



How to Repel Water: Four Lessons from Nature

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Abstract: A clever combination of surface chemistry and physical texture generates materials that can repel water. We first discuss how such materials, and the principles of repellency. Yet this property covers a broad spectrum of special functions, all observed in Nature, especially with insects or spiders. We present four functions, namely: (i) oil repellency; (ii) anti-rain abilities; (iii) anti-fogging effect; (iv) super-aerophilicity. After describing how these abilities are essential for the animals' survival, we discuss materials that mimic the natural systems and can sometimes be even more spectacular in terms of efficiency.