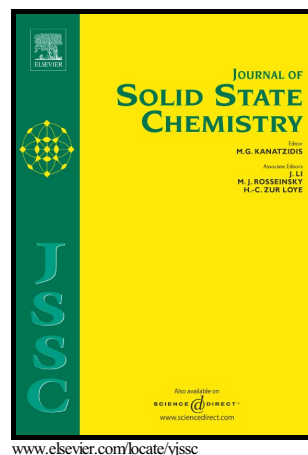


Antibacterial studies of novel Cu_2WS_4 ternary chalcogenide synthesized by hydrothermal Process

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PII: S0022-4596(17)30449-8
DOI: <https://doi.org/10.1016/j.jssc.2017.11.005>
Reference: YJSSC20005

To appear in: *Journal of Solid State Chemistry*

Received date: 8 March 2017

Revised date: 14 July 2017

Accepted date: 2 November 2017

Cite this article as: Selvaraj Kannan, Perumal Vinitha, Kannusamy Mohanraj and Ganesan Sivakumar, Antibacterial studies of novel Cu_2WS_4 ternary chalcogenide synthesized by hydrothermal Process, *Journal of Solid State Chemistry*, <https://doi.org/10.1016/j.jssc.2017.11.005>

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**Antibacterial studies of novel Cu₂WS₄ ternary chalcogenide synthesized by
hydrothermal Process**

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Abstract

This is the first report for the synthesis of L-cysteine mediated Cu₂WS₄ nanoparticles for different temperatures by an inexpensive and less pollutive hydrothermal method. The as-synthesized particles were characterized by XRD, FTIR, FESEM, UV-Vis diffuse reflectance and PL spectra technique respectively. The phase purity and structural confirmation were studied by X-ray powder diffraction technique. It is observed that the synthesis temperature affecting the crystalline size. The optical analysis of the Cu₂WS₄ nanoparticles showed direct band gap in the range of 2.1 to 2.3 eV. The intensity of the PL emission spectra decreases with increase of reaction temperature. The antibacterial performance of Cu₂WS₄ nanoparticles were investigated by agar well diffusion method and the results confirm that the antibacterial activity of Cu₂WS₄ against Gram-positive (*B. subtilis*, *M. luteus*) and Gram-negative (*E. coli*, *P. aeruginosa* and *K. pneumoniae*) bacteria.

Table of contents

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