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Synthesis, growth and crystal structure of sodium tris(oxalato)chromate(III) pentahydrate

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Abstract: The synthesis, growth and structure of sodium tris(oxalato)chromate(III) pentahydrate crystals have been investigated. The crystals were grown by slow evaporation of solution growth technique. The crystal structure and the unit cell parameters were analyzed from the X-ray diffraction studies. Single crystal X-ray diffraction analyses reveal that the grown crystal belongs to monoclinic system with the space group $C2/c$. The structure of the compound consists of $[\text{Cr}(\text{C}_2\text{O}_4)_3]^{3-}$ anionic units with distorted octahedral geometry of chromium surrounded by six oxygen atoms of three oxalate groups. The anionic units are inter linked through three sodium ions of different octahedral and distorted octahedral environments yielding a three-dimensional motif.

Keywords: Cr(III) complex; synthesis; crystal growth; crystal structure.