

A Series of 1D terbium coordination polymers with benzoate derivatives

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To explore the influence of different monosubstituted benzoate derivative on the self-assembly and luminescent properties of lanthanide coordination polymers, six terbium(III) coordination compounds viz. [Tb₃(Bz)₉] (1), [Tb₂(p-BrBz)₆] (2), [Tb₂(m-ClBz)₆] (3), [Tb₂(p-ClBz)₆] (4), [Tb(p-NOBz)₃(H₂O)] (5), and [Tb(m-PhBz)₃] (6) [Bz = benzoate, p-BrBz = p-bromobenzoate, m-ClBz = m-cholobenzoate, p-ClBz = p-cholobenzoate, NOBz = p-nitrobenzoate, Ph-bz = p-phenylbenzoate) have been synthesized. Structural analysis reveals that all compounds 1-6 crystallize in the same monoclinic P21/n space group and features a one-dimensional terbium-carboxylate chain structure. Substitution of a hydrogen atom at meta or para positions in the benzoate ligand with a bromine, chlorine, nitro, or phenyl groups, have significant effect on the crystal packing, which are accomplished by O–H···O, C–H···O, C–H···n, halogen bonding, and n···n interactions. Moreover, their luminescent properties in the solid state have been investigated at room temperature.

Keywords: [Lanthanide](#); [coordination polymer](#); [photoluminescence](#); [terbium](#)