

Superhydrophobic Coatings Based On Waterborne Polyolefin And Silica Nanoparticles

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Abstract : Superhydrophobic surfaces have been paid great attentions over the years due to their various applications. In this study, superhydrophobic coatings based on the hybrids of hydrophobically modified silica nanoparticles and waterborne polyolefin were fabricated onto a cotton fabric by spraying a mixture of surface dodecylated silica nanoparticles with aqueous dispersion of polyolefin onto the fabric and a subsequent drying at 80°C. The coated fabrics were characterized using water-contact angle measurement, SEM, and AFM analysis. The coated fabrics exhibit superhydrophobicity with a water contact angle of 155° along with excellent self-cleaning and water/oil separation ability. It was also revealed that such superhydrophobicity was maintained after repeated mechanical abrasion using a sandpaper.

Keywords : superhydrophobic coating, waterborne polyolefin, dodecylated silica nanoparticle, durability

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