EFFECTIVE ATOMIC NUMBER

Transition metals exhibit a high propensity to form coordination compounds due to the presence of vacant 'd' orbitals, which are capable of accepting electron pairs donated by ligands. Within these complexes, the metal ions strive to achieve a configuration akin to the nearest stable inert gas, typically resembling krypton (with Z = 36), by acquiring electrons from the ligands.

The determination of the Effective Atomic Number (EAN) of the metal within a complex is crucial. This value is calculated using the formula:

$$EAN = Z - (\text{Oxidation Number}) + 2(\text{Coordination Number})$$

or, in alternative terms, it considers the number of lone pairs donated to the central atom.

Here,

- Z represents the atomic number of the metal ion,
- O.N.O.N. stands for the oxidation number of the metal,
- C.N.C.N. denotes the coordination number of the metal center.