

Supporting information

Fabrication of Mechanically Robust, Self-cleaning and Optically High-performance Hybrid Thin Films by SiO₂&TiO₂ Double-Shelled Hollow Nanospheres

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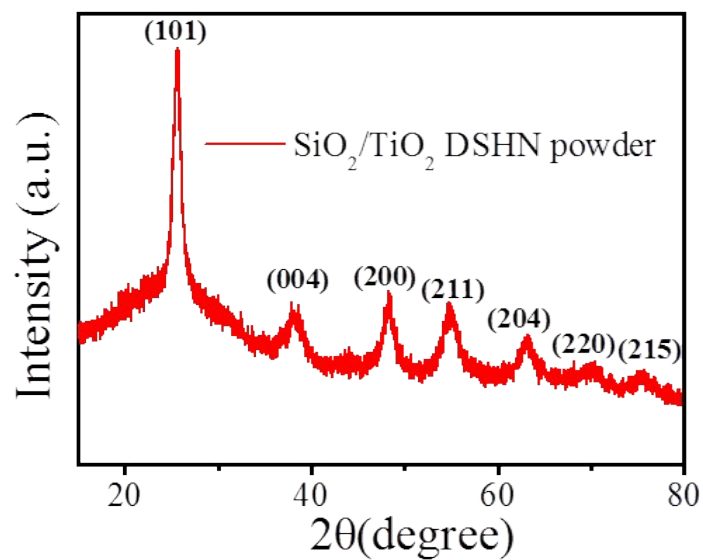


Figure S1. X-ray diffraction (XRD) patterns of SiO₂&TiO₂ DSHN powder.

Scherrer equation

$D = 0.89 \lambda / (\beta \cos \theta)$ (1), where 2θ is the diffraction angle, λ is the wavelength of X-ray radiation, and β is the full width at the half-maximum of the diffraction peak.

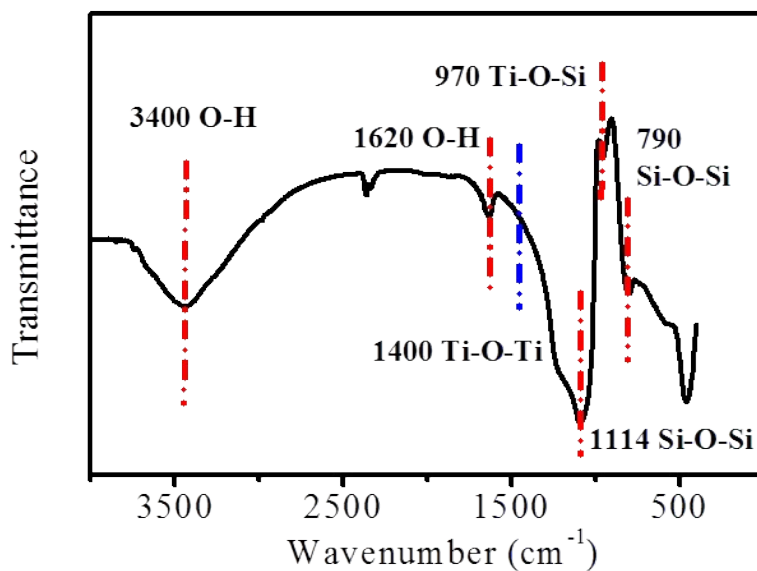


Figure S2. IR spectrum of SiO₂&TiO₂ DSHN powder.

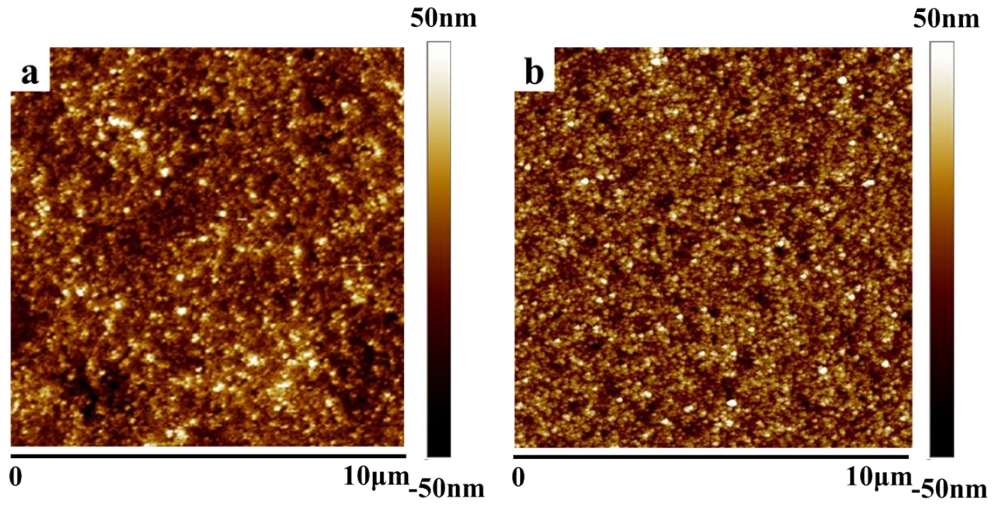


Figure S3. AFM images of (a) SiO₂ HN thin film and (b) SiO₂&TiO₂ DSHN thin film.

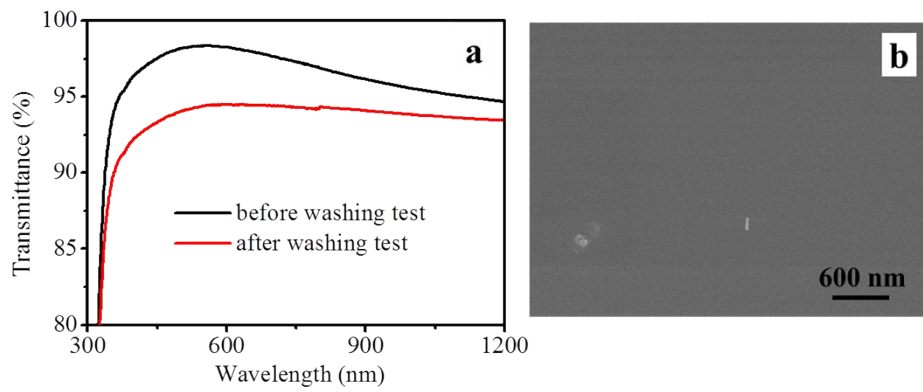


Figure S4. (a) Transmission spectra of SiO₂ HN thin film before and after washing test. (b) SEM image of SiO₂ HN thin film after washing test.