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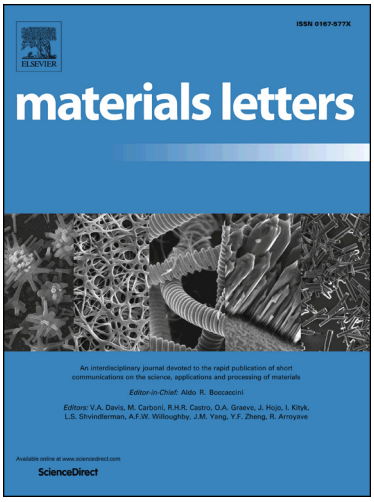

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ACCEPTED MANUSCRIPT

A facile method to fabricate the superhydrophobic magnetic sponge for oil-water separation

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Abstract: The superhydrophobic magnetic sponge with the ability for highly-effective oil-water separation is facilely fabricated by a one-step method through dipping of commercial sponge in a solution containing Fe_3O_4 magnetic nanoparticles and low-surface-energy compound Actyflon-G502 under ultrasonication. The as-prepared sponge can be driven by a magnet to the polluted water zone to selectively absorb oils from water. The oil absorption capacities of the as-prepared sponge for different types of oil and organic solvents are high up to 25-87 times of its own weight. Moreover, the as-prepared sponge shows excellent recyclability, which can be forecasted as an ideal candidate for oil-water separation.

Keywords: Porous materials; functional; surfaces; superhydrophobicity; oil-water separation.

1. Introduction

In recent years, the frequent occurrence of water pollution by oil spillages and organic-compounds leakages has caused severe environmental and ecological problems [1,2]. Therefore, oil-water separation has been a global challenge. Many absorbents

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