

# Visible light assisted antimicrobial activity of Cu doped titania photocatalysts

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## Abstract

Metal-doped titania (TiO<sub>2</sub>) anatase photocatalyst is a promising candidate for energy and environmental applications under solar light. In this present work, the antimicrobial activity of copper (Cu) doped TiO<sub>2</sub> was evaluated against *Escherichia coli* (Gram-negative) and *Staphylococcus aureus* (Gram-positive) under visible light irradiation. 0.5 % of Cu-TiO<sub>2</sub> was synthesized *via* sol-gel technique and the sample was calcined at various temperatures (in the range of 500 °C – 800 °C) to evaluate the thermal stability of TiO<sub>2</sub> anatase phase. The physico-chemical properties of the sample were characterised through X-ray diffraction (XRD), Raman spectroscopy, X-ray photo-electron spectroscopy (XPS) and UV-visible spectroscopy techniques. XRD results revealed that the anatase phase of TiO<sub>2</sub> was maintained well up to 650 °C by the Cu dopant. On the other hand the control sample was fully converted to Rutile at 600 C.

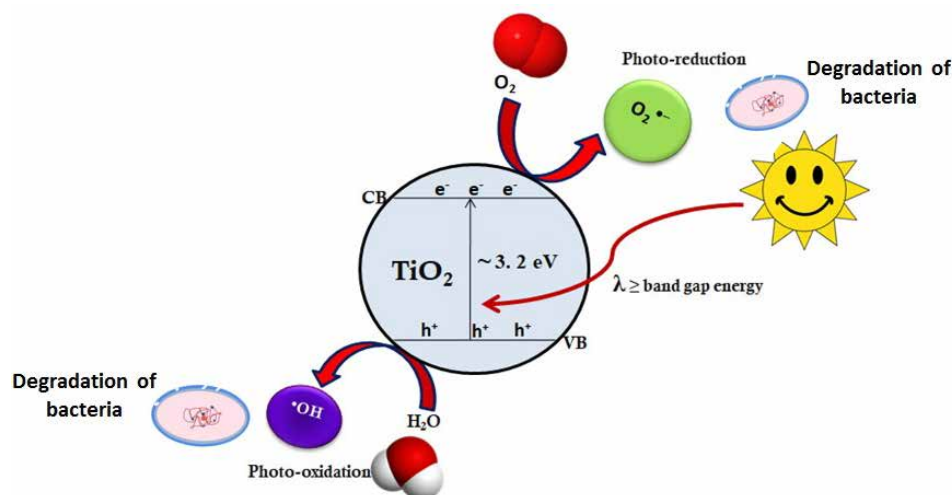


Figure. Schematic representation for the photocatalytic degradation of microbes under light irradiation

## Reference:

P. Ganguly, C. Byrne, A. Breen, and S. C. Pillai, "Antimicrobial activity of photocatalysts: Fundamentals, mechanisms, kinetics and recent advances," *Applied Catalysis B: Environmental*, 225, 2018, 51-75.