Multifunctional ZnO nanorod arrays: Extreme wettabilities, Anti-reflection and UV protection

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We report a facile wet-chemical coating method for the fabrication of transparent superhydrophobic ZnO nanowire surface on a glass substrate (a water contact angle of 159.2°). The surface also had a novel antireflective property and showed high transparency in visible range and strong absorption in the UV range, which makes it the ideal candidate for the protection against UV radiation. Due to the low temperature processing (~90°C), the multifunctional (transparent, superhydrophobic, UV-protective and anti-reflective) nanowire surfaces can be applied not only for the protection of inorganic substrate, but also for organic surface. UV-Vis spectroscopy analysis confirmed the transmittance and reflectance of samples for various surface roughnesses.