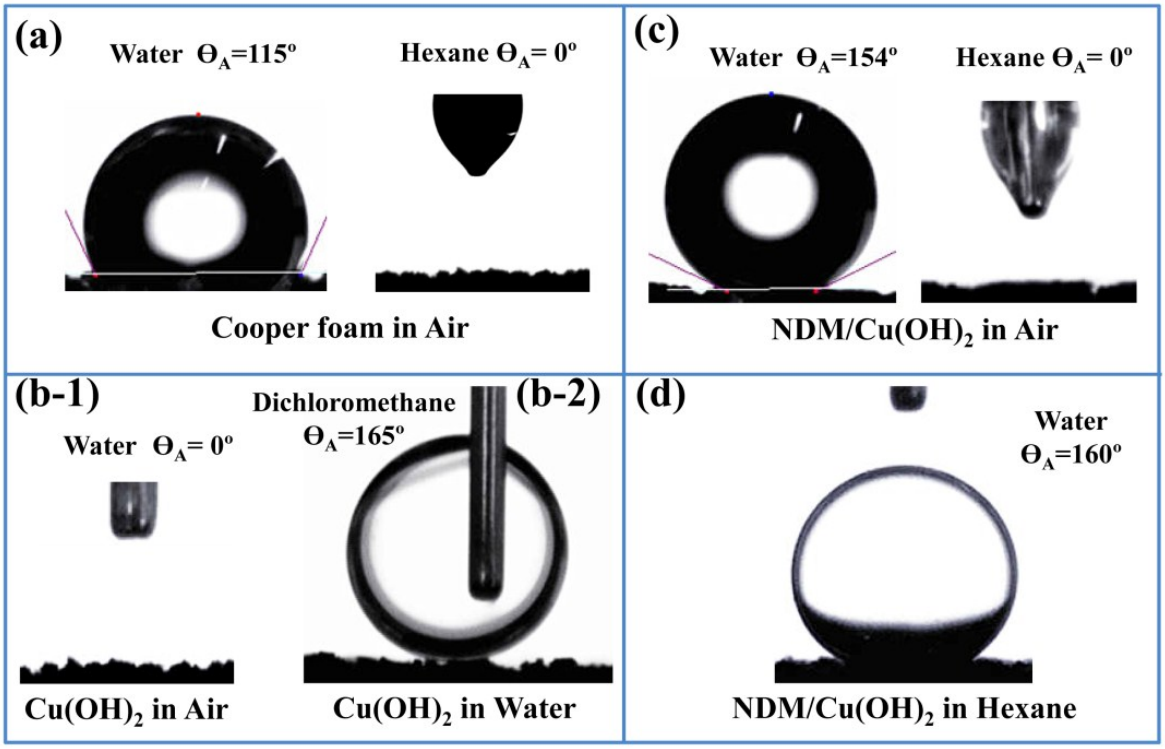

Fig. S3 (a) WCA and OCA of original CF in air; (b1) WCA of SICF in air and (b2) underwater OCA of SICF; (c) WCA and OCA of SOCF in air; (d) WCA of SOCF in hexane.

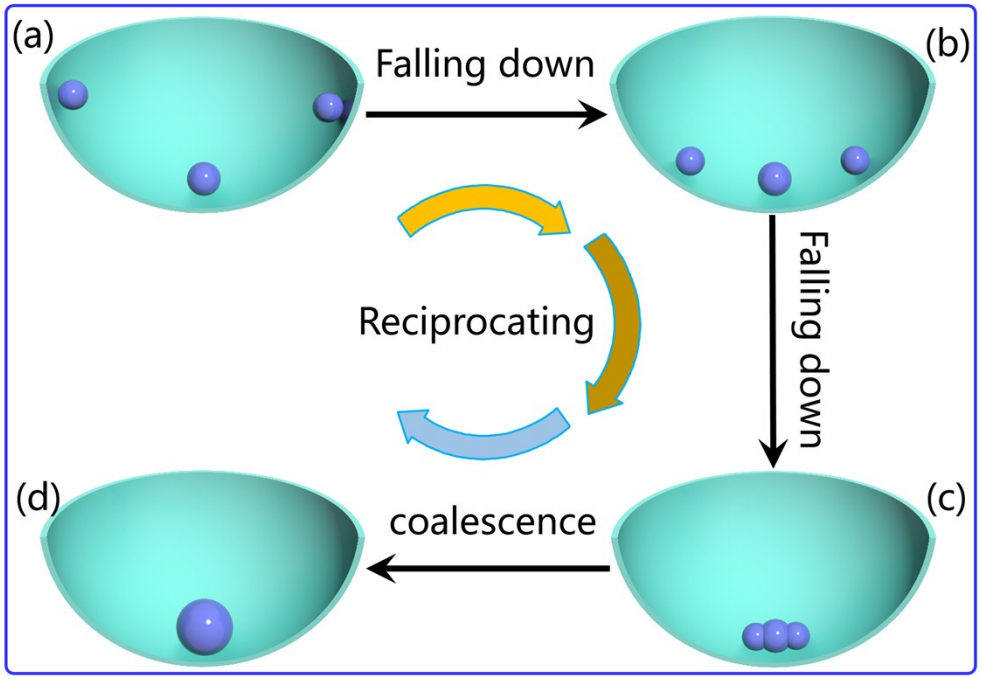

Fig. S4 Schematic illustration of the falling and coalescence process of water droplets.

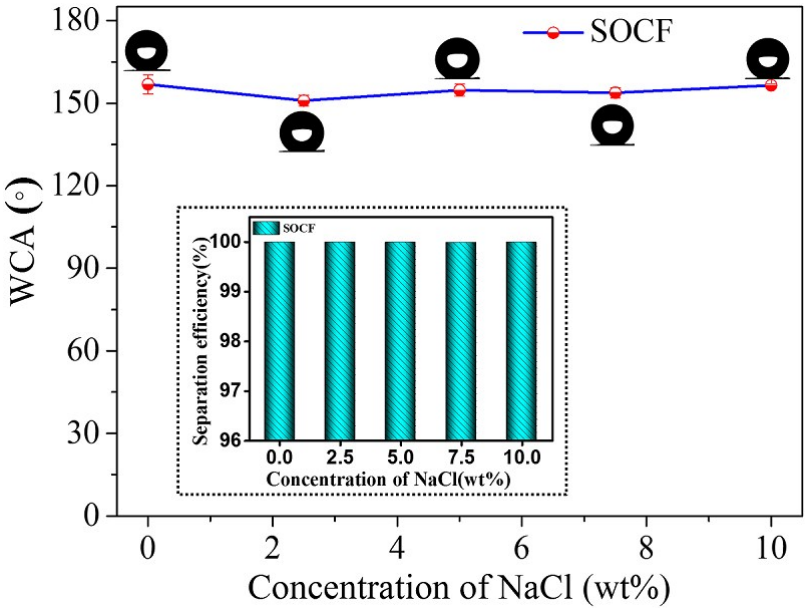

Fig. S4 Variation of water contact angles on the SOCF exposed to salt solutions. Insets are the corresponding separation efficiencies for the hexane/salt solutions mixture.

Videos S1 Underwater superoleophobic properties for SICF.

Videos S2 Underoil superhydrophobic properties for SOCF.

Videos S3 Continuous oil/water separation.

Videos S4 Separation of water in oil emulsion by SOCF.

Videos S5 The separation of oil from water surface by pump system.

Videos S6 Separation of crude oil from water surface by pump system.