

Abstract Submitted
for the NMC15 Meeting of
The American Physical Society

Water Remediation via TiO₂ photocatalytic Nanoparticle under Solar Simulated Radiation¹ DIEFF VITAL, ARTHUR MALANGA, ERIC VICKERS, SSHA SRINIVASAN, Florida Polytechnic University — In this research project, we have successfully developed the TiO₂ nanoparticles dispersed-processed water solutions irradiated with UV-Visible light to create reactive oxygen species (ROS) for the *decontamination of azo- dyes*. TiO₂ nanocomposite photocatalysts have shown potential promise in disinfection of both bacterial and organic contaminants in water. We have successfully demonstrated the degradation of *azo-dyes* such as Methyl Orange, and Methylene Blue by using UV-Vis light source. The process of photo-oxidation of MO and MB in presence of TiO₂ photocatalyst thus produce hydroxyl free radicals and superoxides, for the complete destruction of toxic organics in the processed water. The characterization such as Fourier Infrared Spectroscopy and UV-Vis spectroscopy have been employed to characterize the aqueous water solution before and after photocatalytic treatment to understand the physic-chemical behavior. A bench scale photocatalytic reactor has been fabricated for the water decontamination experiments using our 3D printing and laser cutter technologies.

¹Water Remediation via TiO₂ photocatalytic Nanoparticle under Solar Simulated Radiation

Dieff Vital
Florida Polytechnic University

Date submitted: 25 Sep 2015

Electronic form version 1.4