

Hard-Soft Acid-Base Classification (representative examples)

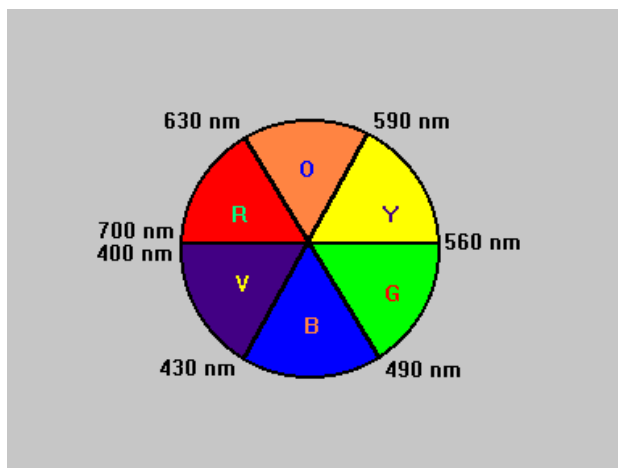
hard acids: alkali metals and earths, Al^{3+} , Sc^{3+} , Ga^{3+} , In^{3+} , Cr^{3+} , Co^{3+} , and Fe^{3+}

soft acids: Ag^+ , Au^+ , Hg^{2+} , Cd^{2+} , Pb^{2+} , and Cu^+

hard bases: F^- , OH^- , PO_4^{3-} , SO_4^{2-} , Cl^- , CO_3^{2-} , NO_3^- , and NH_3

soft bases: I^- , S^{2-} , SCN^- (binding through sulfur), CN^- , and CO

Color Wheel



Crystal-Field Splitting of *d*-Orbitals

splitting of *d*-orbitals in the presence of octahedral, tetrahedral, and square planar ligand fields

