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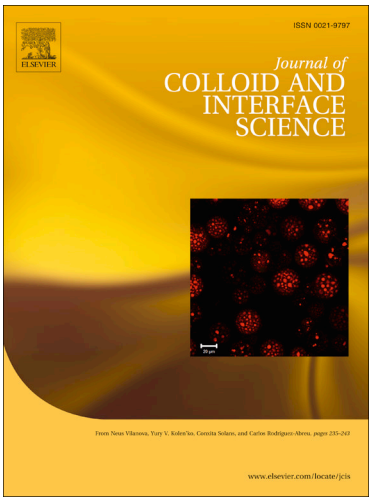

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Abstract

In this paper, superhydrophobicity of cotton fabric was produced by simple immersion method in non-fluorinated hexadecyltrimethoxysilane solution. Modified cotton fabric showed repellency to water and liquids with surface tension of more than 47 mN/m, with a static contact angle of more than 150° and tilt angle of less than 10°. The mechanical, chemical, thermal, and UV stability of superhydrophobic cotton fabric was evaluated. Modified cotton fabric exhibited the self-cleaning and stain-resistant properties. It also showed that it could be used for oil-water separation application with separation efficiency of about 99%. Additionally, the modified cotton fabric exhibited anti-bacterial properties. This approach is facile, economical, and eco-friendly and can be applied for household and industrial applications.

Keywords: Superhydrophobic, self-cleaning, stain resistant, oil-water separation, anti-bacterial

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