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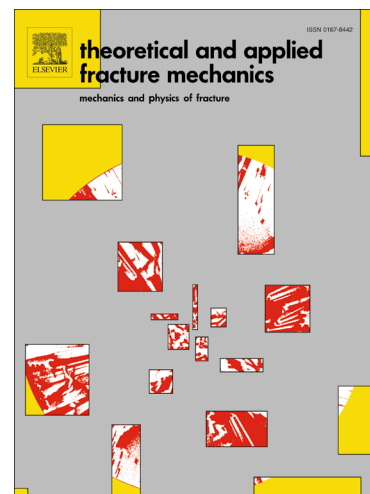
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A chemically durable superhydrophobic Aluminum surface coated with silicon carbide nanoparticles and perfluoro acrylic copolymer

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Abstract:

Stability of superhydrophobic surfaces, especially chemical stability, has a crucial role in the application of this type of coatings, which leads to a number of researchers for improving this property. In this study, a superhydrophobic surface with high chemical resistance was fabricated using a facile and inexpensive method containing spraying the silicon carbide nanoparticles on the surfaces of aluminum (Al) plates followed by coating the surface with a low surface energy water-based copolymer. The surface morphology was evaluated using a scanning electron microscope (SEM). In order to evaluation of superhydrophobicity of the surfaces water contact angle measurements were employed. The conditions for inducing superhydrophobicity were optimized by changing the polymer concentration and number of spray cycles of polymeric coatings. The chemical stability test results showed the appropriate chemical stability after immersion the surfaces in the different pHs solutions and immersion in 3.5 wt% NaCl solution.

Keywords: superhydrophobicity; chemically resistance; Al alloys; scalable, harsh chemical environment

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