

Supplementary Information

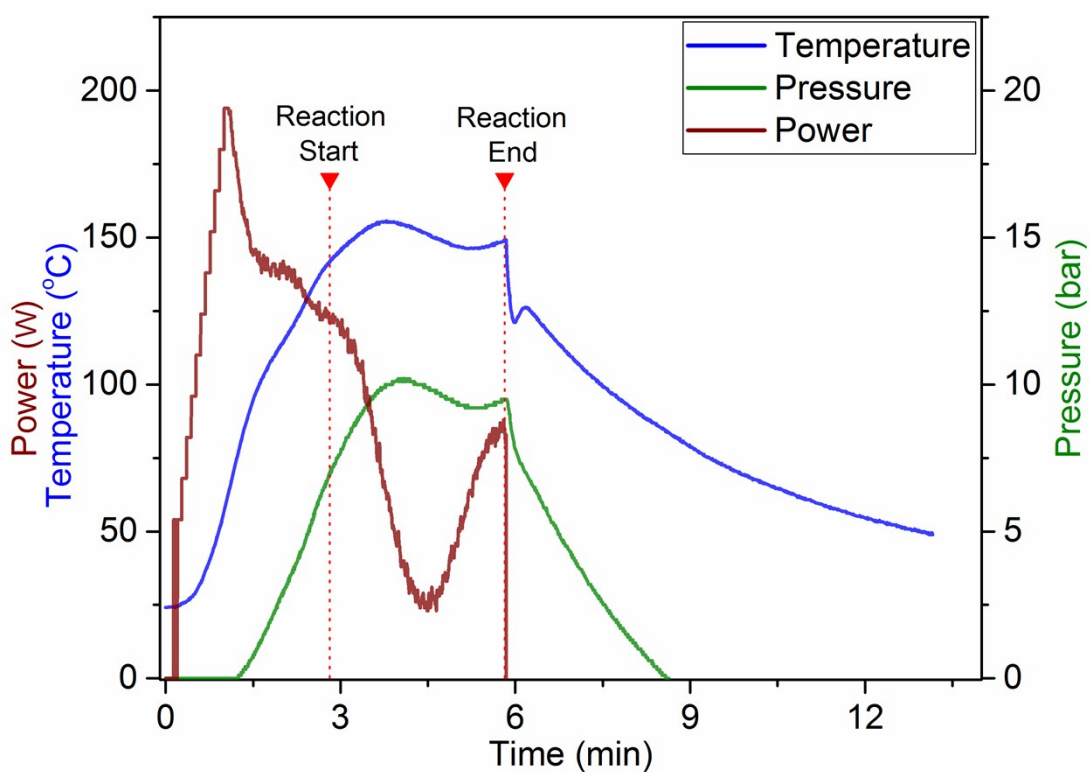


Figure S1. Graph showing experimental data of pressure, temperature and power during the microwave synthesis of 3.97wt% Pd-TiO₂

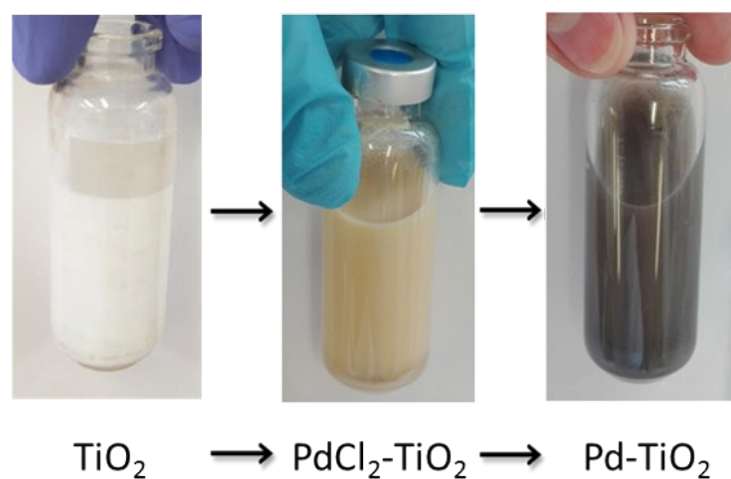


Figure S2. Pictures showing colour changes of nanopowder suspensions after the addition of Pd precursor and after the microwave synthesis.



Figure S3. Picture of Lelesil Photocatalytic Reactor utilised in photocatalytic studies

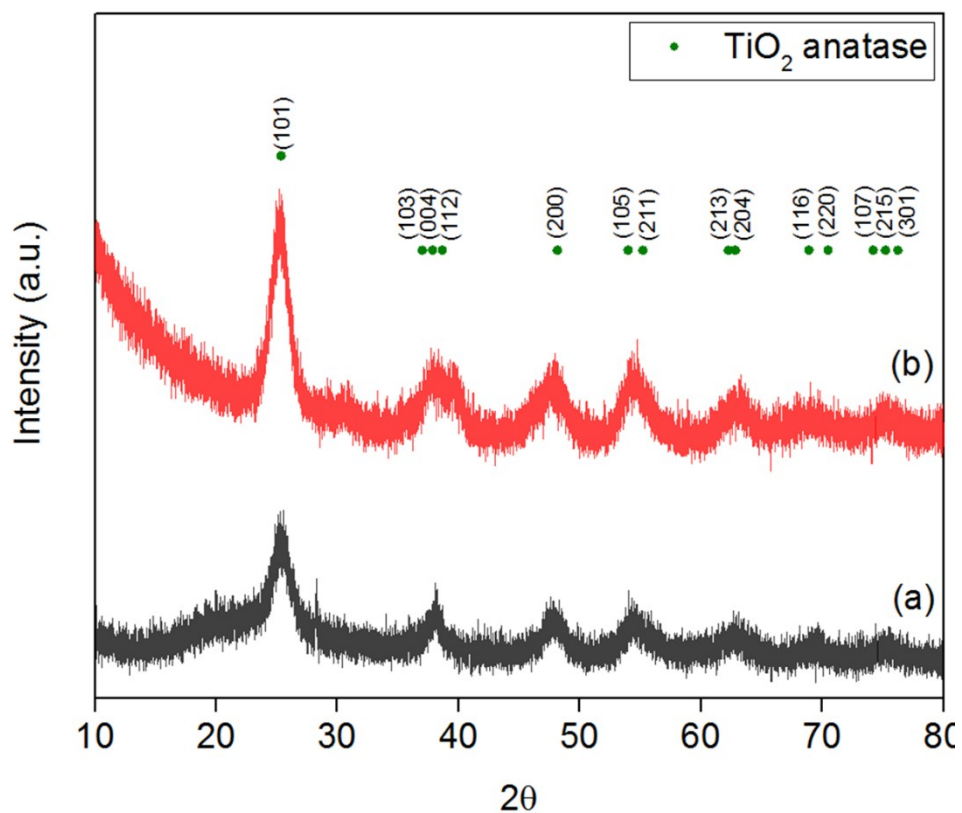


Figure S4. XRD pattern (a) before microwave synthesis of 3.97wt% Pd-TiO₂ powder and (b) after typical 3 minute microwave synthesis

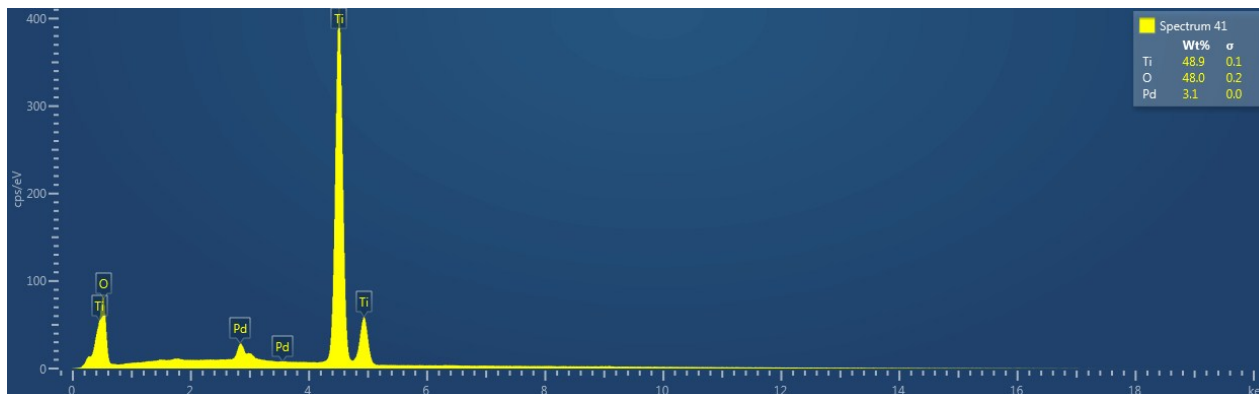


Figure S5. Typical EDX spectrum of a 3.97wt % Pd-TiO₂ powder

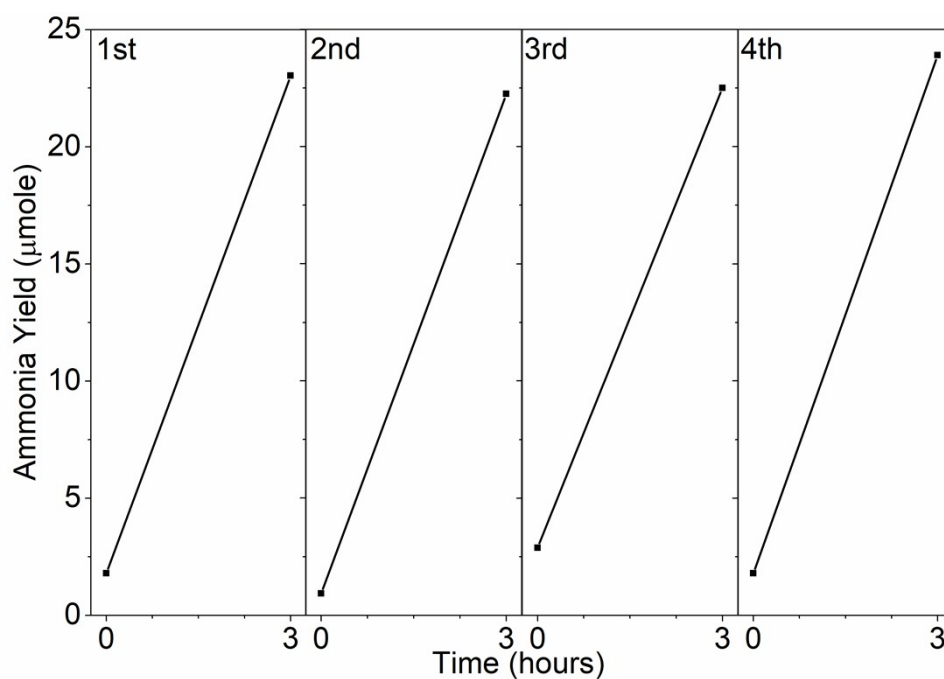


Figure S6. Yield of NH₃ over repeated 3 hour illuminated photocatalytic reactions, after each cycle photocatalyst powder was retrieved, washed and dried before the next reaction. Photocatalytic reaction conditions are

identical as stated in experimental section, however measurements were made before and after reaction instead of every 30 minutes.

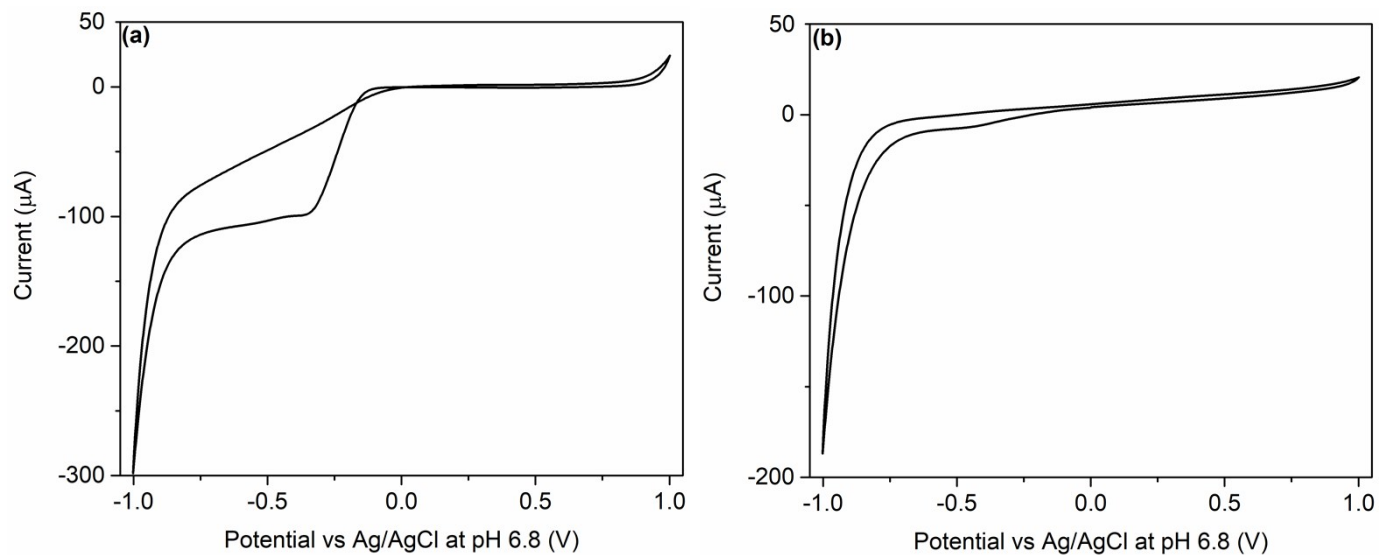


Figure S7. Cyclic voltammograms conducted in the dark on 3.97wt% Pd-TiO₂ photoelectrodes across a potential range of +1V to -1V vs Ag/AgCl 3M in 0.2M Na₂SO₄ (pH 6.8) at a scan rate of 20mV/s in (a) Air, and (b) Argon atmospheres

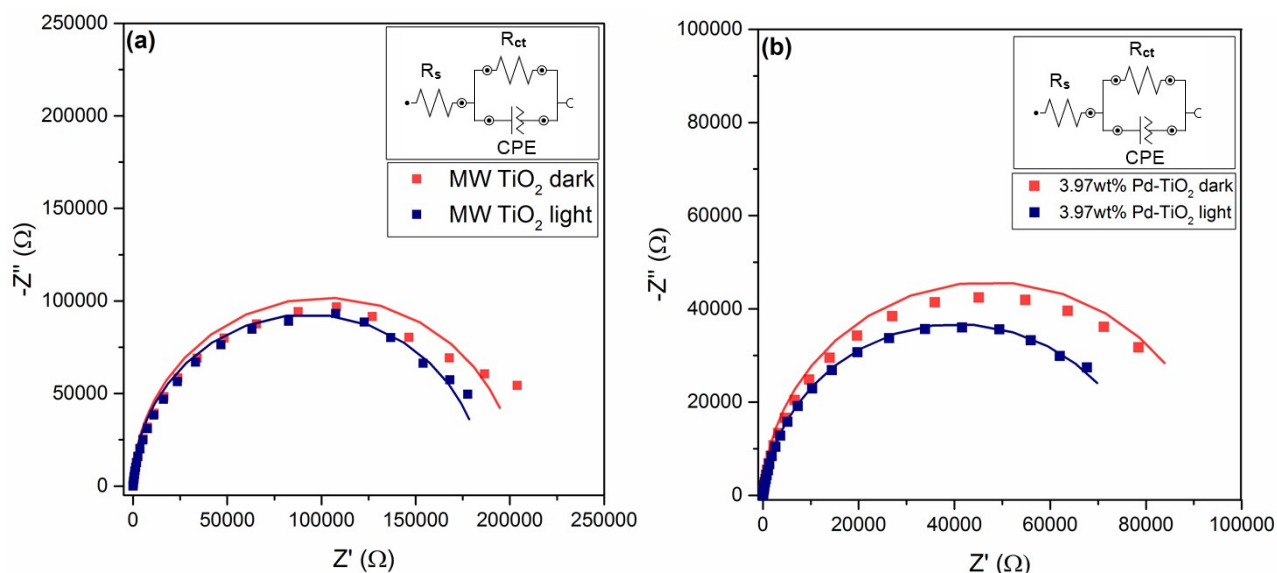


Figure S8. Nyquist plot comparisons between light and dark measurements of (a) MW-TiO₂ and (b) 3.97wt% Pd-TiO₂ photoelectrodes at 0.7V vs Ag/AgCl with a halogen lamp

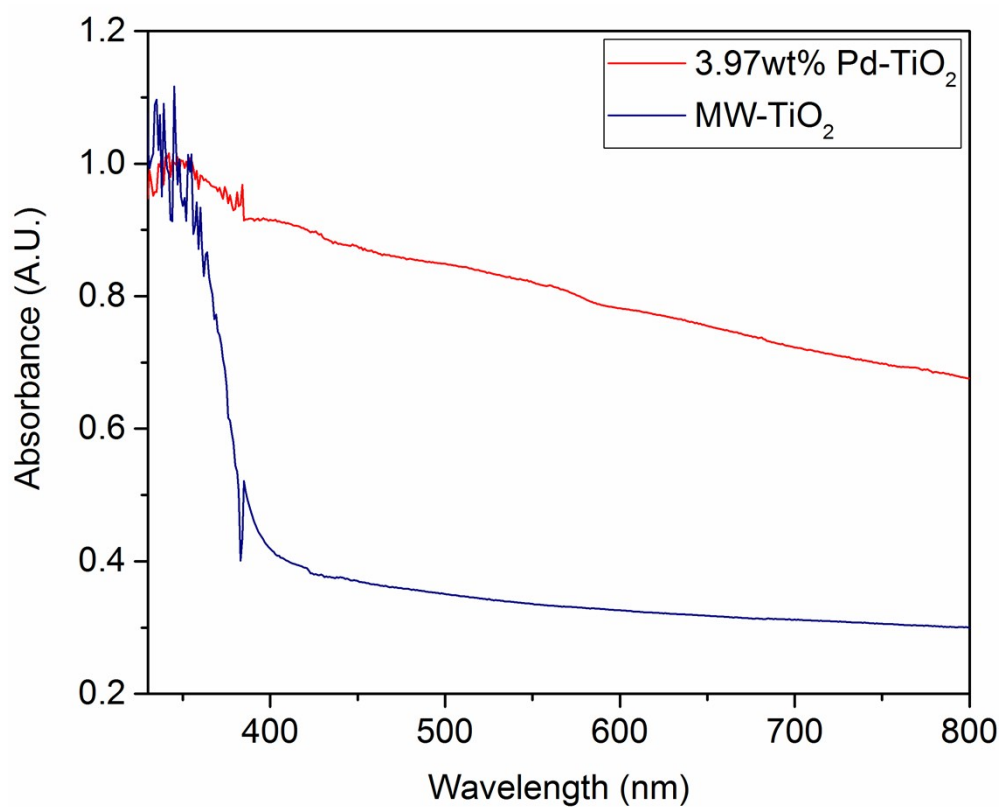


Figure S9. UV/Vis Absorbance spectrum for MW-TiO₂ and Pd-TiO₂ (instrumental noise is seen at lower wavelengths).