

Synthesizing and Evaluating the Photocatalytic and Antibacterial Ability of TiO₂/SiO₂ Nanocomposite for Silicate Coating

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1. Results and Discussion

The surface morphology and particle size of TiO₂/SiO₂ Nc (0–50%) were evaluated by SEM (Figure S1). The SEM image clearly shows that the isolated spherical particle of the TiO₂/SiO₂ Nc (0-50%) samples are formed. Second, when the SiO₂ content in the nanocomposite sample increases from 0 to 15%, the SEM results of four samples TiO₂/SiO₂ Nc (0-15%) show a the particle size samples decreases slowly. In contrast, the SEM results of two samples TiO₂/SiO₂ Nc (20-50%) show decreases rapidly. These SEM results are consistent with the XRD results reported above. As the SiO₂ content increases from 0 to 50%, the anatase and rutile grain size decrease. Thus, we suggest that the increased of SiO₂ content in TiO₂/SiO₂ Nc prevent the crystalline transition to the rutile phase, results in retard the growth of nanoparticles and reduce the anatase grain size from 20.0 to 18.2 nm and rutile grain size from 20.8 to 16.8 nm.

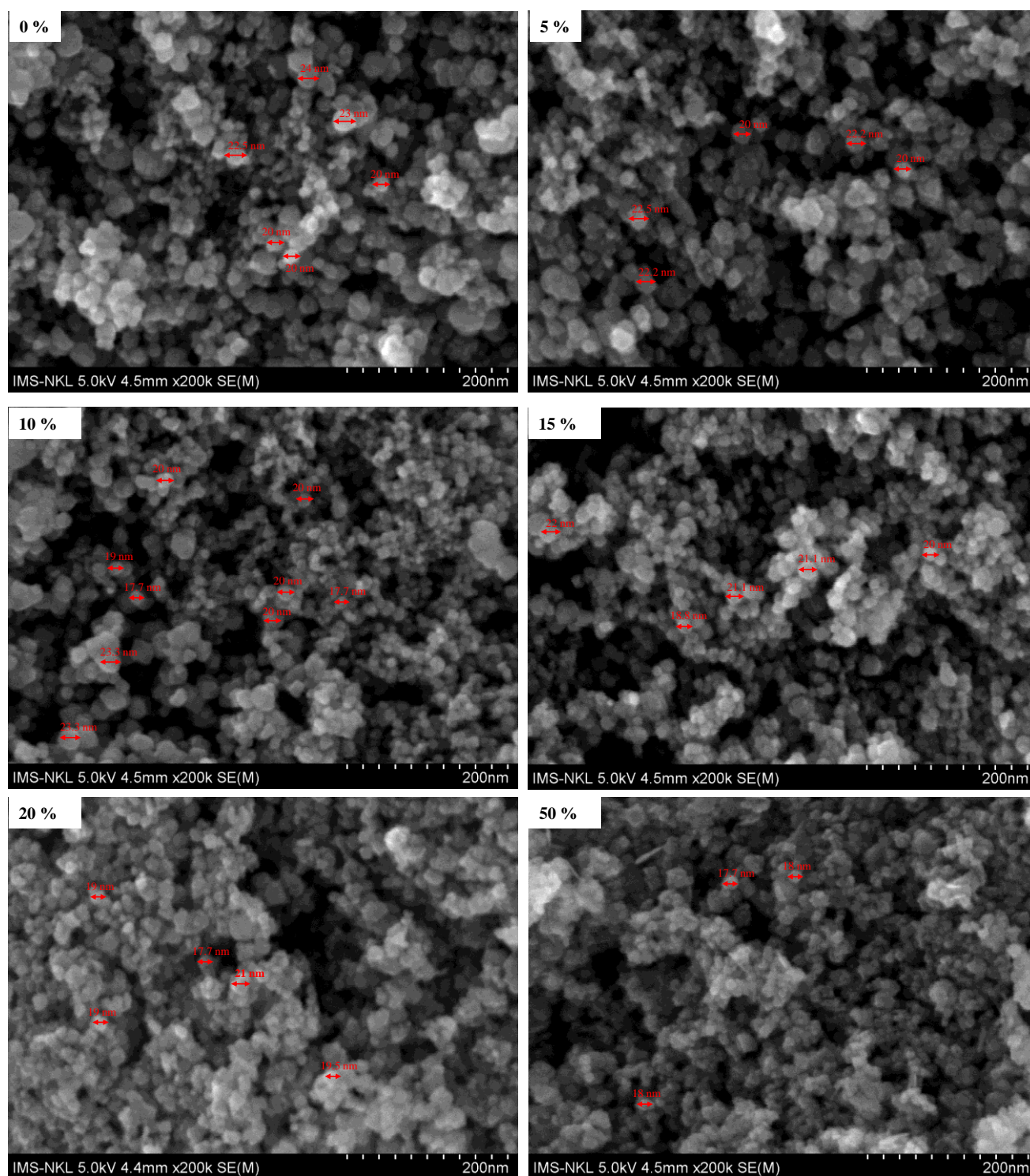


Figure S1. SEM images of $\text{TiO}_2/\text{SiO}_2$ Nc (0-50%) samples.