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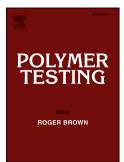
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Lightweight, mechanical robust foam with a herringbone-like porous structure for oil/water separation and filtering

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Abstract: The advancement of the super absorbent materials with a prominent mechanical robustness for oil-water separation is urgently needed because marine oil-spillage and industrial oily-wastewater have aroused great attention. In this work, a lightweight carbon nanotubes (CNTs)/ thermoplastic polyurethane (TPU)/epoxy (EP) composite foam with a novel three-dimensional (3D) herringbone-like structure was successfully fabricated via a simple and facile ice-templating method for oil absorption and oil-water separation. The density and porosity of the sample are 0.11g cm⁻³ and 63%, respectively. The durability of the as-prepared porous foams was demonstrated by repeated mechanical compressions in air and organic solvent, respectively. The influence of the varied CNTs and EP content on the water contact angle (WCA) of the composite foams were investigated. The composite foams are of sufficient oil absorption capacity and high selectivity due to their particular wettability and high porosity. Moreover, the hydrophobic foams can rapidly and selectively absorb a variety of oils and organic solvents, and the adsorbates can be

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