

# Is it possible to produce superhydrophobic surfaces from water-borne coatings?

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## Abstract

Bio-inspired superhydrophobic surfaces have attracted considerable attention due to their excellent water repellent properties and their underlying potential applications.

It is very well established in the state of the art that the production of superhydrophobic surfaces requires the use of low surface energy materials carefully tailored with micro/nanostructures to substantially increase the surface roughness. However, as hydrophobic materials are not soluble in water, superhydrophobic coatings are usually formulated with organic solvents, emitting large amounts of undesired volatile organic compounds (VOC) to the atmosphere upon application.

The search for a *superhydrophobic water-based* coating seems contradictory, but is it really impossible to achieve?

The goal of the present work is to develop a simple approach to manufacture superhydrophobic top-coats from water-based formulations, for anticorrosion applications. Low water adhesion is highly desirable, in order to achieve the Cassie-Baxter wetting regime and to observe the water roll-off effect.

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## Figures



Figure 1 – water droplets lying over a Mg plate covered with two water-borne superhydrophobic top-coats