

Hyperconjugation

**An alternative explanation for
breaking the octet rule**

Two extreme points of view

- 1. The d level is exploited to make room for more bonding**
- 2. The binding of n atoms to the central atom using fewer than n electron pairs**

Hybridization of s, p, and d Orbitals

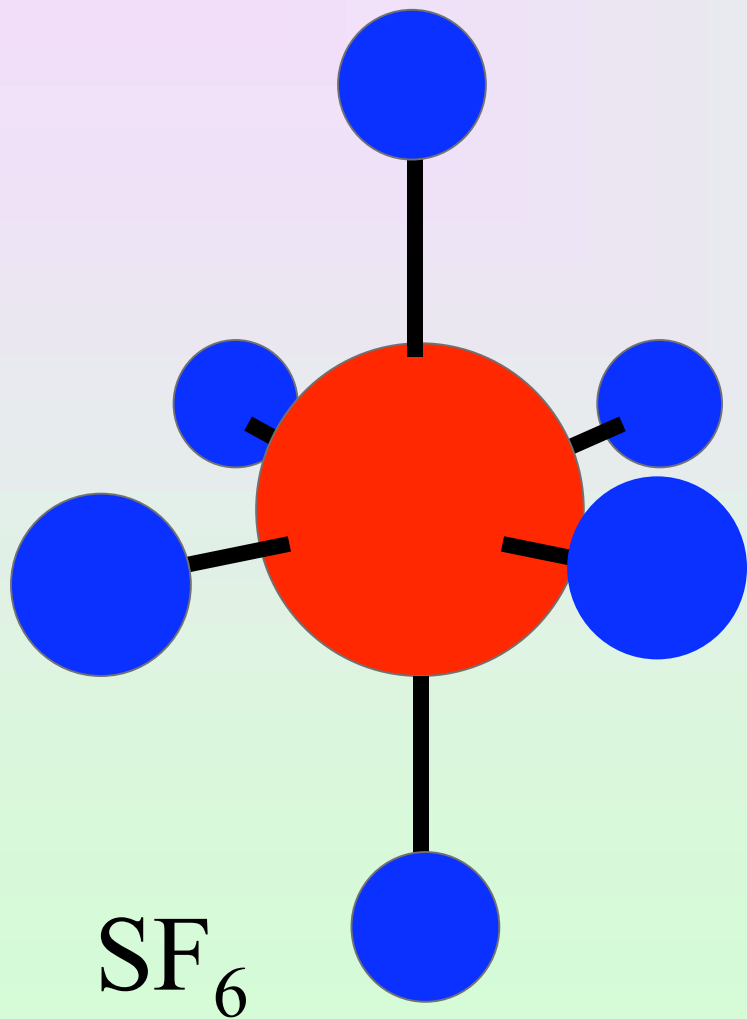
Beginning with the third period of the periodic table

1 3s orbital + **3** 3p orbital + **2** 3d orbital

gives sp^3d^2

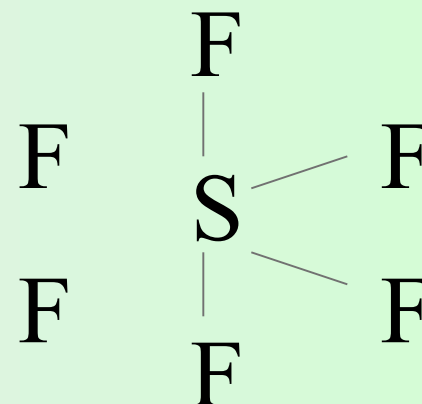
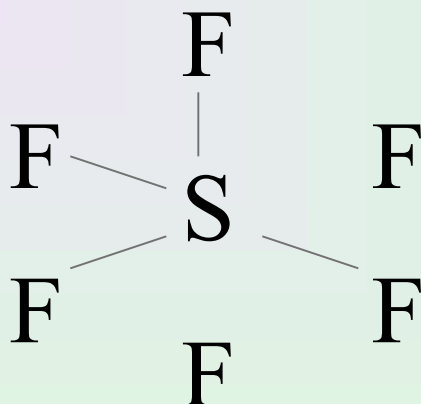
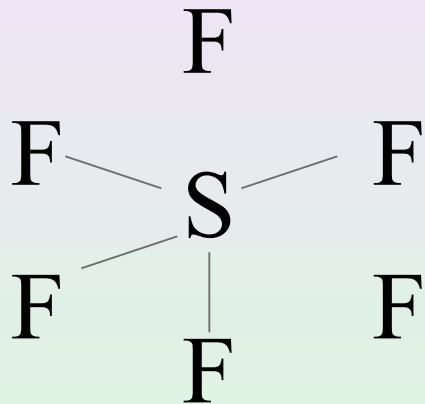
Permits six electron pairs (octahedral)

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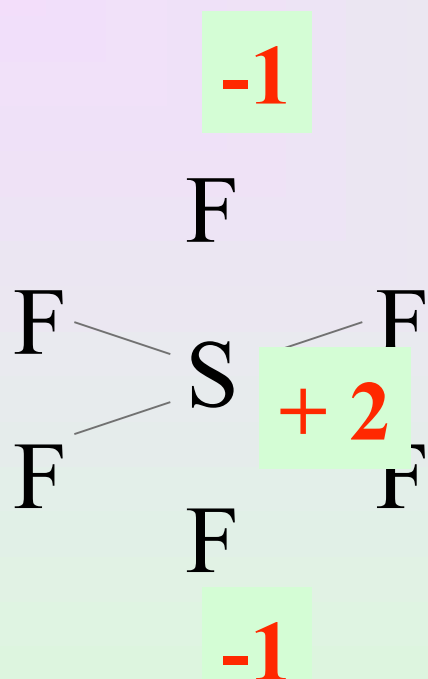
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the overall bonding is described as a combination of covalent and ionic contributions

Formal charge leading to attractive force



4 electron pair bonds

6 S-F interactions

2

Covalent
bond per S-F
interactions

3

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