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Research Article

# Review on Superhydrophobic Polymer Composite Coating Materials and its Coating Technology for Advanced Applications

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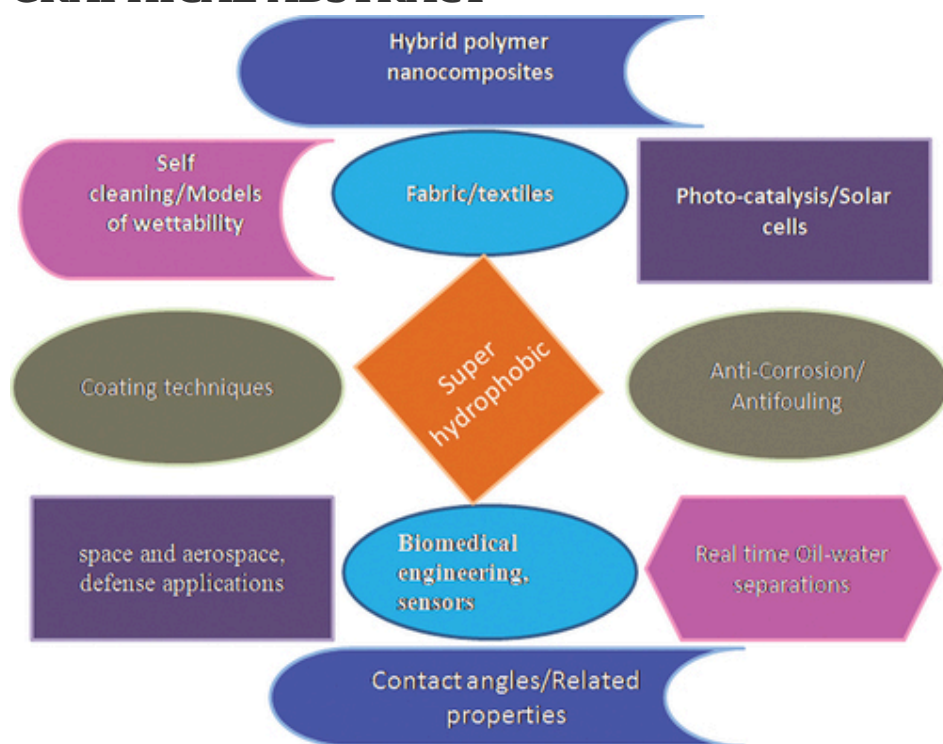
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## ABSTRACT

Researchers all over the world are working to produce improved polymeric materials suitable for cutting-edge advanced applications that will eventually replace traditional materials. Polymeric materials that display super hydrophobic characteristics are quite valuable and interesting when it comes to the development of things with lotus leaf surface effects. In recent decades, super hydrophobic surfaces (SHS) have been considered as key parameter, and superhydrophobic coatings are vital to achieve materials with hydrophobic surface. The most crucial criteria influencing super hydrophobic surfaces are low surface free energy and higher surface roughness. Explorations on superhydrophobic surfaces (SHS) are very interesting because of their importance in varied nature of industrial, engineering and bio-medical applications. Superhydrophobic membranes have made a lot

of curiosity recently, especially for efficient oil-water separation application. A major exploitation of these SHS is to increase the corrosion resistance of surfaces exposed to corrosive environments as well as their long-term chemical stability and maintaining the superhydrophobic characteristics. The other major important sectors utilize these materials to achieve ultra-superhydrophobic behavior are space and aerospace, defense, automotive, marine, water-oil separation, biomedical-engineering, and sensors. Superhydrophobic surfaces repel water primarily due to their surface texture and physicochemical properties. The present article deals with the basic and fundamental principles, importance and applications of superhydrophobic behavior of materials, including different analytical and fabrication techniques used to study and to ascertain the super hydrophobic properties of the materials.

## GRAPHICAL ABSTRACT



Schematic review presentation of superhydrophobic hybrid coatings and its technology for advanced application

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**Q KEYWORDS:** Low surface free energy polymer composites superhydrophobic coatings surface-roughness water contact angle water-oil separation

## Disclosure statement