



Removal of ethylene bisdithiocarbamate fungicides in wastewater and agricultural runoff by zinc oxide nanoparticles before analysis by HPLC and UV-Vis spectroscopy

Mahadi Danjuma Sani ^{a, c, *}, V.D.N. Kumar Abbaraju ^a, N.V.S. Venugopal ^b, and Nura Umar Kura ^c

^a Department of Environmental Science, GITAM School of Science, GITAM (Deemed to be University), Visakhapatnam, A.P. India

^b Department of Chemistry, GITAM School of Science, GITAM (Deemed to be University), Visakhapatnam, A.P. India

^c Department of Environmental Science, Federal University Dutse, Jigawa State, Nigeria

Supplementary References(RS)

- [RS1] A. Layek, A generalized three-stage mechanism of ZnO nanoparticle formation in homogeneous liquid medium, 2012. <https://doi.org/10.1021/jp211613b>.
- [RS2] V. B. Raghavendra, S. Shankar, M. Govindappa, A. Pugazhendhi, M. Sharma, S. C. Nayaka, Green synthesis of zinc oxide nanoparticles (ZnO NPs) for effective degradation of dye, polyethylene and antibacterial performance in waste water treatment, J. Inorg. Organomet. Polym. Mater., 32 (2022) 614–630. <https://doi.org/10.1007/S10904-021-02142-7/FIGURES/13>.
- [RS3] H. Adabavazeh, A. Saljooqi, T. Shamspur, A. Mostafavi, Synthesis of polyaniline decorated with ZnO and CoMoO₄ nanoparticles for enhanced photocatalytic degradation of imidacloprid pesticide under visible light, Polyhedron, 198 (2021) 115058. doi: <https://doi.org/10.1016/J.POLY.2021.115058>.
- [RS4] N. Premalatha, L. Rose Miranda, Surfactant modified ZnO–Bi₂O₃ nanocomposite for degradation of lambda-cyhalothrin pesticide in visible light: A study of reaction kinetics and intermediates, J. Environ. Manage., 246 (2019) 259–266. <https://doi.org/10.1016/J.JENVMAN.2019.05.155>.
- [RS5] S. Farahbakhsh, R. Parvari, A. Zare, H. Mahdizadeh, V. Faizi, A. Saljooqi, Preparation of biochar based on grapefruit peel and magnetite decorated with cadmium sulfide nanoparticles for photocatalytic degradation of chlorpyrifos, Diam. Relat. Mater., 126 (2022) 109130. <https://doi.org/10.1016/J.DIAMOND.2022.109130>.
- [RS6] F. Alvarado-Hidalgo, R. Starbird-Perez, Electrochemical characterization of mancozeb degradation for wastewater treatment using a sensor based on poly, Polym. Artic., 11(2019) 1449. <https://doi.org/10.3390/polym11091449>

*Corresponding Author: Mahadi Danjuma Sani

Email: msani@gitam.in

<https://doi.org/10.24200/amecj.v6.i04.251>