Preparation, Crystal Structure and Spectroscopic Characterization of $[Ga(OH)(SO_4)(terpy)(H_2O)] \cdot H_2O$ (terpy=2,2':6',2-Terpyridine): The First Characterized Gallium(III) Sulfato Complex

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The reaction of $Ga_2(SO_4)_3 \cdot 18H_2O$ and excess 2,2′:6′,2″-terpyridine (terpy) in MeOH / H_2O leads to $[Ga(OH)(SO_4)(terpy)(H_2O)] \cdot H_2O$ (**1**$\cdot H_2O$] in good yield. The structure of the complex has been determined by single-crystal X-ray crystallography. The Ga^{III} atom in **1**$\cdot H_2O$ is 6-coordinate and ligation is provided by one terdentate terpy molecule, one monodentate sulfate, one terminal hydroxide and one terminal H_2O molecule; the coodination polyhedron about the metal is described as a distorted octahedron. There is an extensive hydrogen-bonding network in the crystal structure which generates corrugated layers parallel to *bc*. The new complex was characterized by IR and ^1H NMR spectroscopy. The spectroscopic data are discussed in terms of the nature of bonding.

Key words: Crystal Structure, Gallium(III) Sulfate Complex, Terminal Hydroxo Ligands, 2,2':6',2"-Terpyridine Complexes