

Abstract Submitted
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Understanding and designing of steam-phobic surfaces¹ ILA BADGE, SUNNY SETHI, ALI DHINOJWALA, The University of Akron — The wetting behavior of a surface under steam condensation depends on its intrinsic wettability and micron or nanoscale surface roughness. A typical superhydrophobic surface may not be suitable as a steam-phobic surface due to nucleation and growth of water inside the valleys and thus, failure to form air-liquid- solid composite interface. Here, we present the results of steam condensation on chemically modified nano-structured carbon nanotube carpets. The combination of surface chemistry and surface roughness provides a mechanism to retain superhydrophobicity of the nanotube surfaces under steam condensation. Ability of withstand steam temperature and pressure also implies improved hydrostatic stability of the surface.

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