

## 8.6: Tanabe Sugano Diagrams

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Learning objectives for this unit are to:

- Know the information provided by a Tanabe Sugano diagram
  - Determine the ground state term symbol for an electron configuration, including total angular momentum and multiplicity
  - Know the conditions under which an electronic transition will be spin-allowed or spin-forbidden and how this affects the intensity of the observed transitions
  - Use Tanabe Sugano diagrams to assign peaks in absorption spectra to specific electronic transitions and calculate  $D_0$  and  $B$  based on absorption spectra
  - Rationalize or predict values for Racah  $B$  based on the size and charge of a metal ion
  - Explain why Racah  $B$  is smaller for complexes compared to free ions
  - Calculate the nephelauxetic factor  $b$  and relate the results to metal-ligand bond covalency
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