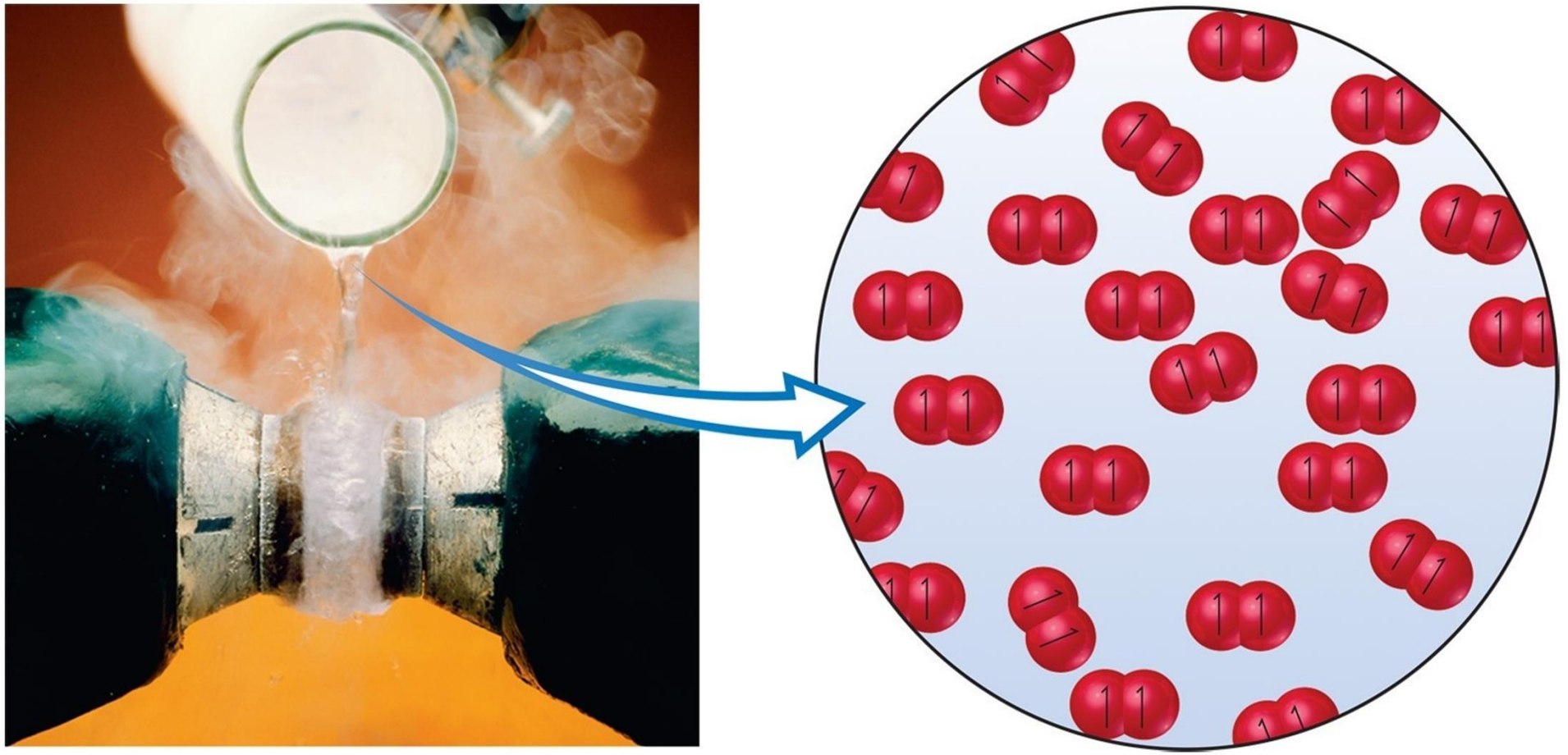
Oxygen O_2 is Paramagnetic, why?



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Show me why.

	Large 2*s*-2*p* interaction			Small 2*s*-2*p* interaction		
	B_2	C_2	N_2	O_2	F_2	Ne_2
σ^*_{2p}						↿⇂
π^*_{2p}				↑ ↑	↿⇂ ↿⇂	↿⇂ ↿⇂
σ_{2p}			↿⇂	↿⇂ ↿⇂	↿⇂ ↿⇂	↿⇂ ↿⇂
π_{2p}	↑ ↑	↿⇂ ↿⇂	↿⇂ ↿⇂	↿⇂	↿⇂	↿⇂
σ^*_{2s}	↿⇂	↿⇂	↿⇂	↿⇂	↿⇂	↿⇂
σ_{2s}	↿⇂	↿⇂	↿⇂	↿⇂	↿⇂	↿⇂
Bond order	1	2	3	2	1	0
Bond enthalpy (kJ/mol)	290	620	941	495	155	—
Bond length (Å)	1.59	1.31	1.10	1.21	1.43	—
Magnetic behavior	Paramagnetic	Diamagnetic	Diamagnetic	Paramagnetic	Diamagnetic	—

Chemistry of Coordination Compounds

For exam concentrate on these topics more

Concentrate on the homeworks and the quiz!

Terms:

1. Coordination sphere
2. Ligand
3. Coordination compound
4. Metal complex
5. Complex ion
6. Coordination
7. Coordination number Same ligands different properties?

Figuring oxidation number on metal

Polydentate ligands (what are they)?

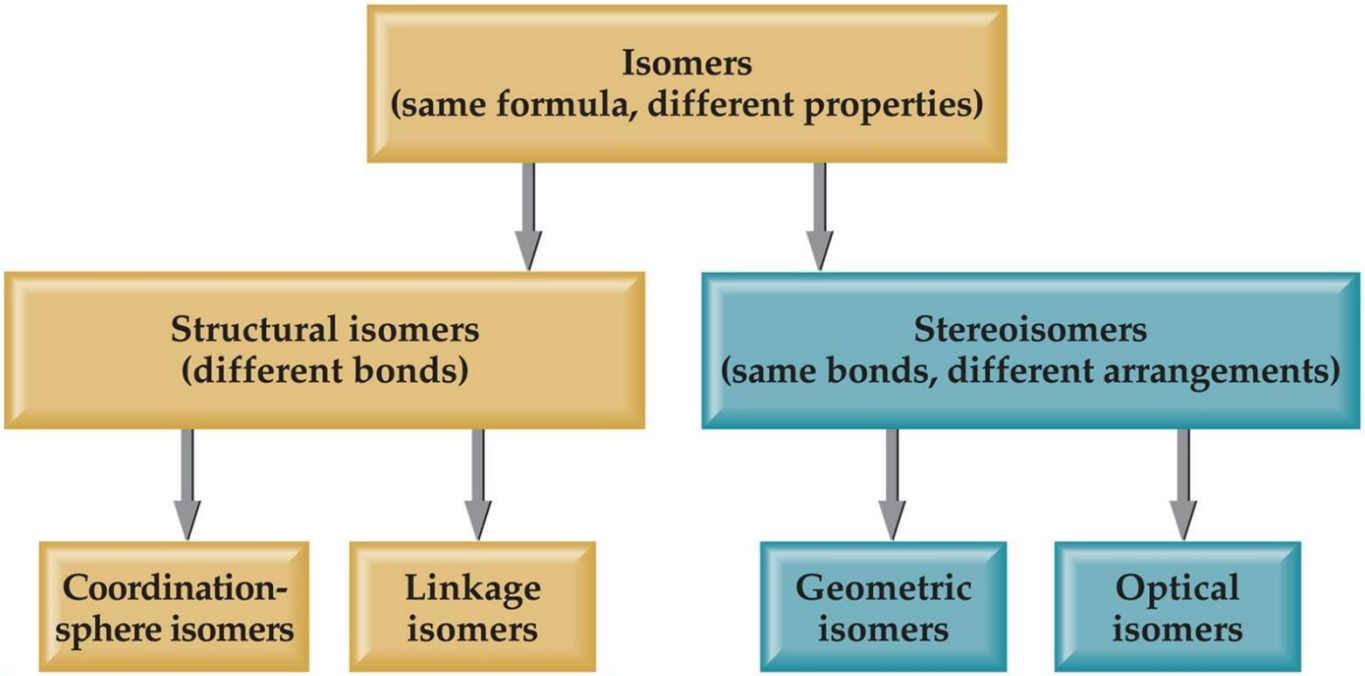
Isomers.

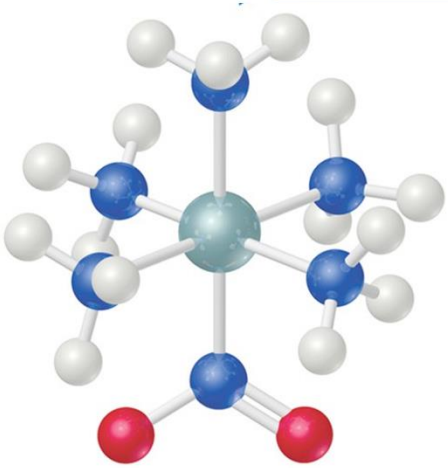
structural isomers (formula same, bonds differ)

geometric isomers (formula AND bonds same, structure differs)

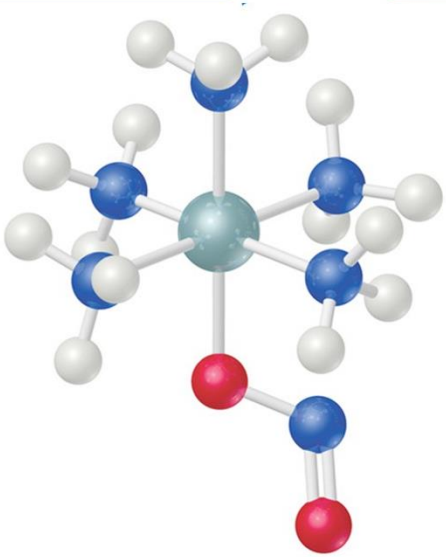
Stereoisomers:

Chirality, handedness,

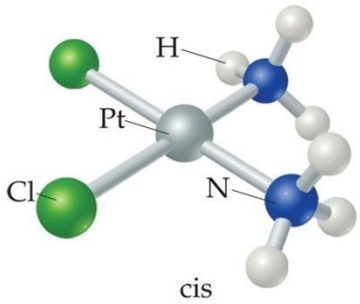




Nitro isomer



Nitrito isomer



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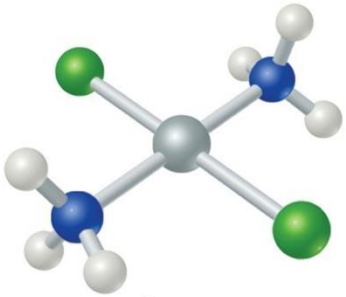

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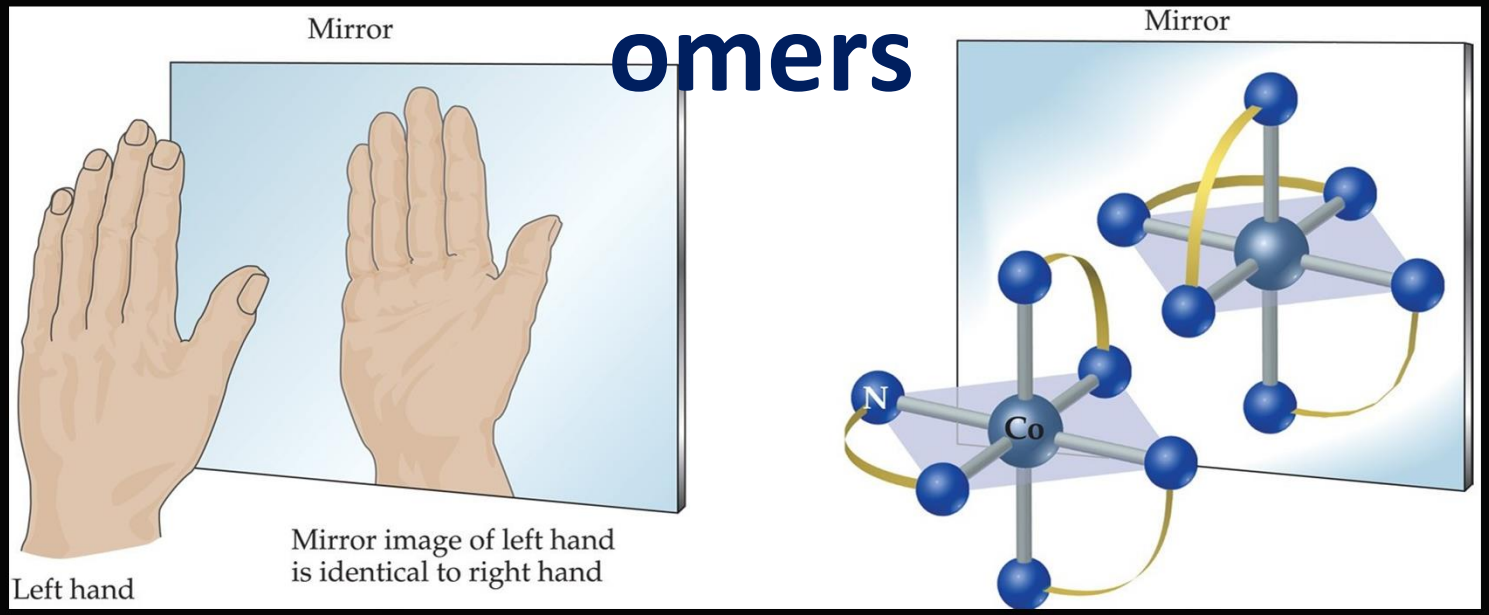
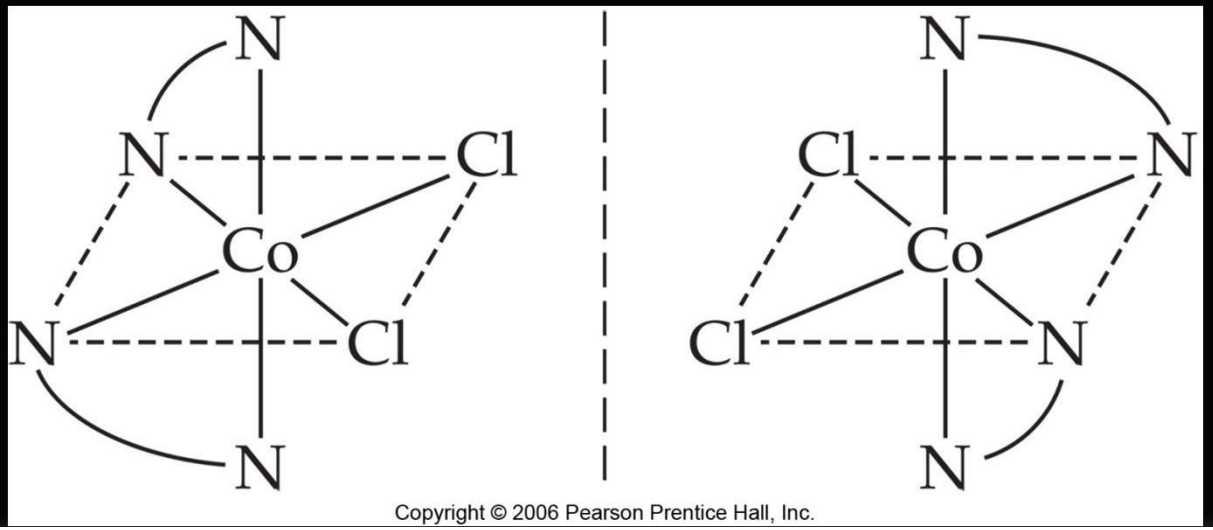
Chemistry of
Coordination
Compounds

Stereoisomers





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Explaining the properties of metal complexes

Magnetism and color

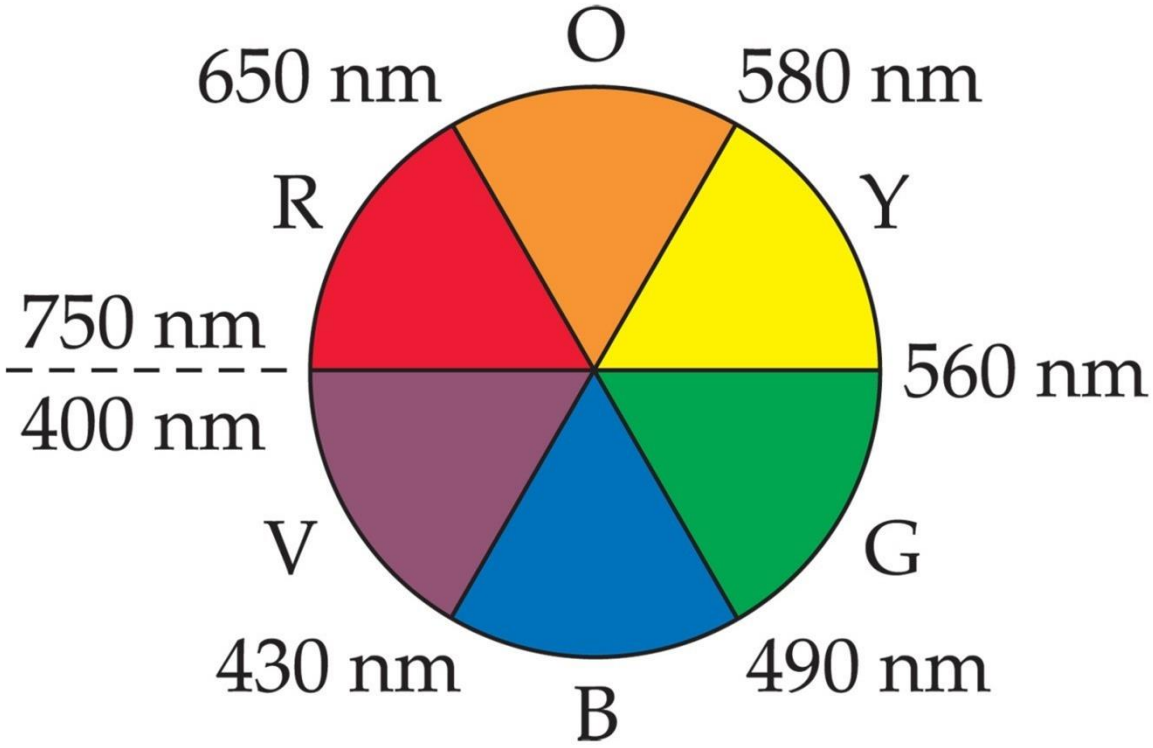
How does seeing color work?

Absorb **Orange**

See **Blue**

Absorb **Red**

See **Green**



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Different ligands on same metal give different colors

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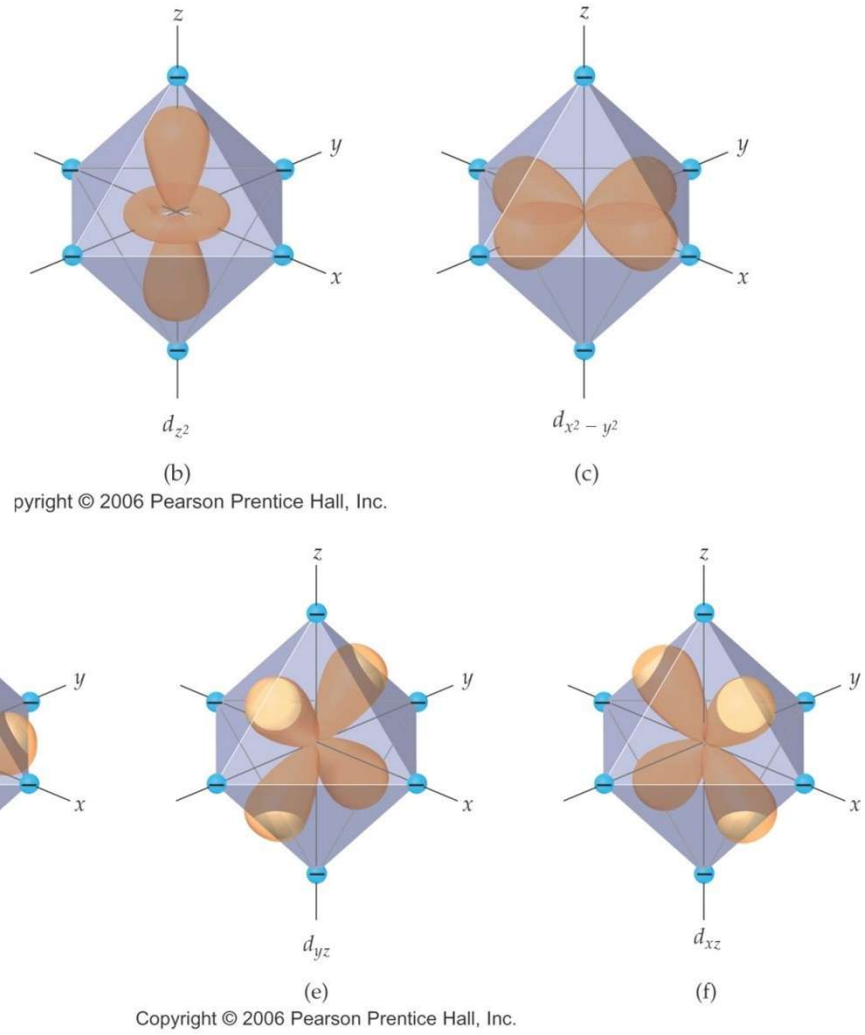
Addition of NH_3 ligand to $Cu(H_2O)_4$ changes its color

Splitting of d orbitals in an oxtahedral ligand field

d_{z^2} $d_{x^2-y^2}$

d_{xy} d_{yz} d_{xz}



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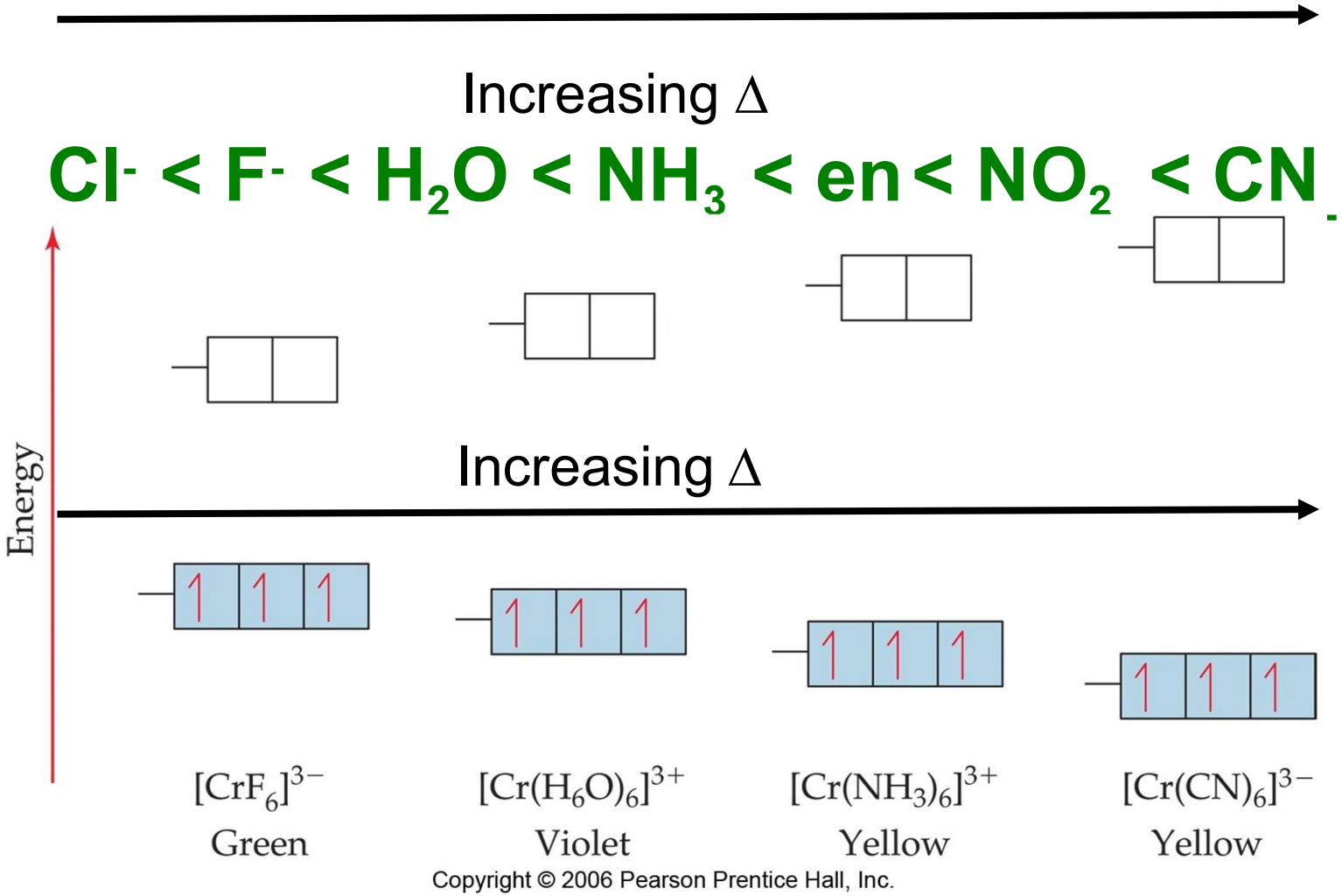

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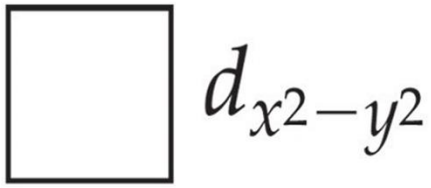
Know low spin versus high spin

There is also splitting from tetrahedral And square planar.

Know they are different, don't remember exactly what they are like.

Tetrahedral



Square planar

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