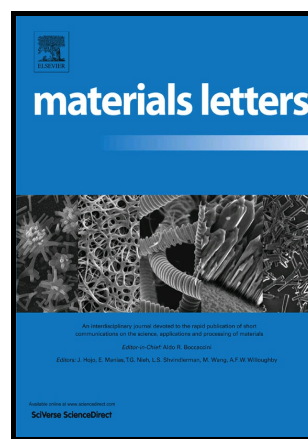


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Facile fabrication of three-dimensional superhydrophobic foam for effective separation of oil and water mixture

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Abstract

Three-dimensional (3D) CuO coated foam with superhydrophobic and superoleophilic property has been successfully fabricated via a simple solution-immersion process. Based on a design of box, the 3D superhydrophobic Cu foam can separate all kinds of oils regardless of the heavy oil or light oil in the mixture with the separation efficiency up to 97%, the advantage of which the other 2D superhydrophobic oil filtration material did not possess. In addition, the box manufactured superhydrophobic and superoleophilic CuO coated foam could continuously capture and removal the oil from water surfaces under a continuous vacuum regime. When vacuum degree was 30 kPa, the separation velocity can be 5 mL s⁻¹, showing a high-speed separation process.

Keywords: Surface; Porous materials; Three-dimension; Superhydrophobic; Oil/water separation

With augment of industrial oily wastewater release and crude oil leakage, heightened technological interest in oil/water separation has become a worldwide subject. Since oil/water separation is governed by interfacial phenomenon, the use of

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