

Abstract

Co-precipitation method was adapted to synthesis Ag-Cu BNPs and obtained samples were annealed using a Muffle furnace at different temperatures. Hydrothermal technique was employed for doping of Ag-Cu (5 & 10%) into exfoliated MoS₂ nanosheets. The prepared bimetallic and bimetallic doped MoS₂ NPS were characterized by channels of powder X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR), field emission scanning electron microscopy (FESEM) and UV-Vis spectroscopy. XRD peak-patterns expose increase in the crystallite size in case of Ag-Cu annealed samples and reduction in average particle size with increasing BNPs content in MoS₂. UV-vis. analysis depicts absorption increased gradually upon heat treatment and measured band gap ranging from 3-3.5 eV for samples. BNPs have spherical shape and particle size decreased with annealing and Ag-Cu co-doped MoS₂ are in the form of nanosheets, and these results were analyzed by SEM-images. The biomedical application of obtained nanoparticles was analyzed on MRSA-superbug causing skin and soft tissue infections. The antimicrobial results are well compared with ciprofloxacin antibiotic from where we can say that the synthesized NPs can be used as "Alternatives to antibiotics".