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Study of Photocatalytic Activity and Phostability of ZnO Particles Coated with UV-stable Polydimethylsiloxane

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ZnO particles with a size range of 50-150 nm were coated with polydimethylsiloxane (PDMS) with a thin film thickness of 3-4 nm using a simple ambient-pressure chemical vapor deposition methods. Surfaces consisting of the PDMS-coated ZnO nanoparticles were found to be superhydrophobic with a water contact angle higher than 160°. The superhydrophobicity was sustained in the presence of UV light. Photocatalytic activity and photocorrosion of ZnO were nearly completely quenched in the presence of PDMS coating. It is suggested that our PDMS-coating can be of potential interest for the application of ZnO in UV protection agents and energy and electronic devices.

Keywords: ZnO, PDMS coating, photostability, Quenching, photocatalytic activity