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# Molecular Dynamics Study on the Hydrophobicity of a Surface Patterned with Hierarchical Nanotextures

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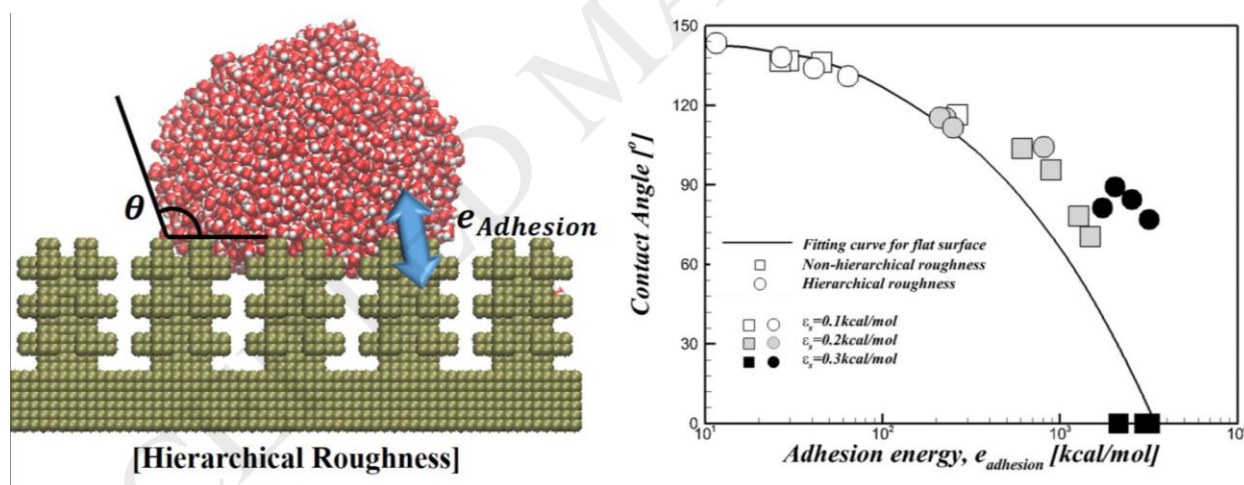
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Graphical abstract



## ABSTRACT

Using all-atom molecular dynamics simulation, we investigated the wetting behavior of a water droplet on a surface texturized with nanoscale pillars. We studied the surfaces with nonhierarchical and hierarchical roughnesses by systematically varying the pillar height and the characteristic surface energy. A surface decorated with a hierarchical roughness showed an enhanced hydrophobicity in that the droplet on such a surface prefers the Cassie-Baxter state over the Wenzel state. A hierarchical roughness also gave an enhanced contact angle of a droplet. Even a hydrophilic surface (contact angle

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