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Self-Cleaning Properties on Superhydrophobic Surfaces via Condensation[1] DAVID MILLER, JULIE CROCKETT, DANIEL MAYNES, Brigham Young University — Superhydrophobic (SH) surfaces have many unique capabilities, one of which is self-cleaning. When a water droplet rolls on a contaminated SH surface, particulates can adhere to the droplet and roll away with the droplet, creating a self-cleaning effect. Another unique characteristic of SH surfaces is the promotion of dropwise condensation when cooled in a humid environment. These droplets may engulf particulates on the surface as they are generated and coalesce. This research seeks to understand the potential cleaning efficiency SH surfaces have when water vapor is condensed on a dirty SH surface and allowed to roll off. Multiple condensation cycles with common particulates deposited on SH surfaces oriented vertically are explored. Sliding and contact angles are measured to approximate the cleaning efficiency of the condensed, rolling droplets after each condensation cycle. Results are compared with the cleaning efficiency of water droplets placed on the surface to roll.

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