

Abstract Submitted  
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**Continuum Modeling of a Water Droplet sitting on a Vibrating Superhydrophobic Surface**<sup>1</sup> PING HE, CHUN-WEI YAO, Lamar Univ — Because of the complex, multiscale nature, modeling of droplet-surface interaction remains a challenge. To understand the underlying mechanisms is important for application design. The interactions among liquid-gas-solid molecules dominate the contact line dynamics, and determines the stationary and dynamic contact angles. We propose a novel numerical method to handle the droplet on a superhydrophobic surface, and validate our model with experiments on a 3mm water droplet sitting on a vibrating surface. Different cases have been investigated for validating our methods and understanding of the vibration mechanism of droplet shedding. Although the vibration-induced wetting transition was investigated in recent studies, the vibration mechanism of droplet shedding has not yet been fully understood. This research quantitatively considers the effect of vibration on droplet shedding under various vibration resonance conditions, providing a possible way to effectively shed droplet off surfaces in condensation applications.

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