Biomimetics: plants do it better!

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Nature-based solutions present an innovative approach that respects the usability, multi-functionality and ecological benefits of green and blue spaces in urban areas, and are a new and largely opportunity for cities to obtain not only ecological but also social, economic and health benefits. By delivering multiple co-benefits through enhanced ecosystem services, such as air and water quality and biodiversity, climate mitigation and adaptation, jobs and economic opportunities, nature-based solutions are crucial to increase the quality of life in urban areas.

Superhydrophobicity is one of the most fascinating water-wetting features of the surface of many plants. More than half of the total surface area of our planet is covered by superhydrophobic leaves. Superhydrophobic features, such as “self-cleaning”, “anti-acing”, “anti-fogging“, “anti-fouling” and “anti-drag”, offer excellent prospects for the design of new materials with high technological interest and high added value for specific targeted applications, opening challenging new directions in materials science and related technologies. Currently research on superhydrophobic surfaces targets essentially applications in the sector of coatings for the automobile, aeronautical, aerospacial, naval, textile and building industries. The most popular superhydrophobic effect, known as Lotus Effect, refers to the “self-cleaning” ability of the Lotus leaf (Nelumbo nucifera).

Our work presents a rather extensive study on superhydrophobic characteristics of several plant species that are present in Northern Portugal.