New surfaces repel most known liquids

In an advance toward stain-proof, spill-proof clothing, protective garments and other products that shrug off virtually every liquid—from blood and ketchup to concentrated acids—scientists are reporting development of new "superomniphobic" surfaces. Their report on surfaces that display extreme repellency to two families of liquids—Newtonian and non-Newtonian liquids—appears in the *Journal of the American Chemical Society*.

Anish Tuteja and colleagues point out that scientists have previously reported "omniphobic" surfaces, the term meaning that such surfaces can cause a range of different liquids to bead up and not spread on them. But typically very low surface tension liquids such as some oils and alcohols can adhere to those surfaces. Further, scientists have mostly focused on making surfaces that repel only one of the two families of liquids—Newtonian liquids, named for the great English scientist who described how they flow. Tuteja's team set out to do the same for non-Newtonian liquids, which include blood, yogurt, gravy, various polymer solutions and a range of other liquids.

In their work, Tuteja and colleagues describe surfaces that resist liquids, including concentrated acids and bases, oils and alcohols with extremely low surface tension, solvents and various polymer solutions. They say that virtually all liquids easily roll off and bounce on the new surfaces, which makes them ideal for protecting other materials from the effects of chemicals. The scientists conclude that the surfaces will have numerous applications, including stain-free clothing; spill-resistant, breathable protective wear; surfaces that shrug off microbes like bacteria; and corrosion-resistant coatings.

Source: American Chemical Society [1]

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