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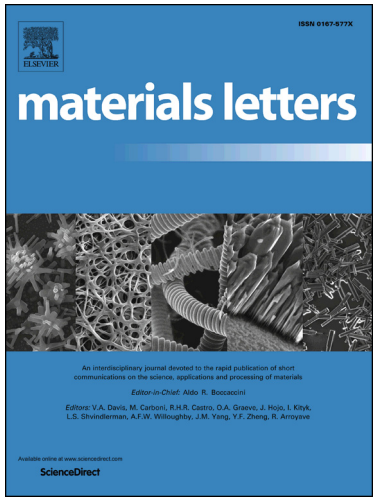

A facile method to fabricate super-hydrophobic surface with water evaporation-induced phase inversion of stearic acid

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A facile method to fabricate super-hydrophobic surface with water evaporation-induced phase inversion of stearic acid

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Abstract: In this paper, commercially available and low-cost super-hydrophobic carbon soot particles hybrid film (SCPHF) is fabricated via evaporating strategy combined with a facile solution method and water-induced phase inversion process. The SCPHF could tolerate corrosive solutions and self-cleaning. Our water-induced phase inversion design strategy may help the development of super-hydrophobic coatings or surfaces for practical applications in self-cleaning surfaces, corrosion-resistant materials, and many other important fields.

Keywords: Superhydrophobic; Stearic acid; Phase inversion; Self-cleaning; Corrosive resistance

1. Introduction

Super-hydrophobic materials with a static water contact angle (CA) exceeding 150° and low roll-off angles of less than 10° have aroused significant attention owing to their unique water-repellent and self-cleaning properties[1]. The principles characteristic of super-hydrophobicity are generally based on the combination of low-energy surfaces and multiscale roughness on the micro/ nano-scale [2, 3].

Numerous techniques have been developed to facilitate super-hydrophobic