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**Wetting kinetics of nanodroplets on lyophilic nanopillar-arrayed surfaces: A molecular dynamics study**

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**Abstract**

Wetting kinetics of water droplets on substrates with lyophilic nanopillars was investigated using molecular dynamics simulations. Early spreading of the droplet is hindered by the nanopillars because of the penetration of the liquid which induce an extra dissipation in the droplet. Droplet spreading is mainly controlled by liquid viscosity and surface tension and not dependent on solid wettability. Propagation of the fringe film is hindered by the enhanced solid wettability because of the energy barrier introduced by the interaction between water molecules and nanopillars which increase with solid wettability.

**Keywords:** wetting; nanopillar-arrayed surface; molecular dynamics; nanodroplet

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