



“Gheorghe Asachi” Technical University of Iasi, Romania



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## PHOTOCATALYTIC DEGRADATION OF DISPERSE BLUE 56 BY Cu-Ti-PILCs AND Fe-Ti-PILCs

Beytullah Eren<sup>1</sup>, Can Serkan Keskin\*, Abdil Özdemir<sup>2</sup>

<sup>1</sup>Sakarya University, Faculty of Engineering, Department of Environmental Chemistry, Sakarya, Turkey

<sup>2</sup>Sakarya University, Faculty of Arts and Sciences, Department of Chemistry, Sakarya, Turkey

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### Abstract

Pollution with aromatic hydrocarbon has been rising because of the extreme usage of benzene containing compounds. Most of the people, animals and plants have been exposed to aromatic hydrocarbons due to polluted water sources. The aim of the present work was to carry out an experimental study for the photocatalytic degradation of aromatic hydrocarbon containing compounds by iron-titanium-pillared interlayered clays (Fe-Ti-PILCs) and copper-titanium-pillared interlayered clays (Cu-Ti-PILCs). For this purpose, a dye named disperse blue 56 (DB56) was selected for treatment experiment. Zeolite was used as a catalyst support material to prepare Fe-Ti-PILCs and Cu-Ti-PILCs. The experiments were carried out in batch method and UV-Vis spectroscopy was used for analysis. Several parameters such as contact time, H<sub>2</sub>O<sub>2</sub> and amount of PILCs were examined to find optimized conditions. The obtained degradation rates using Cu-Ti-PILCs were better than Fe-Ti-PILCs. The obtained highest removal rates were ~97% and ~94% for Cu-Ti-PILCs and Fe-Ti-PILCs, respectively in 120 min reaction time with using 100 mg/L of dye, 1 g of Fe-Ti-PILC and Cu-Ti-PILCs and 1 mL of H<sub>2</sub>O<sub>2</sub>.

*Key words:* anthraquinone dye, degradation, disperse blue 56, UV radiation, zeolite

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\* Author to whom all correspondence should be addressed: e-mail: ckeskin@sakarya.edu.tr; Phone: +90 2642956036