

## 8.4: Ligand Field Theory

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Learning objectives for this unit are to:

- Identify and classify ligands as s-donor, s-donor/p-donor, and s-donor/p-acceptor based on the type of bonding interaction they can have with a metal atom
  - Derive MO diagrams for  $ML_6$  complexes with s-donor, s-donor/p-donor, and s-donor/p-acceptor ligands
  - Explain why and how sigma-donor, s-donor, s-donor/p-donor, and s-donor/p-acceptor ligands affect the magnitude of  $D_o$
  - Rationalize the spectrochemical series based on ligand field theory
  - Describe the orbital interactions involved in p-backbonding
  - Predict or explain changes in bond length, bond strength, and CO stretching frequencies due to p-backbonding interactions
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