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Superhydrophobic surfaces using ultra-short pulse structuring of thin metals

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Fabrication of superhydrophobic surfaces induced by ultra-short-pulse lasers is a hotspot of surface studies. We report a way of generating nearly superhydrophobic surfaces on stainless steel (304S15). The method for fabricating this water-repellent surface is to microstructure by irridating with ultra-short-pulses.

Contact angle measurements were used to investigate the wettability of the surface in relation to the laser parameters (laser fluence and scan line separation). The steady contact angle was investigated in the range of 140°. Investigations with optical measuring methods (white light interferometer) displays the structures of the surfaces. The generated surface shows hierarchical structures with nano and micro roughness similar to a lotus leaf. In further experiments, different materials shall be structured with various structures. Subsequent laser structuring should produce a functional surface with water repellent properties.

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