

COMPLEX OF Co(II) WITH LIGAND 2,2'-BIPIRIDINE AND ANIONIC TRIFLUOROACETATE: SYNTHESIS, PHYSICAL PROPERTY, STRUCTURAL ANALYSIS AND ITS ANTIBACTERIAL ACTIVITY

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ABSTRACT

ABSTRACT The complex containing cobalt(II), bipyridine (*bipy*) as ligand, and trifluoroacetate (TFA) as counter anion has been prepared and characterized. The electrical equivalent conductance, metal content, and TGA-DTA analysis suggest the complex to be $[\text{Co}(\textit{bipy})_3](\text{CF}_3\text{COO})_2 \cdot 5\text{H}_2\text{O}$. The magnetic moment was found to be a normal high-spin paramagnet for three unpaired electrons in the electronic configuration of cobalt(II). The electronic spectral bands indicate the three possible spin-allowed transitions of quartet ground state to quartet excited states. The IR spectral data signify the mode of vibrations typical for *bipy* as well as TFA. While the images of SEM photographs confirm the crystalline particle size, the EDX signifies the existence of all elemental content. The analysis of powder XRD refined by the Le Bail method of the rietica program suggests being a structurally monoclinic system of *space group* C2/c. This complex shows a weak inhibition of bacterial activity against *S. aureus* and *E. coli*.

Keywords: synthesis, characterization, $[\text{Co}(\textit{bipy})_3](\text{CF}_3\text{COO})_2 \cdot 5\text{H}_2\text{O}$, 2,2'-bipyridine, trifluoroacetate, antibacteria

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