Crystal Structure and Fluorescence Properties of a New Ternary Binuclear Complex: $Sm_2(C_3H_3O_2)_6(phen)_2$

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A new ternary mixed ligand dinuclear samarium(III) complex, $Sm_2(C_3H_3O_2)_6(phen)_2$ (**1**) ($C_3H_3O_2$ = acrylate; phen = 1,10-phenathroline), has been synthesized and characterized by microanalysis, IR and UV/vis spectra and single crystal X-ray diffraction. Compound **1** crystallizes in the triclinic space group $P\bar{1}$ with cell parameters: a = 9.6687(19), b = 10.690(2), c = 10.799(2) Å, α = 105.50(3), β = 106.67(3), γ = 91.59(3)°, V = 1023.8(3) Å^3. The Sm(III) cations are bridged by four acrylate anions into a dinuclear molecular unit. The nine-coordinate Sm(III) atoms adopt a significantly distorted monocapped anti-square-prismatic geometry. Within the crystal structure, the complex molecules are associated *via* π-π stacking interactions into one-dimensional supramolecular chains along the [011] direction. Compound **1** exhibits intense fluorescence in the solid state at room temperature.

Key words: Crystal Structure, Binuclear Samarium(III) Complex, Ternary Complex, Fluorescence Properties