Photocatalytic Degradation of organic dyes over alkali doped TiO_2-ZrO_2 with tunable band gap energy

Abhishek Burri, 옥대용, 정은영, 박상언*
인하대학교
(separk@inha.ac.kr*)

The ultraviolet and visible light irradiation photocatalysis is one of the emerging and promising techniques for the degradation of organic dyes. The degradation of organic dyes like Methylene Blue (MB) was interesting to investigate the adsorbed states and adsorption phenomena of MB because such properties could be affected by the structural and environmental change due to adsorption. Doped TiO2 has been of great interest because of the variance in the bandgap according to the dopant. The Dopants include alkali metal, alkaline earth metals and other semiconductors. Herein, we report the alkali metal doped TiO_2-ZrO_2 (1:1) mixed oxide with High surface area and tunable bandgap energy based on the dopant, specifically K and Na are reported. The surface area observed for K doped TiO2-ZrO2 is 256m2/g and Na doped sample showed 196m2/g. We studied the photocatalytic degradation of Methylene Blue (MB) over K/Na doped TiO2-ZrO2 in comparison with TiO2-ZrO2 (TZ) and commercial TiO2 (Degussa P25) and the kinetics of the degradation were studied based on the degradation over KTZ.