

Supporting Information

A Highly Efficient and Stable Au/CeO₂-TiO₂ Photocatalyst for Nitric Oxide Abatement: A Potential Application in Flue Gas Treatment

Wei Zhu[†], Shuning Xiao[†], Dieqing Zhang^{*†}, Peijue Liu[†], Hongjun Zhou[†], Wenrui Dai[†],
Fanfan Liu[†], Hexing Li^{†*}

[†] Key Laboratory of Resource Chemistry of Ministry of Education, Shanghai Key Laboratory of Rare Earth Functional Materials, College of Life and Environmental Science, Shanghai Normal University, Shanghai, 200234, China (PRC). E-mail: dqzhang@shnu.edu.cn, hexing-li@shnu.edu.cn, Fax: +(86)21-64322272; Tel: +(86)21-64322272.

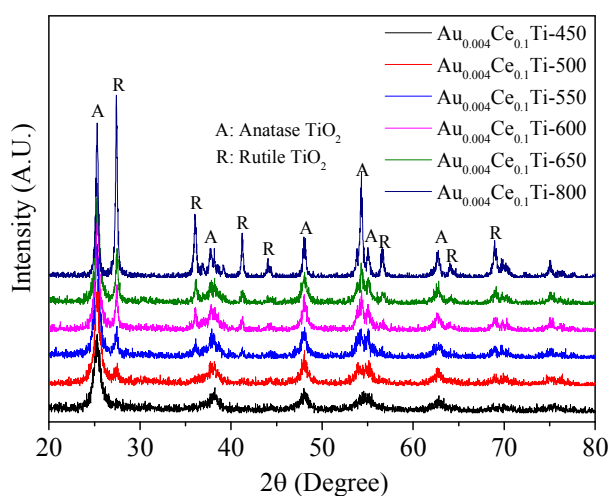


Figure S1. XRD patterns of Au_{0.004}Ce_{0.1}Ti calcined at different temperatures.

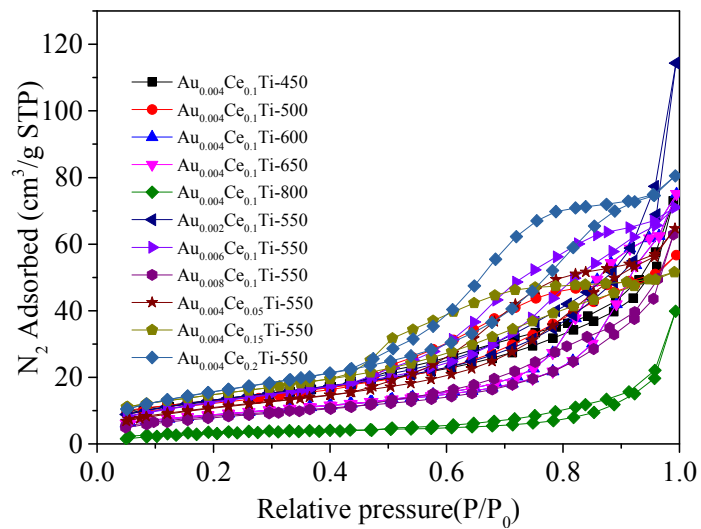


Figure S2. N₂ adsorption-desorption isotherms of different photocatalysts.

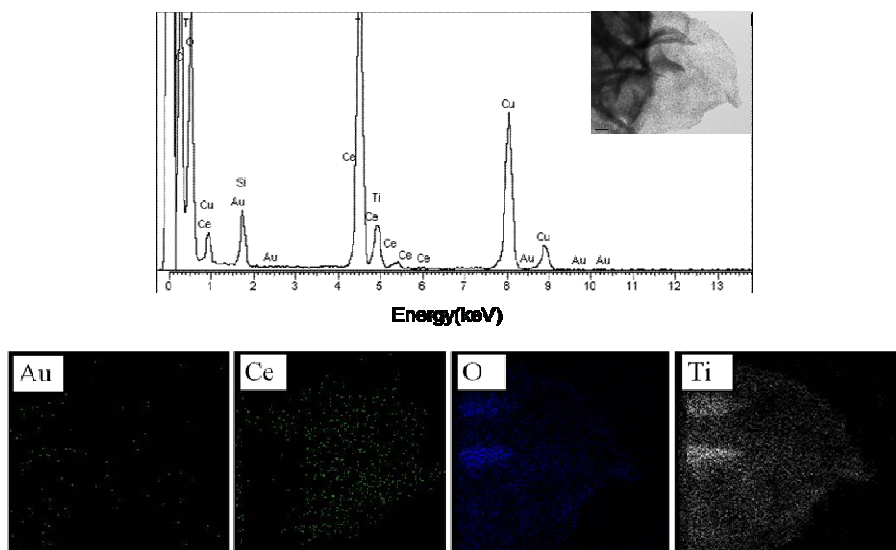


Figure S3. The energy dispersive X-ray spectroscopy (EDX) analysis results and Mapping images of Au_{0.004}Ce_{0.1}Ti-550. Note: Cu and C come from the supporting carbon-coated copper grid.

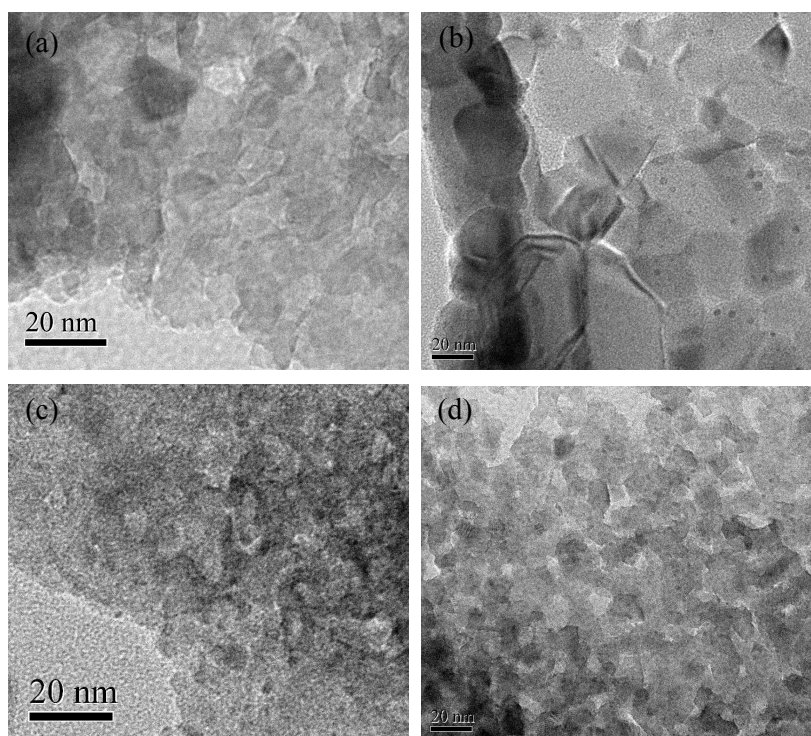


Figure S4. Typical TEM images of (a) pure TiO₂-550, (b) Au_{0.004}Ti-550, (c) Ce_{0.1}Ti-550, and (d) Au_{0.004}Ce_{0.1}Ti-550

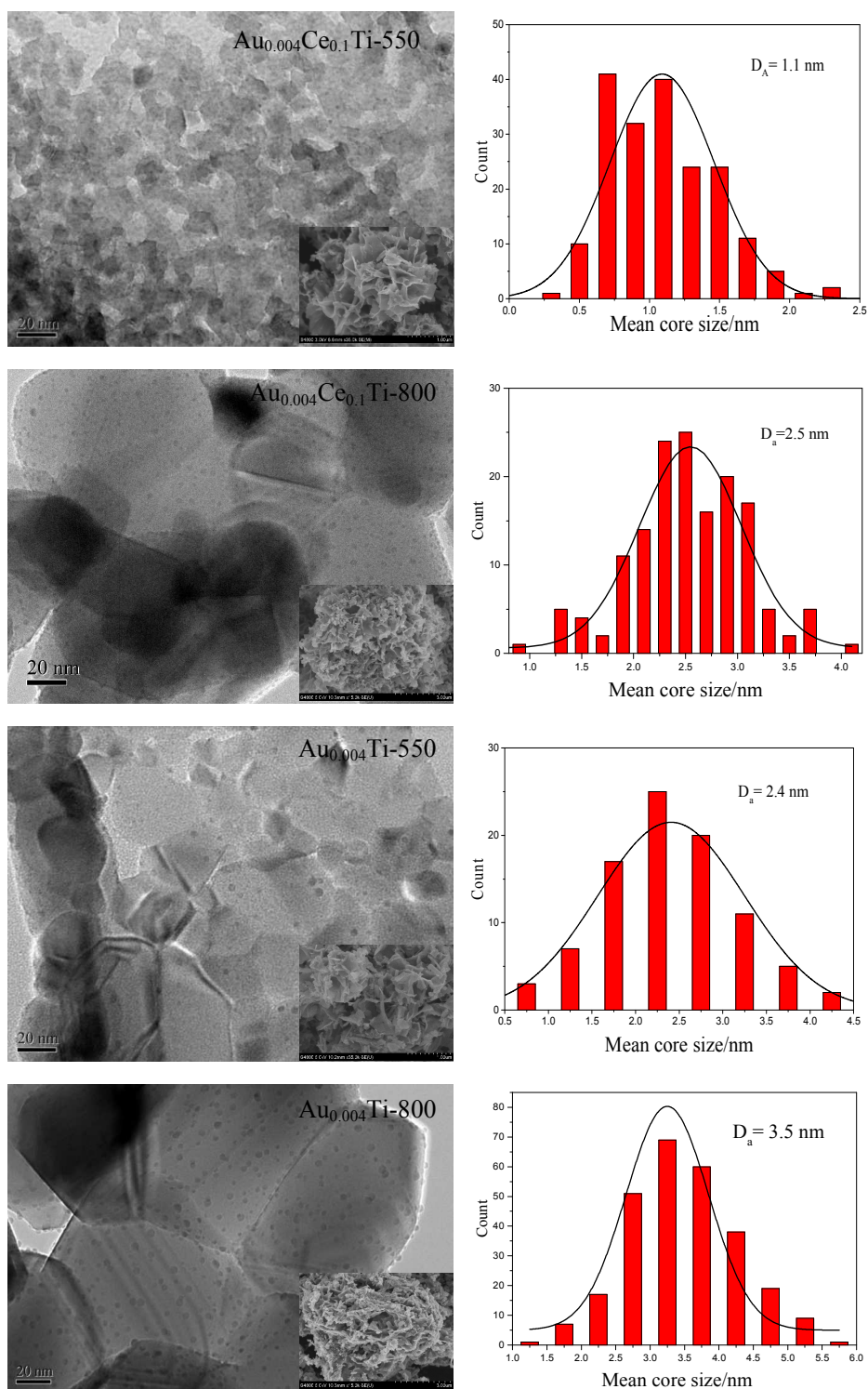


Figure S5. Typical TEM images and size distribution of Au particles on respective photocatalysts

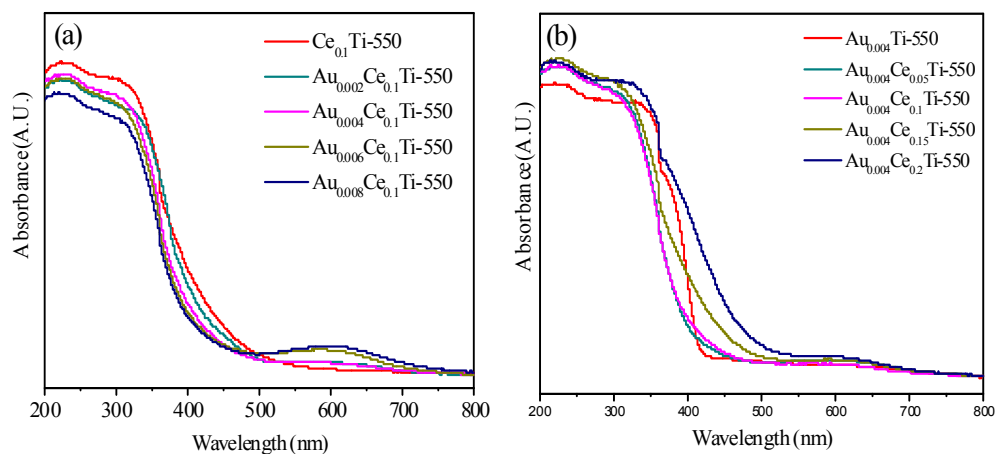


Figure S6. UV-vis DRS spectra of $\text{Au}_x\text{Ce}_y\text{Ti-550}$ with (a) different Au loading and (b) different CeO_2 loading.

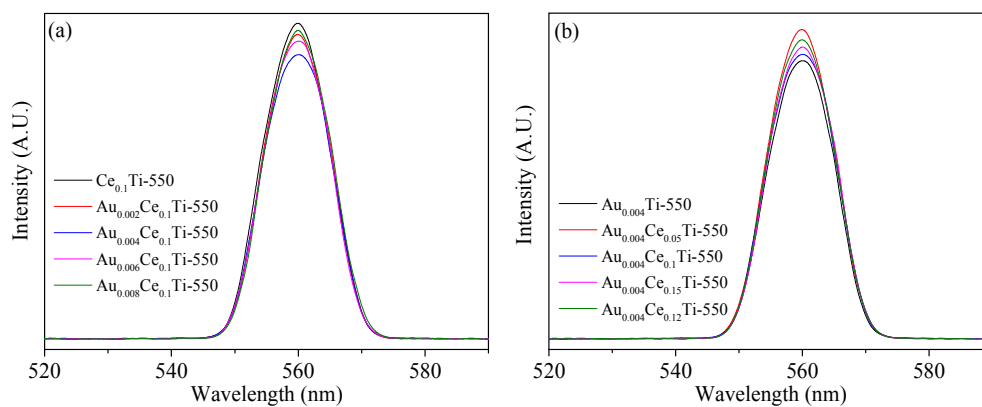


Figure S7. PL spectra (excited by 280 nm) of $\text{Au}_x\text{Ce}_y\text{Ti-550}$ with (a) different amounts of Au loading and (b) different amounts of CeO_2 loading.

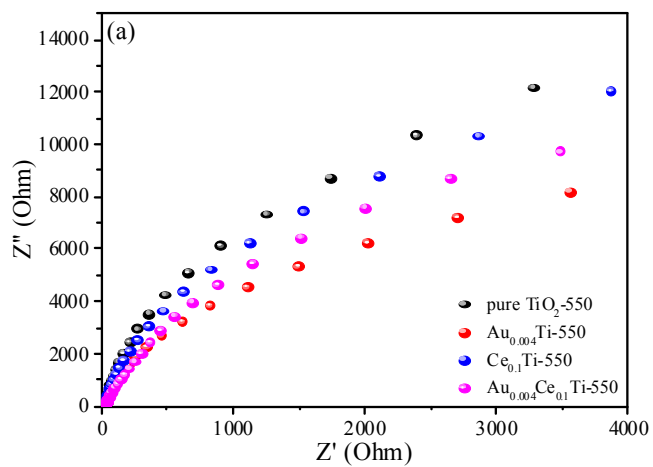


Figure S8. EIS of pure TiO_2 -550, $\text{Au}_{0.004}\text{Ti}$ -550, $\text{Ce}_{0.1}\text{Ti}$ -550 and $\text{Au}_{0.004}\text{Ce}_{0.1}\text{Ti}$ -550.

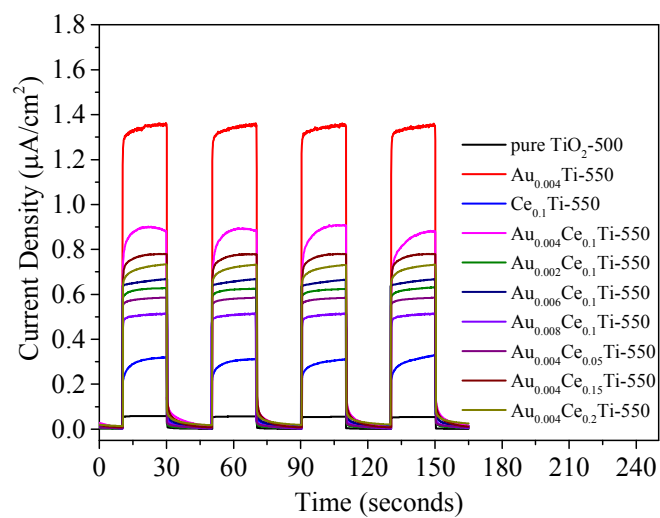


Figure S9. Photocurrent response of different samples under irradiation of Xe lamp.

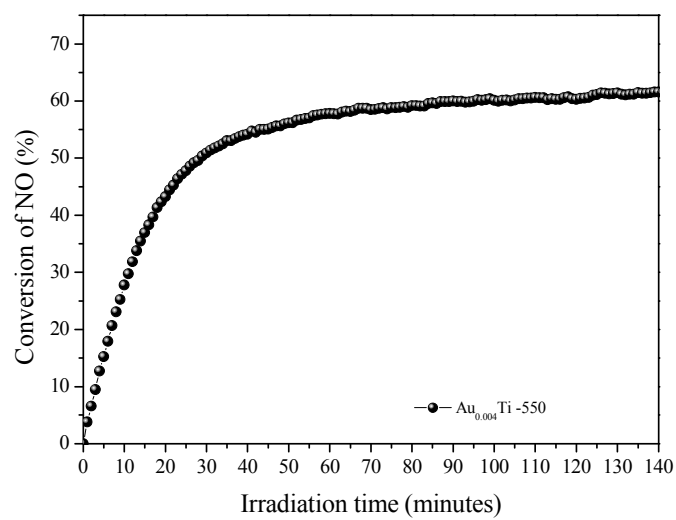


Figure S10. Conversion of NO vs irradiation time over $\text{Au}_{0.004}\text{Ti}-550$ sample under tungsten lamp irradiation for more than 2 hrs

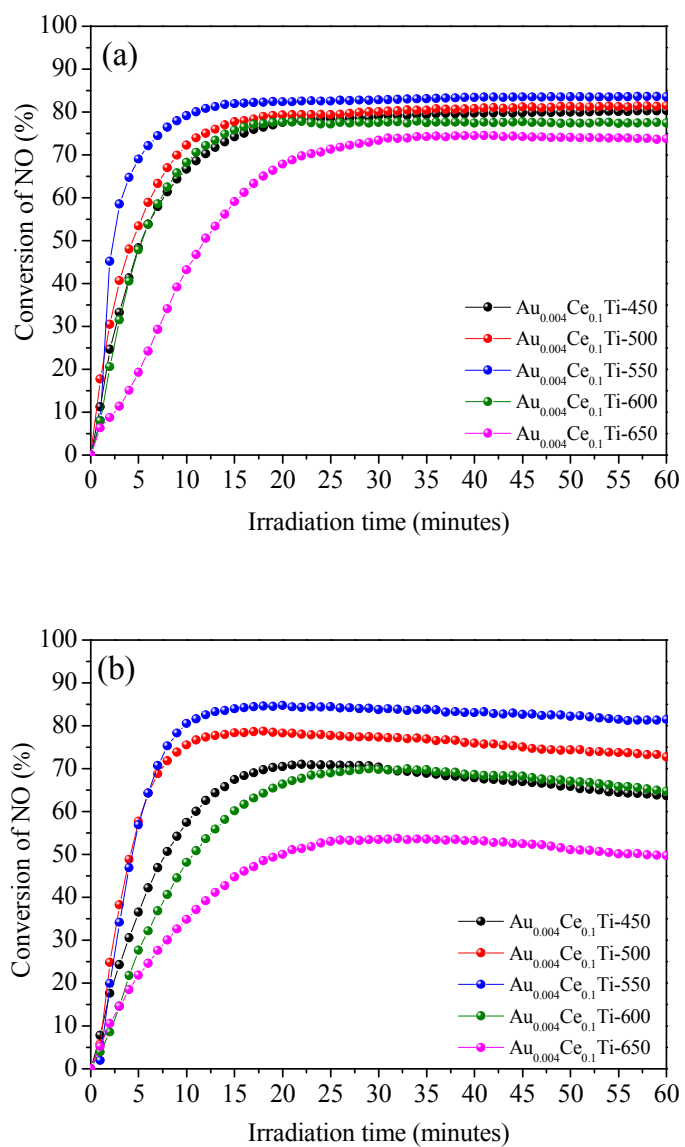


Figure S11. Conversion of NO vs irradiation time over $\text{Au}_{0.004}\text{Ce}_{0.1}\text{Ti}$ photocatalysts calcined at different temperatures. (a) UV lamp and (b) tungsten lamp.

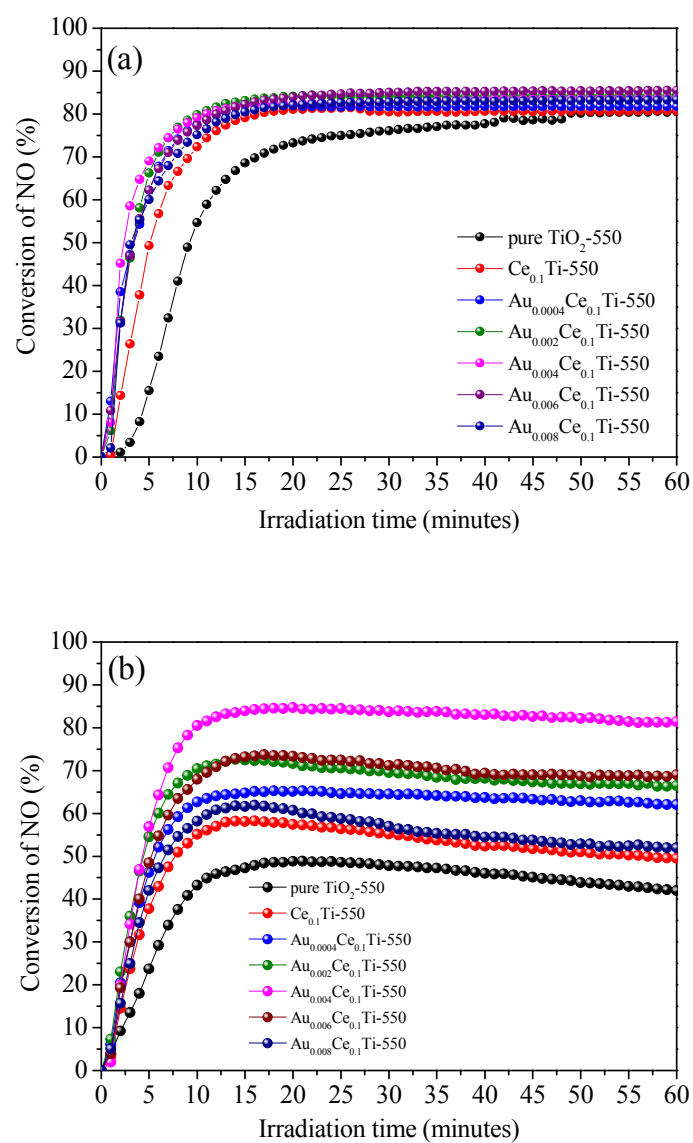


Figure S12. Conversion of NO vs irradiation time over $\text{Au}_{0.004}\text{Ce}_{0.1}\text{Ti}$ photocatalysts with different Au loadings. (a) UV lamp and (b) tungsten lamp.

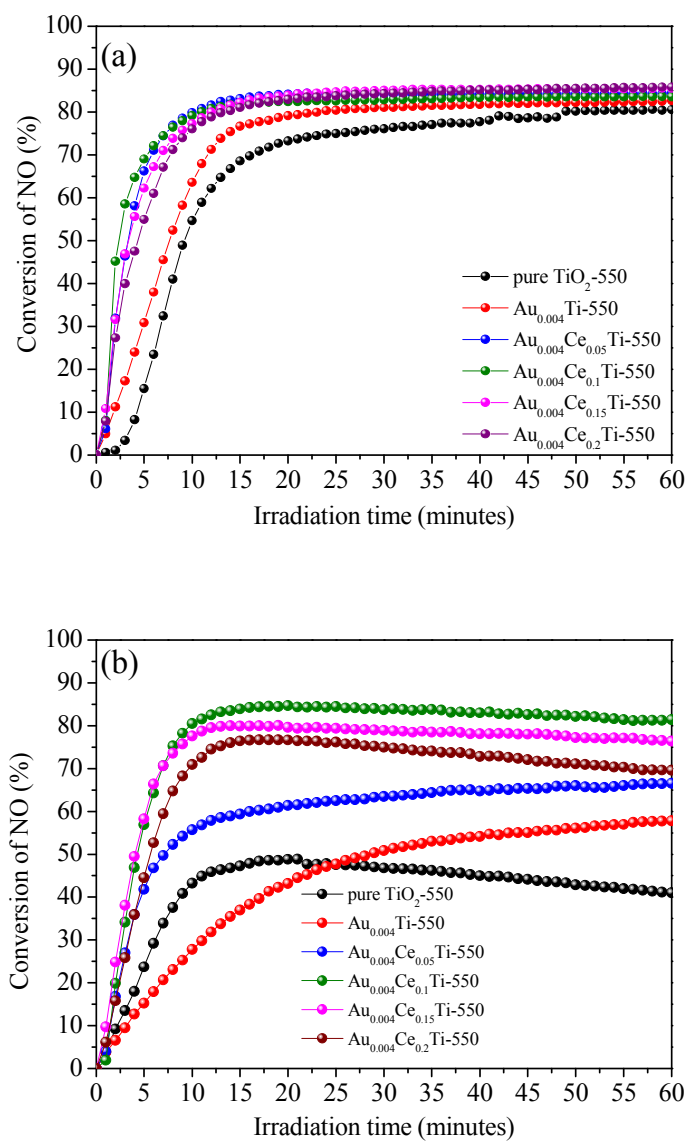


Figure S13. Conversion of NO vs irradiation time over $\text{Au}_{0.004}\text{Ce}_{0.1}\text{Ti}$ -550 with different CeO_2 loadings. (a) UV lamp and (b) tungsten lamp.

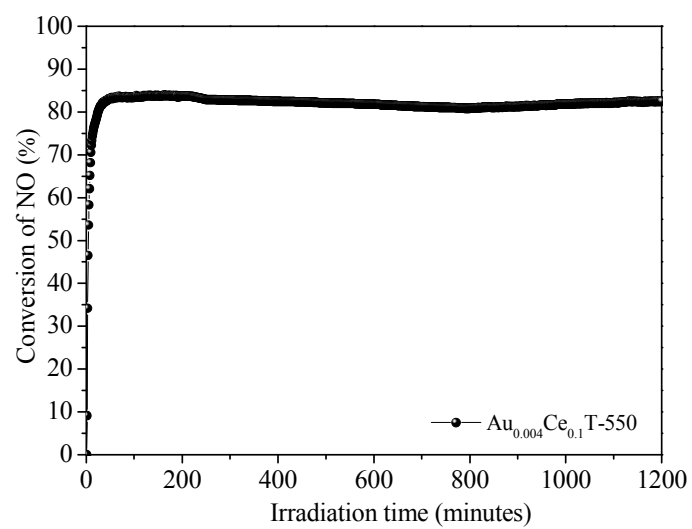


Figure S14. Conversion of NO removal rate vs irradiation time over $\text{Au}_{0.004}\text{Ce}_{0.1}\text{Ti-550}$ under UV lamp for about 20 hrs