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DEPARTMENT OF HUMANITIES & SCIENCES (PHYSICS)

In Association with

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Indian SpectroPhysics Association (ISPA)

INTERNATIONAL CONFERENCE ON
**MODERN FUNCTIONAL
MATERIALS**

(ICMFM-2025 - HYBRID MODE)

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Functional Materials Research Laboratory (FMRL)



PROCEEDINGS



Sri SAI RAM ENGINEERING COLLEGE

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Photocatalytic and Antimicrobial Activities of SnO₂ nanoparticles via Microwave-assisted precipitation process

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Abstract

Semiconductor tin oxide (SnO₂) nanoparticles were prepared by microwave-assisted precipitation process. The structural, morphological and optical properties of the prepared SnO₂ samples are subjected to various characterization studies such as powder XRD, FTIR, SEM, TEM, UV and PL analysis. The powder XRD patterns showed the tetragonal rutile phase of tin oxide sample. The nanostructured SnO₂ spheres-like morphology is observed from the SEM and TEM analysis with average crystallite size range of 10-15 nm. The photocatalytic activities of the tin oxide samples were examined using an Orange G dye, it showed the effective metal oxide photocatalyst. Further, the antimicrobial activities of the SnO₂ nanoparticles were examined by well-diffusion method using the selected human pathogens.

Keywords: Semiconductor; Metal oxide; Nanomaterials; Microwave-assisted precipitation process; Photocatalytic activities; Antimicrobial activities