



The Biological Activities of NiS Nanoparticles and NiS/PEG Nanocomposites from Primary Amines

Felicia F. Bobinihi*

North-West University, South Africa



Abstract

The increase in the outbreak of new infectious diseases coupled with the increase in drug resistance pathogens have aroused the interest of chemists in the quest for new and effective compounds with improved pharmacological potentials. The recent pandemic ravaging the whole World called corona virus disease (COVID-19) is a typical example. It is proposed that antibiotics, anti-inflammatories and anticoagulants are the way forward to fight this dreadful virus because it is suspected from autopsies to be disseminated intravascular coagulation (Thrombosis) Nickel as an essential element for biological systems is very relevant in the search for novel compounds against infectious and drug resistance diseases and development of metal based pharmaceuticals and so, is very useful in the preparation of antibiotics. This work explores the versatility of dithiocarbamate complexes of Ni metal from different primary amines. The biological activities of the prepared nanoparticles were studied, and incorporated as nanosize particles in the matrices of Poly Ethylene Glycol (PEG) materials as nanocomposites to determine the improved activities over the bulk complexes based on the small size dimensions and nanoparticle drug delivery system. The slight alteration in their structures lead to great quantitative and qualitative changes in their activities which was observed in the metal sulphides obtained as they yielded anisotropic nanoparticles. These changes could be ascribed to differences in the decomposition profile in the solvothermal process used for the nanoparticles synthesis. The different nanoparticles displayed interesting optical and structural properties, which are dependent on their morphology with a decrease in the average size as the chain length of the substituent increased. An increased in antibacterial and antifungal activities was also observed.

Biography:

Felicia Bobinihi has completed her PhD degree from the North West University, South Africa. She is currently a senior lecturer at the Federal college of Education, Okene, Nigeria. She is working on inorganic and material synthesis, their processing and applications in various fields from where she has published some papers in international peer review journals.

Speaker Publications:

1. "Synthesis, characterization, and cyclic voltammetry of nickel sulphide and nickel oxide nanoparticles obtained from Ni(II) dithiocarbamate"; Materials Science in Semiconductor Processing/ 2021.
2. "Group 10 metal complexes of dithiocarbamates derived from primary anilines: Synthesis, characterization, computational and antimicrobial studies"; Polyhedron/ 2018.
3. "Syntheses and characterization of nickel(II) dithiocarbamate complexes containing NiS 4 and NiS 2 PN moieties: Nickel sulphide nanoparticles from a single source precursor"; Journal of Saudi Chemical Society/ 2017.

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