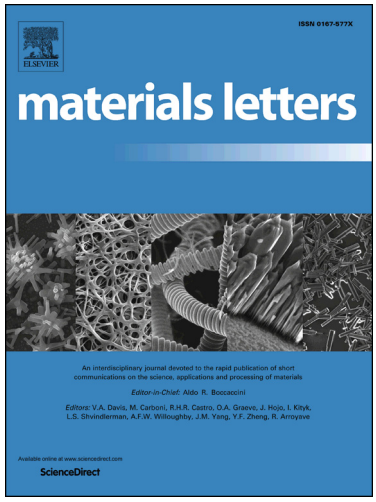

Facile fabrication of superamphiphobic glass coated with fluorinated-silica nanoparticles

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PII: S0167-577X(18)31056-5
DOI: https://doi.org/10.1016/j.matlet.2018.07.025
Reference: MLBLUE 24591

To appear in: *Materials Letters*

Received Date: 19 February 2018
Revised Date: 4 July 2018
Accepted Date: 6 July 2018

Please cite this article as: K. Hong, Y. Kim, Facile fabrication of superamphiphobic glass coated with fluorinated-silica nanoparticles, *Materials Letters* (2018), doi: https://doi.org/10.1016/j.matlet.2018.07.025

Facile fabrication of superamphiphobic glass coated with fluorinated-silica nanoparticles

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Abstract

A hierarchical micro/nanostructure with high roughness and a chemical composition with hydrophobicity are both crucial for preparing superamphiphobic substrates with non-wetting and self-cleaning properties. Herein, fluoroalkyl-functionalized silica nanoparticle (F-SiNP) was prepared as a raspberry-like micro/nanostructure. The superamphiphobicity and non-wetting properties of F-SiNP/glass were tested with 4 Newtonian fluids and 2 non-Newtonian fluids. The contact angle of test liquids was almost 180°, and the washing stability sustained during 200 times washing. In addition, the surface free energy of F-SiNP/glass calculated using Owens and Wendt method showed very low, compared to bare glass, revealing the superamphiphobicity feature of F-SiNP/glass.

KEYWORDS: Superamphiphobic; silica nanoparticles; raspberry-like structure; non-wetting

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