

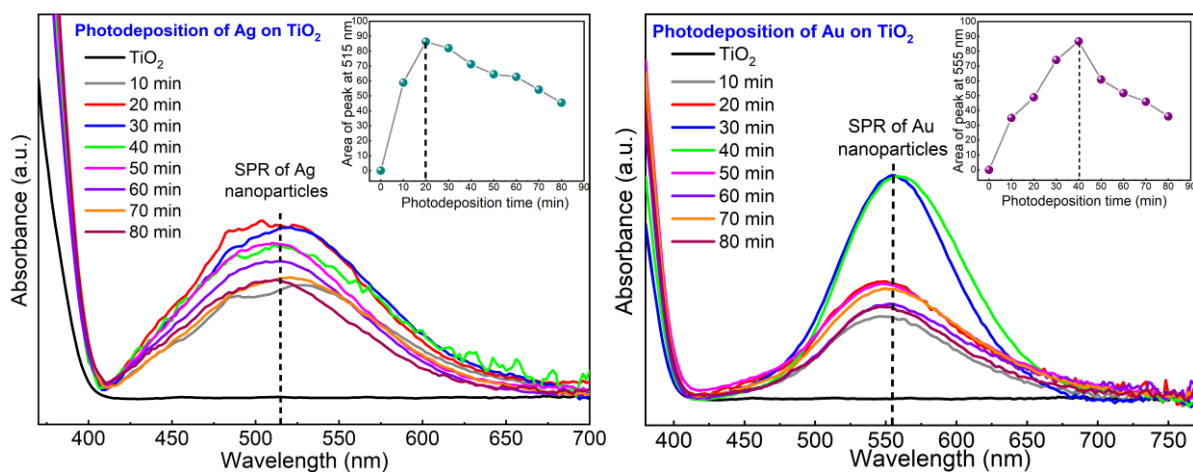
## Electronic Supplementary Information

### **Influence of Photodeposition Sequence on the Photocatalytic Activity of Plasmonic Ag–Au/TiO<sub>2</sub> Nanocomposites**

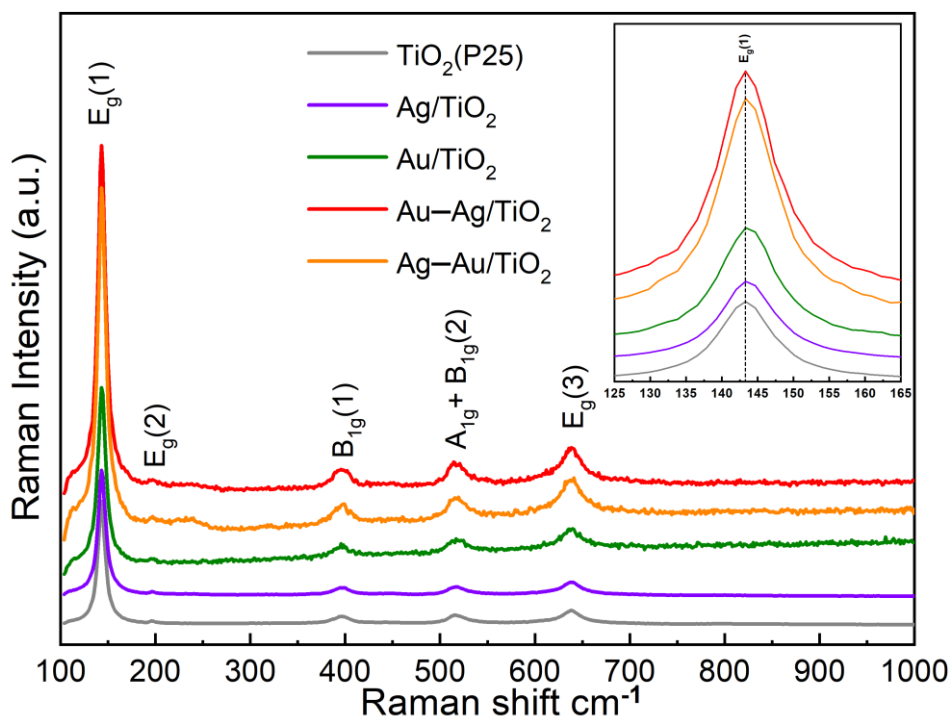
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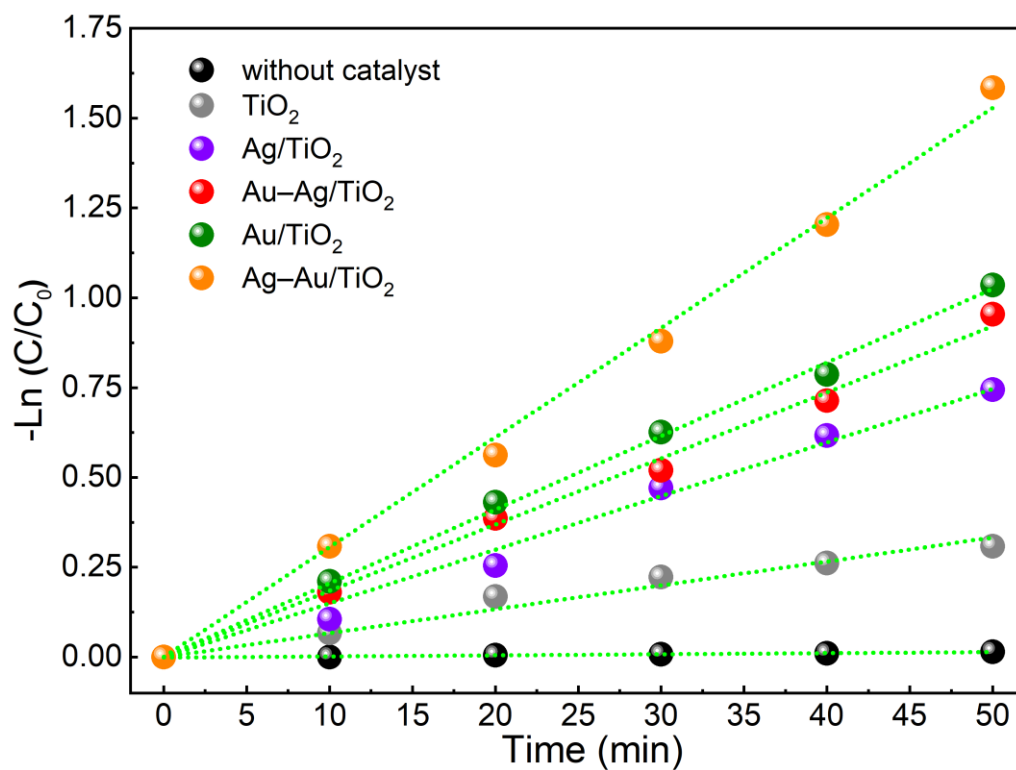
*<sup>b</sup>Tampere Microscopy Center, Tampere University, P.O. Box 692, FI-33014 Tampere University, Finland Address here.*



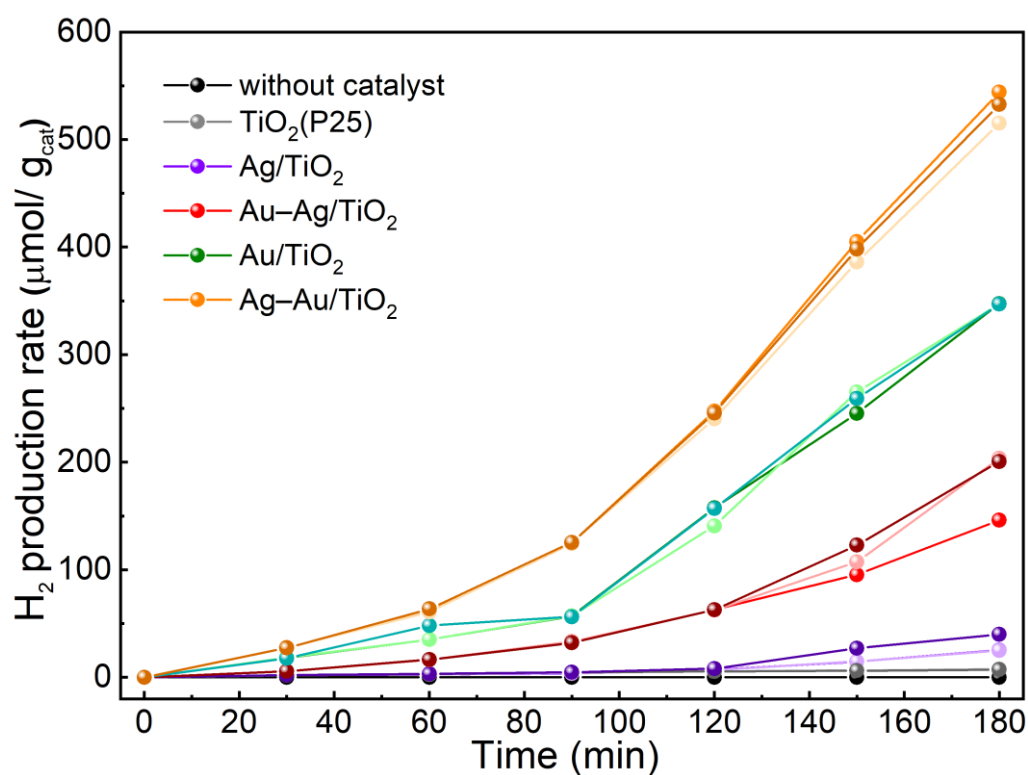
**Figure S1.** UV-Vis absorption spectra of Ag/TiO<sub>2</sub> and Au/TiO<sub>2</sub> with respect to photodeposition time.



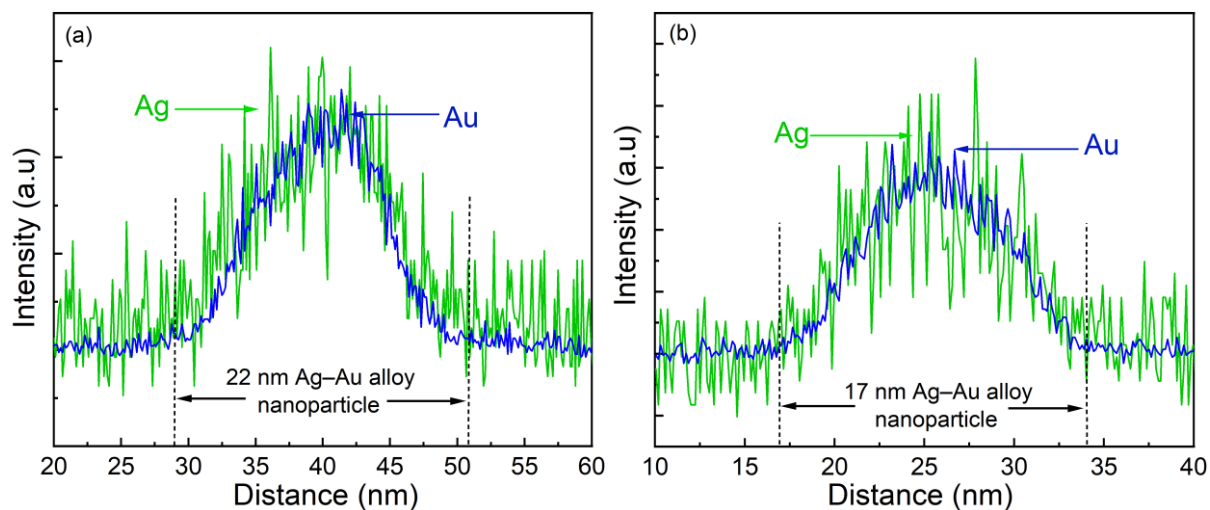
**Figure S2.** Normalized Raman spectra of synthesized catalysts showing structural features and active vibration modes of only anatase TiO<sub>2</sub>. Peaks at 147, 200, 398, 515 and 639 cm<sup>-1</sup> corresponding to E<sub>g</sub> (1), E<sub>g</sub> (2), B<sub>1g</sub> (1), A<sub>1g</sub> + B<sub>1g</sub> (2) and E<sub>g</sub> (3) active vibration modes, respectively.



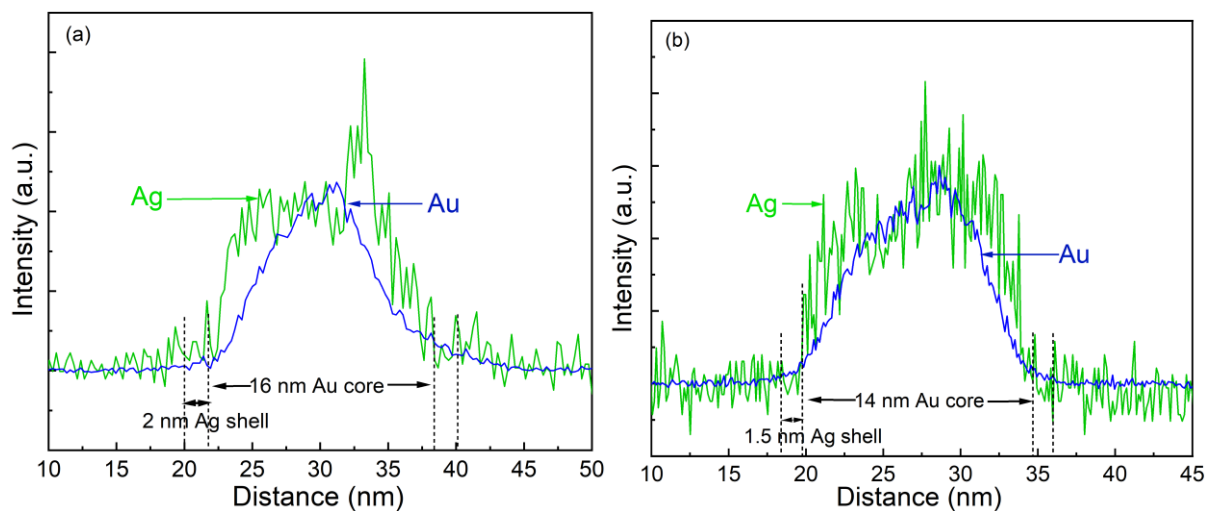
**Figure S3.** Methylene blue degradation kinetics under solar irradiation.



**Figure S4.** Reproducibility of photocatalytic hydrogen production reaction.



**Figure S5.** STEM-EDS line analysis of Ag–Au alloy nanoparticles on Au–Ag/TiO<sub>2</sub>, i.e., samples on which Ag was photodeposited first.



**Figure S6.** STEM-EDS line analysis of Ag-shell–Au-core nanoparticles on Ag–Au/TiO<sub>2</sub>, i.e., samples on which Au was photodeposited first.