Contribution ID: **190** Type: **Poster**

METHYLENE BLUE DEGRADATION UNDER VISIBLE LIGHT EXPOSURE USING TiO2/Au NANOCOMPOSITES SYNTHESIZED VIA LASER ABLATION OF SOLIDS IN LIQUIDS

Under the premise that TiO2 and Au nanoparticles exhibit good photocatalytic properties for the degradation of chemical contaminants in water, nanocomposites of TiO2/Au were synthesized in a 30% H2O2 and H2O solution using the laser ablation of solids in liquids technique. A Ti target was ablated with an energy of 475 mJ/pulse for 120 s, and in the same solution, an Au target was ablated applying the same energy while varying the ablation times, aiming to induce changes in Au concentration for each sample. The solutions containing the nanocomposites, along with samples of TiO2NPs and AuNPs synthesized under the same parameters used for the nanocomposites, were characterized using UV-VIS spectroscopy, grazing incidence X-ray diffraction (GIXRD), Raman spectroscopy, and transmission electron microscopy (TEM). Utilizing the obtained samples, photocatalytic degradation of methylene blue (MB) dye was conducted using TiO2/Au nanocomposites and TiO2NPs in the visible light range, with the incidence of an LED lamp for a total of 150 minutes, measuring solution absorbance with UV-VIS spectroscopy at intervals of 0, 15, 30, 45, and 60 minutes.

Keywords

TiO2/Au, methylene blue, visible light, photocatalysis, water

Reference

V. Verma, M. Al-Dossari, J. Singh, M. Rawat, M. G. M. Kordy and M. Shaban, “A Review on Green Synthesis of TiO2 NPs: Photocatalysis and Antimicrobial Applications,” Polymers, vol. XIV, no. 7, 2022.

This work was supported by

Universidad de Guadalajara

Author approval

I confirm

Author will attend

I confirm

Author: Ms FREGOSO-MORA, Muriel (Universidad de Guadalajara)

Co-authors: Dr QUIÑONES-GALVÁN, José Guadalupe (Universidad de Guadalajara); Dr RIVERA-RESÉNDIZ, Laura Patricia (Universidad de Guadalajara); Dr CAMPOS-GONZÁLEZ, Enrique (Instituto Nacional de Investigaciones Nucleares); Dr CAMPS, Enrique (Instituto Nacional de Investigaciones Nucleares)

Presenter: Ms FREGOSO-MORA, Muriel (Universidad de Guadalajara)

Session Classification: NANOSTRUCTURES

Track Classification: Nanostructures