

Highly Transparent, Hydrophobic and Self-Cleaning ZnO-Durazane Based Hybrid Organic-Inorganic Coatings

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Abstract : In this report, we present a simple route to realize robust, hydrophobic, and highly transparent coatings using organic polysilazane (durazane) and zinc oxide nanoparticles (ZnO). These coatings were deposited by spraying the mixture solution on glass slides. Thus, the properties of the films were characterized by scanning electron microscopy (SEM), Fourier transform infrared spectroscopy (FT-IR), UV-vis-NIR spectrophotometer, and water contact angle method. This sprayable polymer mixed with ZnO nanoparticles shows high transparency for visible light > 90%, a hydrophobic character (CA > 90°), and good mechanical and chemical stability. The coating also demonstrates excellent self-cleaning properties, which makes it a promising candidate for commercial use.

Keywords : coatings, durability, hydrophobicity, organic polysilazane, self-cleaning, transparency, zinc oxide nanoparticles

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