**ABSTRACT**

Two new bimetallic complexes NiZnC22H14N4S2O2PPh3 and NiZnC26H16N4S2O2PPh3 has been synthesized and characterized using various spectral techniques like FT-IR, electronic, EDAX and SEM images. The synthesized complexes has been screened for the *in-vitro* antimicrobial activity against various test organisms. The complexes showed moderate to good potency against bacterial strains developing a productive environment for the development of a new class of antimicrobial agents. The bimetallic complexes were undergone thermal decomposition to get bimetallic oxide. The SEM images of the complexes and the oxide formed were compared.