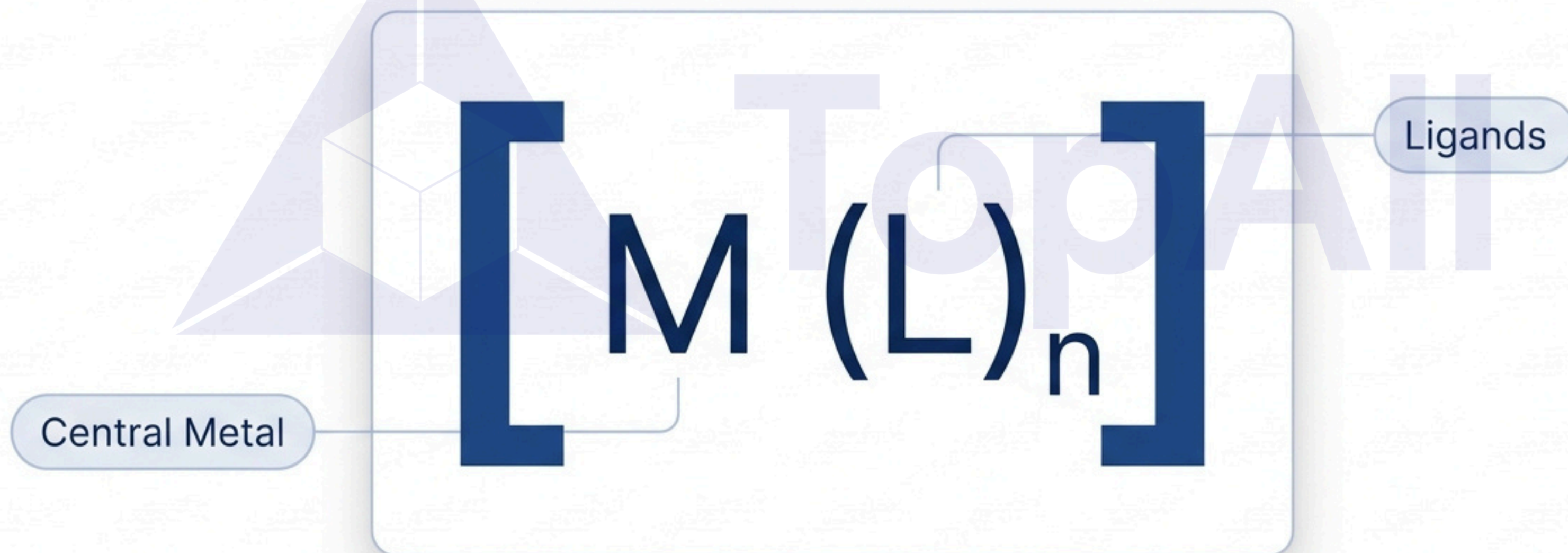


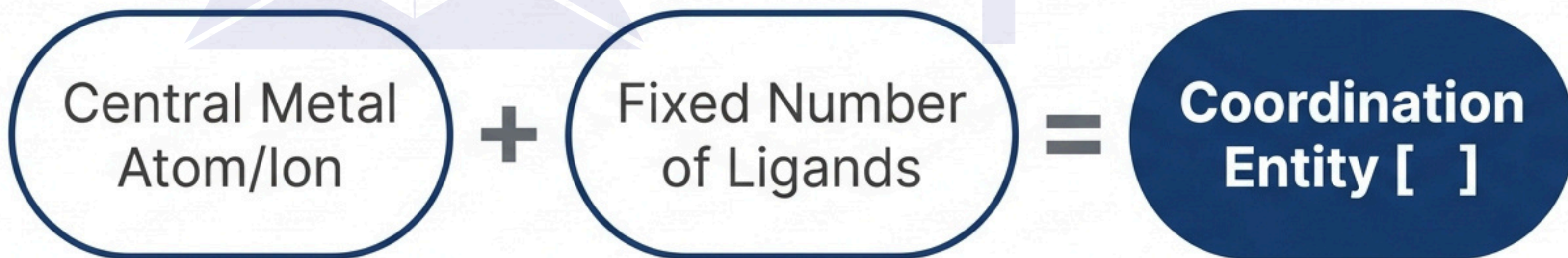
The Coordination Entity

Anatomy of Complex Compounds

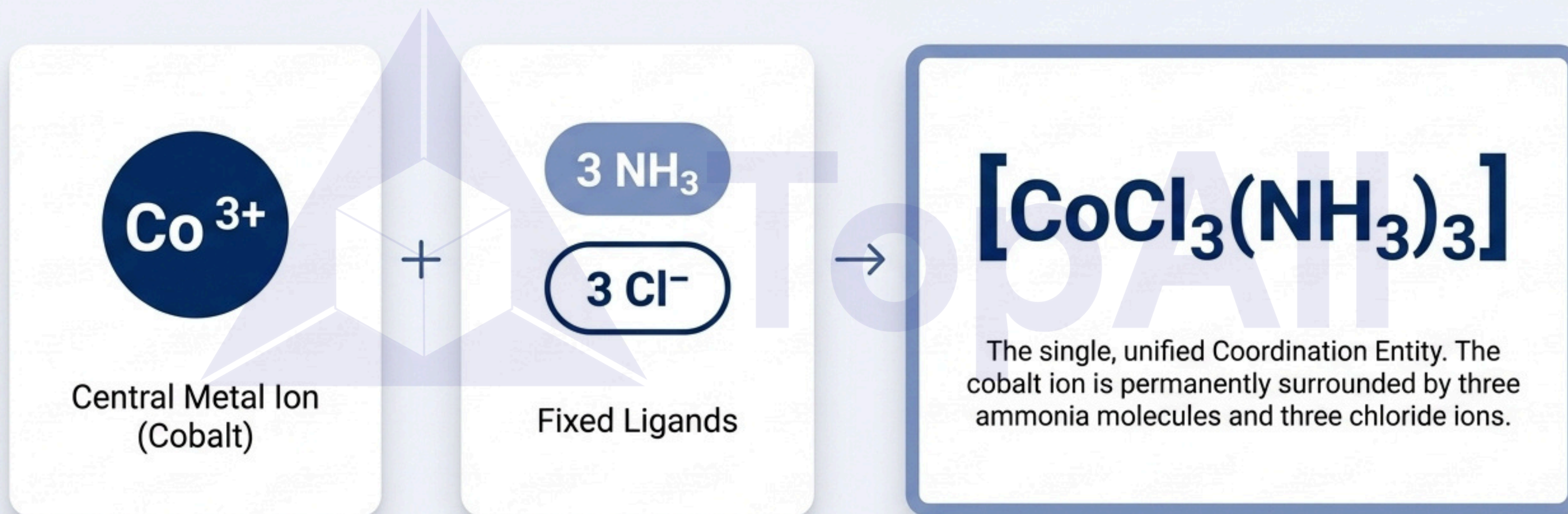


Defining the Coordination Entity

A coordination entity constitutes a central metal atom or ion bonded to a fixed number of ions or molecules.



Deconstructing a Coordination Entity





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Variations of the Coordination Entity



Metal

Ni

Ligands

4 CO

Net Charge: Neutral (0)



Metal

Pt 2+

Ligands

2 Cl⁻

2 NH₃

Net Charge: Neutral (0)



Metal

Fe 2+

Ligands

6 CN⁻

Net Charge: 4⁻ (Anionic)



Metal

Co 3+

Ligands

6 NH₃

Net Charge: 3⁺ (Cationic)

Common Misconception

The Square Bracket Rule



Counter Ions

(Ionisable groups outside the sphere)

The Coordination Entity

(Does not dissociate)

The species within the square bracket forms a single entity. It acts as one unbroken unit in solution.

Double Salts vs. Complexes: Unlike double salts (which dissolve completely into simple ions in water), complex entities like $[\text{Fe}(\text{CN})_6]^{4-}$ do not dissociate into Fe^{2+} and CN^- ions. The bracket holds firm.

SUMMARY

Key Takeaways



Defined by the Bond: A coordination entity is strictly defined as a central metal atom or ion permanently bonded to a fixed number of surrounding ligands (ions or molecules).



The Bracket is the Boundary: In chemical formulas, the coordination entity is always entirely enclosed within square brackets []. Whatever is inside is part of the entity.



Indivisible in Solution: Unlike normal double salts, the atoms within the coordination entity do not dissociate into separate ions under reaction conditions. They move and react as a single, unified species.



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