

Bio-Inspired Non wetting surfaces by ultrafast laser processing

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Ultrafast lasers have strong potential to process wide range of materials from polymer to ceramic including the transparent materials. In recent time, there is huge response from the industries to develop a technology, which suits the industrial needs and environments for the production of new kind of products with superior properties that make easier the consumer life, i.e. anti-finger print, easy to clean, bactericidal effects or oil repellent properties, at affordable costs. Improvement in the surface roughness can enhance the hydrophobic property of variety of materials. Inspired by the nature, for eg. *Morpho Deidamia* and butterfly, makes advantage of micro/nano ratchet like structures on the wings for the detachment of water droplets, bio mimic surfaces of different kinds of wetting property such as super hydrophilic/hydrophobic, underwater super hydrophilic/hydrophobic surfaces were successfully produced. The presentation focus on the development of bioinspired surface functionalization with ultrafast laser ablation on metals. Moreover, it gives a detailed information about the chemical process (environment friendly) required for the transformation of ultrahydrophilic (immediately after laser processing) to ultrahydrophobic in short interval of time compared to the conventional aging techniques. The significance of microstructures, nanostructures and hierarchical structures with respect to droplet volumes and the wetting phenomenon (rose petal and lotus effects) of laser-patterned surface would be discussed.