

Abstract Submitted
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Recyclable Buckysponges for De-emulsification and Oil-spill cleaning MEHMET KARAKAYA, DEEPIKA SAINI, RAMAKRISHNA PODILA, APPARAO M. RAO, Department of Physics and Astronomy, Clemson University, Clemson, SC 29634, RAO'S GROUP TEAM¹ — Here we present a three dimensional, interconnected, carbon nanotube based, spongy material that is capable of efficiently separating oil from water. The buckysponge, as we term it, exhibits superhydrophobicity and oleophilicity. The adopted facile top down approach allows strong control of the porosity and is easily scalable. Due to capillary action combined with its oleophilicity, a buckysponge is capable of selectively absorbing various organic solvents up to 20 times its weight, a value comparable to existing nanosponge materials. This light weight and highly porous material is shown to work with both free and emulsified oil in water. It is not only an ideal candidate for efficient oil removal but also effective in oil recovery. The absorbed oil can be retrieved by reversibly squeezing the buckysponge, or the oil may be burnt to generate heat energy. Notably, the burnt buckysponge shows no damage to its physical structure or its absorptive properties after squeezing or having the oil burnt, and is therefore re-usable.

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