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- ผลที่ได้จากงานวิจัย/การเผยแพร่

ได้นำเสนอผลงานแบบโปสเตอร์ ที่งานประชุม 8th IUPAC International Conference on Green Chemistry, 9 September 2018-14 September 2018, Shangri-La Hotel, Bangkok, Thailand



Poster Presentation Abstracts

September 11, 2018

P11-031

Enhanced Photocatalytic Activity of TiO₂ by Modified Surface with Natural Lac-Dye

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The surface of titanium dioxide photocatalysts were modified with Lac dye by impregnation method. This work, we have studied the effect of Lac dye's concentrations on the microstructure, optical property and photocatalytic activity. The physical properties of the Lac-TiO₂ samples were studied by several techniques such as X-ray powder diffraction (XRD), scanning electron microscopy (SEM), Fourier-transformed infrared spectroscopy (FT-IR), and diffuse reflectance UV-Vis spectroscopy (DRS). XRD pattern of lac dye -sensitized TiO₂ showed the mixed anatase and amorphous phase. The impregnation of natural dye did not affect the phase of samples. SEM images revealed that lac dye-modified TiO₂ nanoparticles had uniform spherical shape. The FT-IR spectra showed the characteristic bands of TiO₂ and lac dye. The DRS spectra revealed that lac dye-modified TiO₂ showed higher red shift into visible region. The photocatalytic degradation of methyl orange solution was investigated under visible light. Photocatalytic results revealed that the prepared lac dye-modified TiO₂ photocatalysts showed higher photocatalytic efficiency than the unmodified TiO₂ under visible light.

Keywords: Lac dye-modified titanium dioxide; TiO₂; degradation of methyl orange.