



# DIGEST

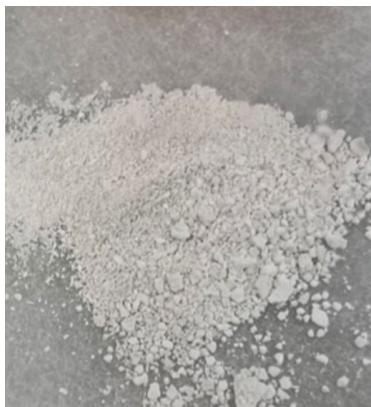
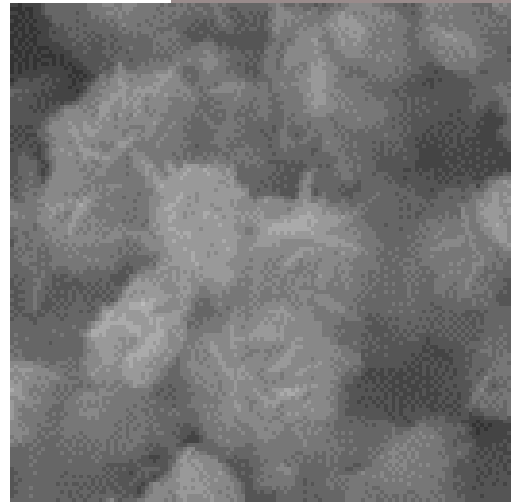
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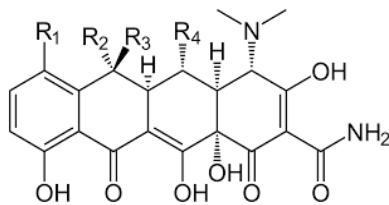
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# Hydrothermal Synthesis of Zinc Oxide (ZnO) for Tetracycline Removal

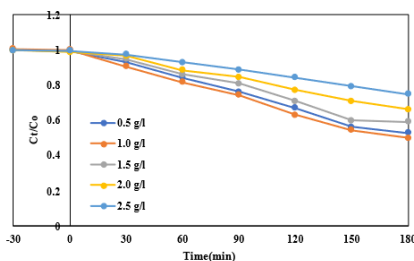


ZnO



Tetracycline

The prevalent presence of Tetracycline (TC) in wastewater, attributed to its extensive utilisation in treating infections in humans and animals, presents potential environmental hazards. Addressing this concern, advanced oxidation processes (AOPs) employing photocatalysis have emerged as efficacious means for TC elimination. This research focuses on synthesising a ZnO photocatalyst through hydrothermal, utilising zinc acetate as a precursor. Various characterisation techniques, including FTIR, XRD, FESEM, SEM-EDX, and UV-VIS analyses, were employed to assess the synthesised ZnO. The study evaluated TC photocatalytic degradation efficiency in batch mode, manipulating parameters such as ZnO dosage (0.5 – 2.5 g/L), TC concentration (5 – 25 ppm), and light sources (solar, visible, and UV). Optimal conditions for TC removal were observed at 70.17% with 1 g/L of ZnO under UV light irradiation at a TC concentration of 5 ppm. This investigation provides valuable insights into the optimal operational conditions for ZnO as a photocatalyst for degrading antibiotics. This research on ZnO photocatalysis for TC degradation not only promotes environmental protection by improving water quality and sustainability but also indirectly contributes to public health efforts by addressing antibiotic resistance and fostering progress in the field of photocatalysis for environmental pollutant removal.



Effect of dosage on photodegradation of tetracycline by ZnO



UV light



Solar light



Visible light

Photocatalytic degradation of tetracycline



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