Self-Cleaning, Superhydrophobic Coatings with Improved Properties, Methods for Fabrication, and Applications Thereof

Tech ID: 20634 / UC Case 2009-035-0

BACKGROUND

Cleantech is an emerging sector of innovation and deals with products and processes that harness renewable energy sources, minimizes pollution and waste, and reduces the depletion of natural resources, including water supply. There are two different technical approaches for self-cleaning coatings: hydrophobic versus hydrophilic. Both types of coatings clean themselves through the action of water. In the case of the hydrophobic surface, rolling droplets take away the dirt and dust. In the case of the hydrophilic surface, sheeting water carries away dirt. For hydrophobic surfaces, an indicator of their effectiveness is the contact angle of the water on the surface, which measures the amount of surface tension induced by the coating on the water.

TECHNOLOGY DESCRIPTION

This invention is a self-cleaning, superhydrophobic coating characterized by extremely large contact angles (approximately 178-179 degrees) and greatly reduces the need for water as a transport medium. The fabrication methods of the invention can be scaled up for volume production and have been adapted to prepare surfaces that are superoleophobic (non-wetting for oil) or omniphobic (non-wetting for both water and oil). Applications of this technology include self-cleaning windows, wind-turbine blades, aircraft wings, wash-free automobiles, low-friction watercraft hulls, and non-stick medical device implants.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,108,880	08/18/2015	2009-035

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OTHER INFORMATION

KEYWORDS

Cleantech, superhydrophobic coating, superoleophobic coating, wash-free surfaces

CATEGORIZED AS

- **Materials & Chemicals**
  - Nanomaterials
- **Nanotechnology**
  - Materials

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