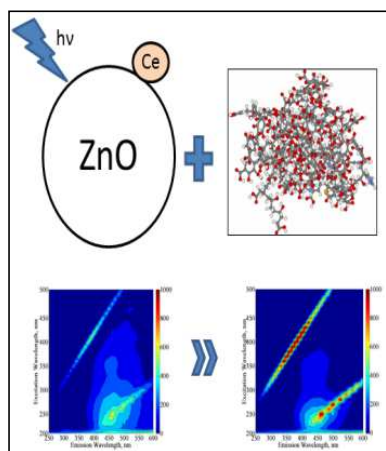


Photocatalytic Degradation of Humic Acid Using a Novel Photocatalyst: Ce Doped ZnO

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This study aimed to investigate photocatalytic degradation of humic acid (HA) as a representative of natural organic matter (NOM) by using Ce doped ZnO as a novel material. Following photocatalysis, HA degradation was characterized by specified UV-vis and fluorescence spectroscopic parameters. Advanced techniques as Excitation-Emission Matrix (EEM) fluorescence features were evaluated. Photocatalytic mineralization extend was followed by dissolved organic carbon (DOC) content. Kinetic modeling of the humic degradation in terms of UV-vis parameters as well as DOC was also employed. Photocatalytic removal rates expressed promising results indicating that Ce doped ZnO could serve as an efficient catalyst for the degradation of NOM.

Textile Photocatalytic Reactors for Large Area Water Purification and Remediation Systems

P-239

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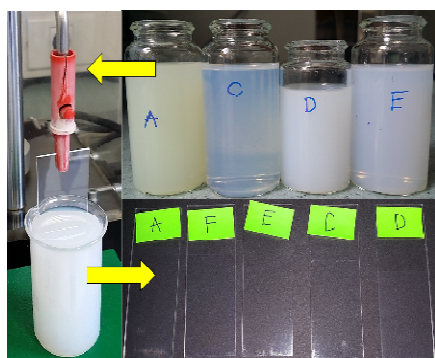


As any surface utilisation phenomena photocatalysis benefits from large areas, giving many reaction sites. Textiles are means for getting cheap, area covering, structured surfaces. We introduce the textile soft reactor as an in-between type of photocatalytic reactors merging flatbed and free floating slurry solutions, enabling immobilization of photocatalytic titanium dioxide nanoparticles and avoiding any post-filtering step. Coating is a well-known processing type within the textile community and we show that industrial processing can be used. Two weave types, plain and waffle, are compared with decolorization of methylene blue by tracking the chroma value and bacterial growth testing (standard SS-EN ISO 6222-1). Within 40 min of light irradiation (AM 1.5) contaminated water is beneath health hazardous limits.

Transparent titania-zirconia-silica thin films for self-cleaning and photocatalytic applications

P-240

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A – TiO₂, C – Ti₁₀Zr, D – Ti₂₀Zr, E – Ti₅Zr, F – Ti₂Zr

Thin films with different amounts of zirconium alkoxide added to titania precursor solution and silica binder were prepared by sol-gel techniques.

Photocatalytic activity of these films was measured by two methods: i) determination of the degradation of methyl stearate layer by measuring the contact angle, and ii) formation of hydroxyterephthalic acid from terephthalic acid layer over a catalyst thin film was assessed by spectrofluorometer.

Prepared samples were characterized by UV-Vis, SEM, XRD, ATR-FTIR and BET analyses. The results of photocatalytic activity measurements show that the samples without zirconia showed highest activity, although the mechanical stability of the samples with zirconia are improved.