

Supplementary Information

Effect of Multiply Twinned Ag⁽⁰⁾ Nanoparticles on Photocatalytic Properties of TiO₂ Nanosheets and TiO₂ Nanostructured Thin Films

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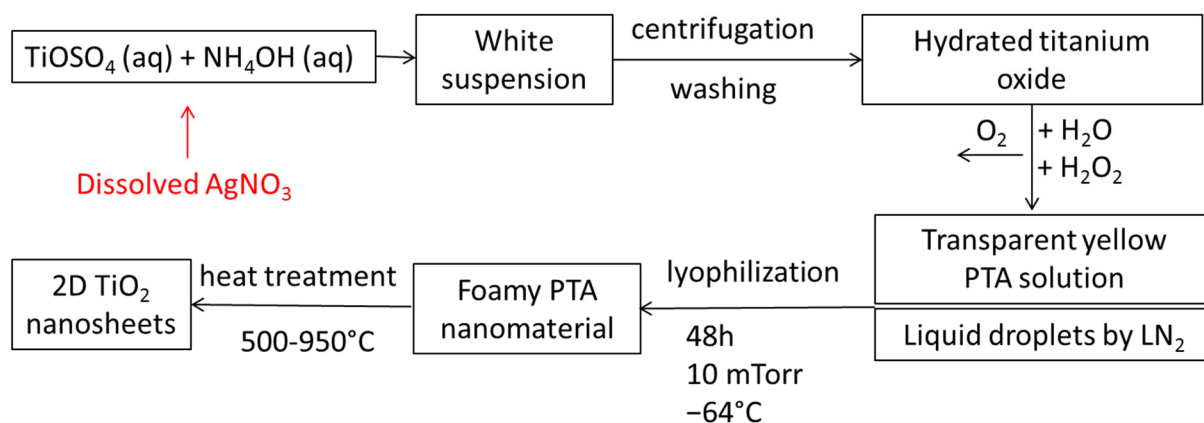


Figure S1. Synthetic route for the preparation of freeze-dried precursor for Ag-modified TiO₂ nanosheets.

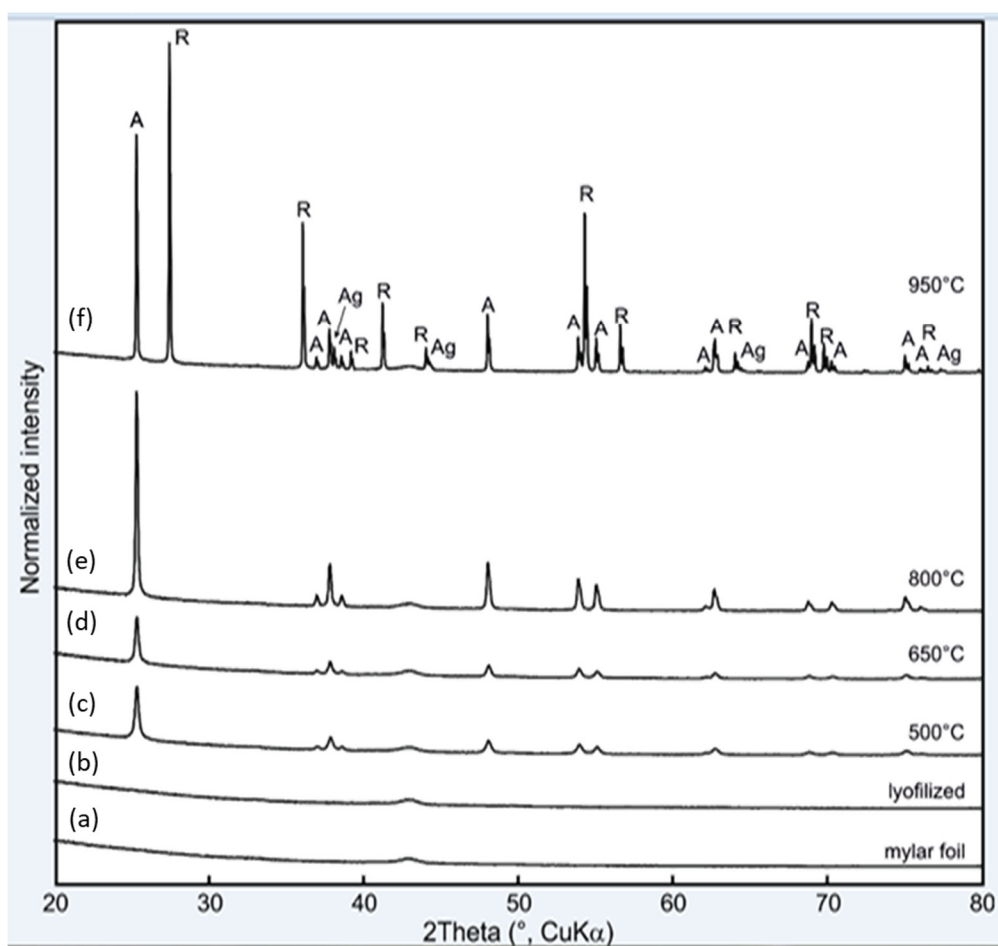


Figure S2. Powder XRD diffraction patterns of Ag modified 2D TiO₂ nanosheets: (a) Mylar foil, (b) lyophilized precursor Ag₂TiO₃LYO, (c) Ag₂TiO₃LYO/500 obtained at 500 °C, Ag₂TiO₃LYO/650 obtained at 650 °C, Ag₂TiO₃LYO/800 obtained at 800 °C, and Ag₂TiO₃LYO/950 obtained at 950 °C.

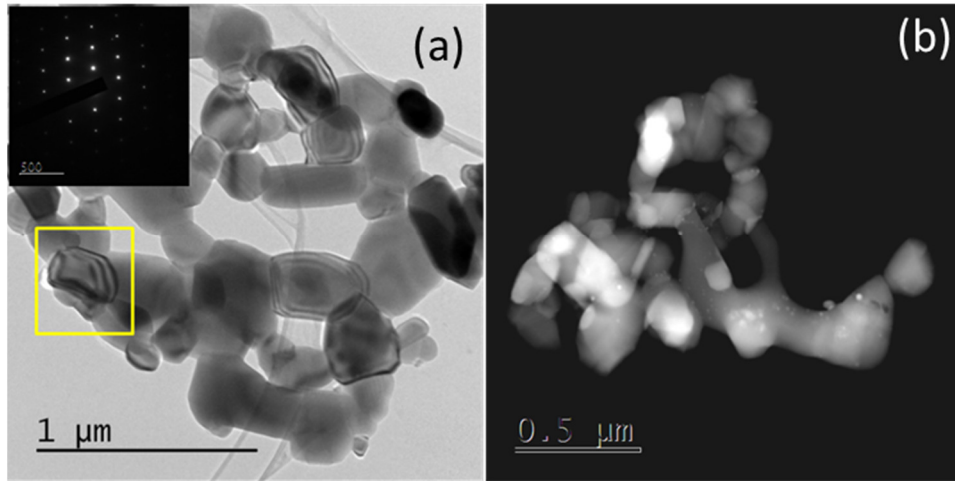


Figure S3. S/TEM images of (a) of Ag_TiO_LYO/950 with SAED inset confirming single nanocrystals of rutile, (b) HAADF image revealed Ag⁽⁰⁾ NPs on the surface of TiO₂.

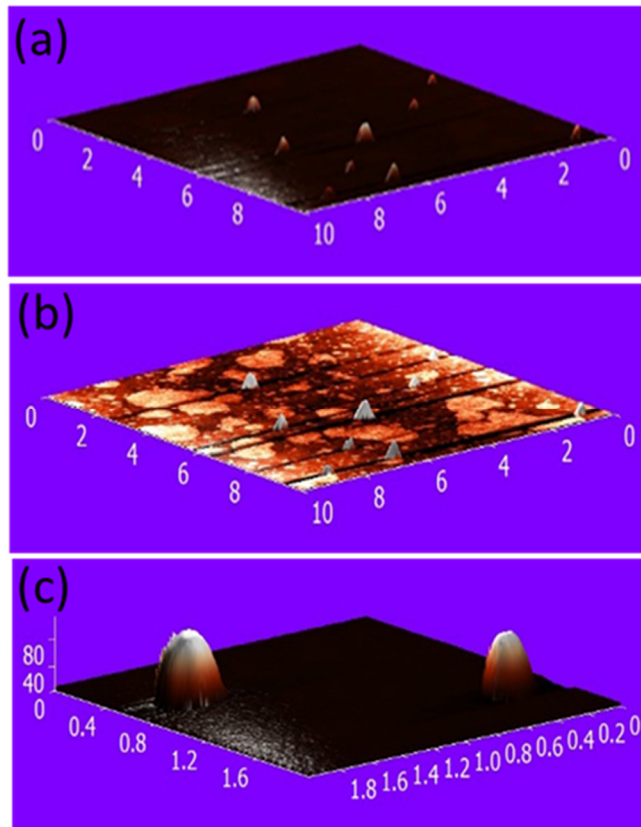


Figure S4. AFM 3D-images of the Ag_TiO_LYO/800 sample deposited on a glass substrate. (a) an image of the sample area of 10 $\mu\text{m} \times 10 \mu\text{m}$ with an offset of Z-axis zero setting that allows distinguishing only large nanoparticles, (b) the same image with an offset of Z-axis zero setting that allows distinguishing the nanostructure details with low height, (c) an image of the sample area with a size of 2 $\mu\text{m} \times 2 \mu\text{m}$ including only two nanoparticles.

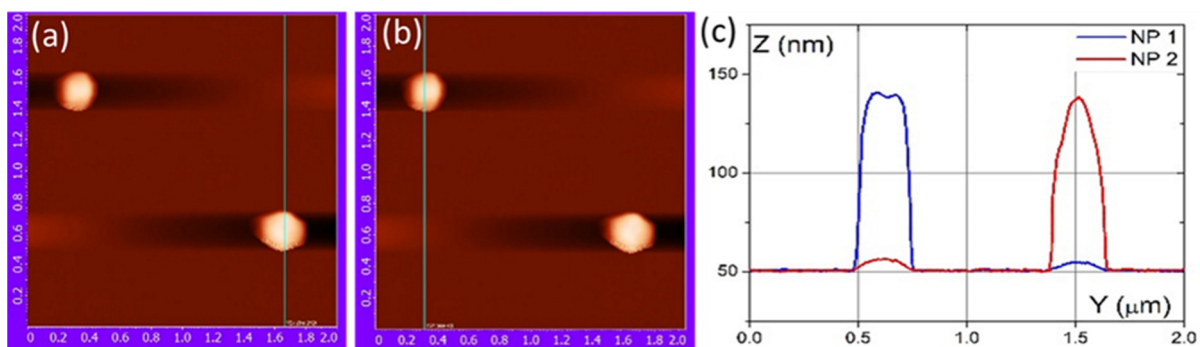


Figure S5. Profiling analysis of the 2D AFM image of the Ag_TiO_LYO/800 deposited on a glass substrate with a size of $2\ \mu\text{m} \times 2\ \mu\text{m}$ including two NPs. (a) the image with Y-profiling along the right NP1, (b) the image with Y-profiling along the left NP2, (c) the plot of the profiles reflecting the size and height of the NP1 and NP2.

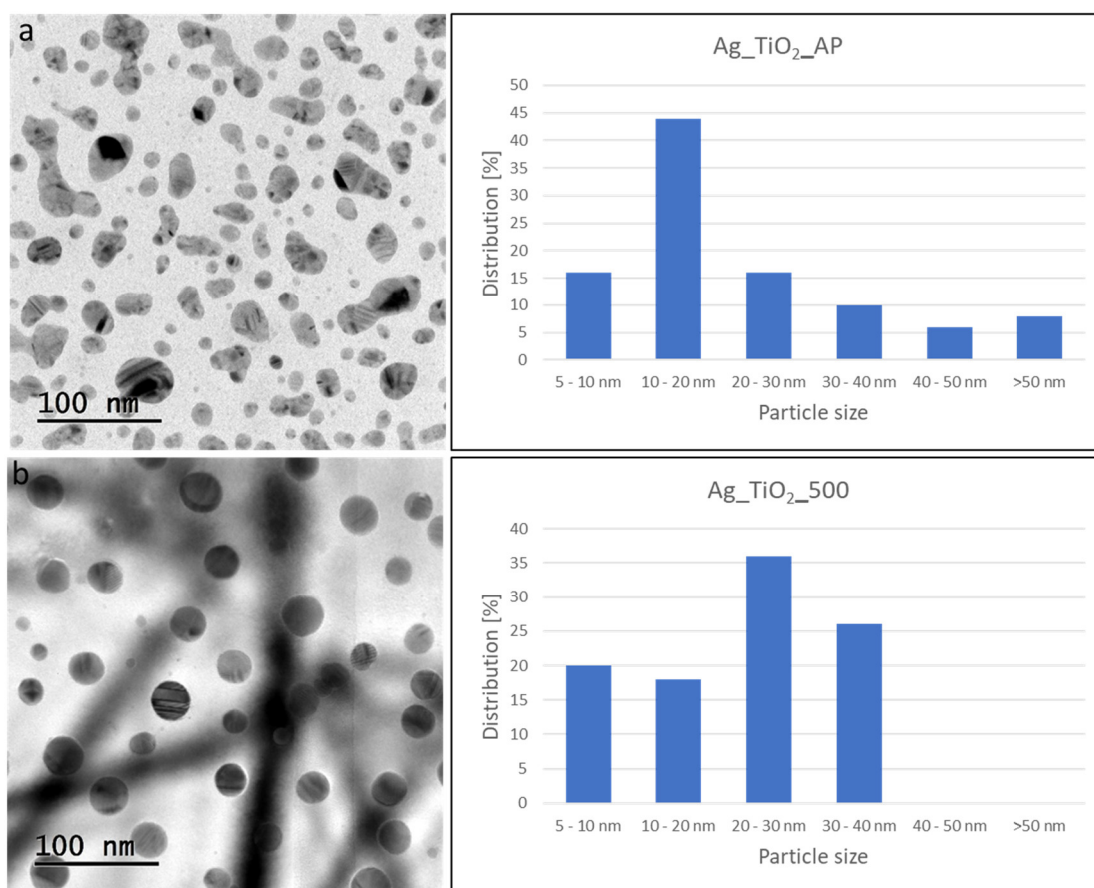


Figure S6. S/TEM image and distribution of nanoparticle size of NSTFs. (a) S/TEM image of Ag_TiO₂_AP with the corresponding distribution of nanoparticle size and (b) S/TEM image Ag_TiO₂_500 NSTF with the corresponding distribution of nanoparticle size obtained by ImageJ software.