

Superhydrophobic WO_x nanowire arrays and wettability control for applications

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A facile route is reported for the fabrication of superhydrophobic tungsten oxide (WO_x) nanowires surface through chemical adsorption of alkyltrichlorosilane with a static water contact angle (CA) of 163.5°. It is confirmed that CAs of superhydrophobic surface decreased gradually under UV illumination, due to UV-assisted decomposition of alkyltrichlorosilane chemically adsorbed on the surface. Reversible superhydrophobic–superhydrophilic switching is also demonstrated by alternating self-assembled monolayer deposition and UV irradiation on the photopatterned nanowires surface. Furthermore, the superhydrophobic surface could be transformed selectively into a hydrophilic state by simply exposing the surface to UV through a shadow mask. These studies provide a relatively simple strategy for the design of superhydrophobic surfaces.