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Rapid Drop Dynamics During Superhydrophobic Condensation XIAODONG ZHANG, JONATHAN BOREYKO, CHUAN-HUA CHEN, Duke University, Department of Mechanical Engineering and Materials Science — Rapid drop motion is observed on superhydrophobic surfaces during condensation; condensate drops with diameter of order 10 μm can move at above 100G and 0.1 m/s. When water vapor condenses on a horizontal superhydrophobic surface, condensate drops move in a seemingly random direction. The observed motion is attributed to the energy released through coalescence of neighboring condensate drops. A scaling analysis captured the initial acceleration and terminal velocity. Our work is a step forward in understanding the dynamics of superhydrophobic condensation occurring in both natural water-repellant plants and engineered dropwise condensers.

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