

## OB12 Synthesis and characterization of Zr-doped Titania based photocatalyst for photodegradation of paraquat dichloride

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Titania (TiO<sub>2</sub>) has been widely used as photocatalyst due to good properties which are non-toxic, reusable, and photostable. The band gap energy of TiO<sub>2</sub> plays an important role as it is near the visible light region which makes it suitable to be applied in industries<sup>1,2</sup>. Previous studies had been reported that modification of titania with other metal oxide showed better photocatalytic performance and inhibited the electron-hole recombination rate by narrowing the band gap energy<sup>3,4</sup>. In this work, the synthesis, characterization and photodegradation of paraquat dichloride were investigated. 20%Zr-doped TiO<sub>2</sub> was successfully synthesized using modified sol gel method and calcined at various temperature range from 700-800°C for 5 hours<sup>5</sup>. The characterization studies were conducted using X-Ray diffraction (XRD) analysis and diffuse reflectance UV- visible (DR-UV-vis) spectroscopy. The experimental results indicate that, the highest photocatalytic activity was obtained using 20%Zr-doped TiO<sub>2</sub> calcinated at 750°C with larger surface area which could be ascribed to the enhancement of the crystallite size. DR UV spectra show red shift in band gap absorption which indicate that Zr ion has been incorporated into the lattice of TiO<sub>2</sub>.

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