

Hydrophobic and Superhydrophobic Coatings

Super-waterproof coatings that are simple, cheap, robust, while being harmless to environment



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Reference: 2020-005

Header image provided by the university

IP Status

Patented, Patent application submitted,
Provisional patent

Seeking

Seeking investment, Development
partner, Commercial partner, University
spin out

Background

Existing technologies to create waterproof coatings (i.e., to make a material surface hydrophobic or superhydrophobic) are complex, time-consuming, and costly, despite their great need in many industrial and daily life applications. The challenge is to obtain hydrophobic and superhydrophobic coatings that are robust in real-life applications, i.e., the coating method should be facile, low-cost, scalable, and environmental-friendly. The present disclosure fulfils these needs and provides further advantages.

Tech Overview

SFU researchers have developed an easy-to-fabricate superhydrophobic coating. This unconventional protocol is based on a controlled reaction of organosilicon compounds with water, which creates ultrafine (nanometer-scale) silicone aggregates dispersible in industrial solvents. Extreme hydrophobicity could be attained on materials of various types and sizes with this coating method by simply dipping or spraying. Remarkably, this coating method holds a more advanced performance with a lower cost than commercially available products.

Benefits

- The protocol is simple and rapid, with all fabrication procedures completed in ambient temperature and pressure.
- The organosilane ingredients has been mass produced for decades, thus cost of raw materials could be very well controlled.
- Possesses exceptional waterproof and self-cleaning performance, as water droplets would remain spherical on and slide of the surface readily.
- The coated surface underwent sandpaper abrasion, water jetting and other mechanical stability tests while remained superhydrophobicity.
- Universal applicable to a broad range of materials, through dipping or spraying, including wood, glass, cotton fabric, filter paper, metal, and plastic.
- Due to the nature of the reaction mechanism, the coating has a unique encapsulation capability, which has tremendous potentials in many other fields, such as designing colorful and luminescent waterproof coatings.

Patents

- IP Filed: Provisional Patent Application Filed, in particular, a provisional US patent application entitled “Hydrophobic and superhydrophobic coatings and methods thereof” was filed on Jan. 26, 2021 (Application No. 63/141,885)

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