



Nomenclature and terminology of Coordination complex : A Review

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Abstract: Discrete coordination compounds and coordination polymers are topical research fields in inorganic chemistry, crystal engineering, solid-state chemistry, and materials science, due to their potential applications in adsorption, separation, catalysis, electrical, magnetic, and optical applications. Beginning with the basic concepts of coordination compounds and coordination polymers, this chapter briefly describes the synthetic methods and rational synthesis of coordination compounds, and the frequently used strategies for the molecular design, the important factors (such temperature, pH, template, additive, solvent, and counter-ion) that have influences on the self-assembly and crystallization, as well as solvothermal/hydrothermal in situ metal/ligand reactions for coordination compounds and coordination polymers, as well as postsynthetic modifications for porous coordination polymers, through selected examples in the literature.

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Introduction:

In chemistry, a coordination complex consists of a central atom or ion, which is usually metallic and is called the coordination centre, and a surrounding array of bound molecules or ions, that are in turn known as ligands or complexing agents. Many metal-containing compounds, especially those of transition metals, are coordination complexes. A coordination complex whose centre is a metal atom is called a metal complex.

Nomenclature and terminology

Coordination complexes are so pervasive that their structures and reactions are described in many ways, sometimes confusingly. The atom within a ligand that is bonded to the central metal atom or ion is called the donor atom. In a typical complex, a metal ion is bonded to several donor atoms, which can be the same or different. A polydentate (multiple bonded) ligand is a molecule or ion that bonds to the central atom through several of the ligand's atoms; ligands with 2, 3, 4 or even 6 bonds to the central atom are common. These complexes are called chelate complexes; the formation of such complexes is called chelation, complexation, and coordination.