

# Enhancement in the photocatalytic degradation of low density polyethylene-TiO<sub>2</sub> nanocomposite films under solar irradiation

Reny Thankam Thomas and N. Sandhyarani\*

## Supplementary information

The Transmission electron microscopy (TEM) images were taken with a Philips CM200 transmission electron microscope operated at 200 kV. The TEM analysis of TiO<sub>2</sub> nanoparticles alone were performed after sonication in water and drop casting a drop of the solution on a carbon coated copper grid.

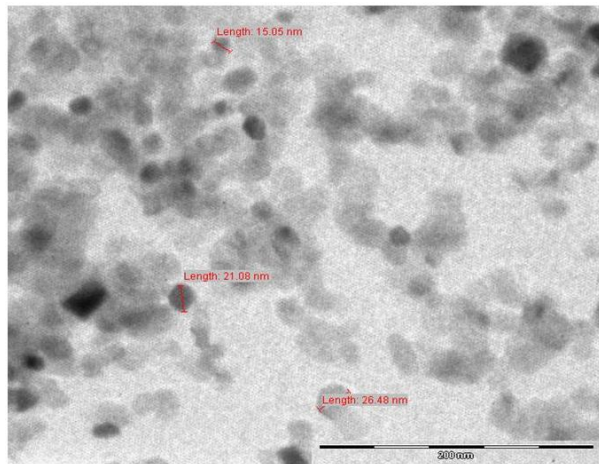


Fig S1 TEM image of TiO<sub>2</sub> nanoparticles shows that the average sizes of the particles are between 20 and 15 nm.

Figure S2 shows the UV assisted degradation of PE-TiO<sub>2</sub> films over 400 hrs. The experiments were performed under two 15W UV-C tubes at distance of 20 cm away from the light source. The decrease in degradation can be attributed to the less absorption at 254 nm when compared to the wide range of UV absorption (UV-A mainly) in the Solar spectrum which activates the photocatalyst better.

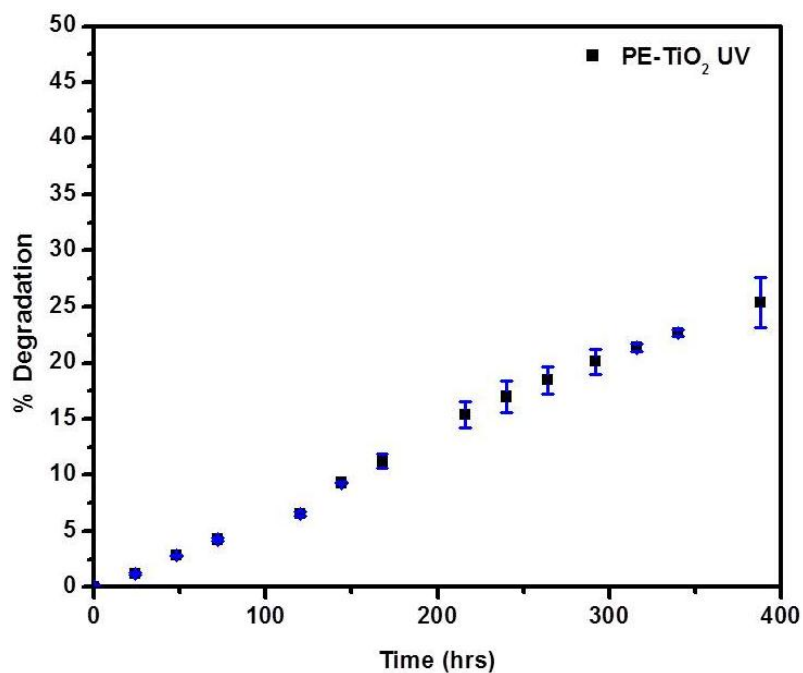


Fig. S2 Percentage weight loss of PE-TiO<sub>2</sub> films under UV radiation. Data presented are averages and the error bars indicate the standard errors of 3 independent experiments.

IR analysis of different batches of nanocomposite after solar treatment was done. The formation of carbonyl groups was observed in all the samples.

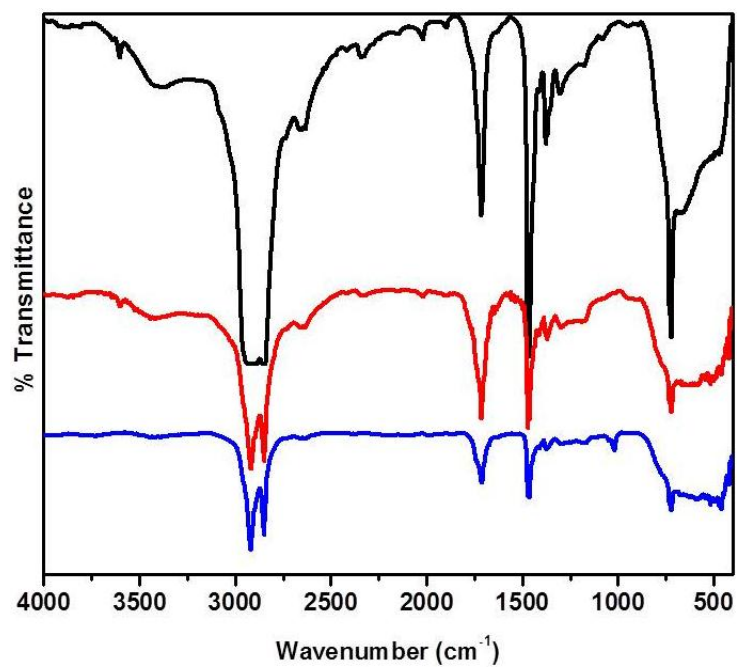


Fig. S3 IR spectra of PE-TiO<sub>2</sub> samples after degradation. The spectra correspond to different samples under the same conditions.