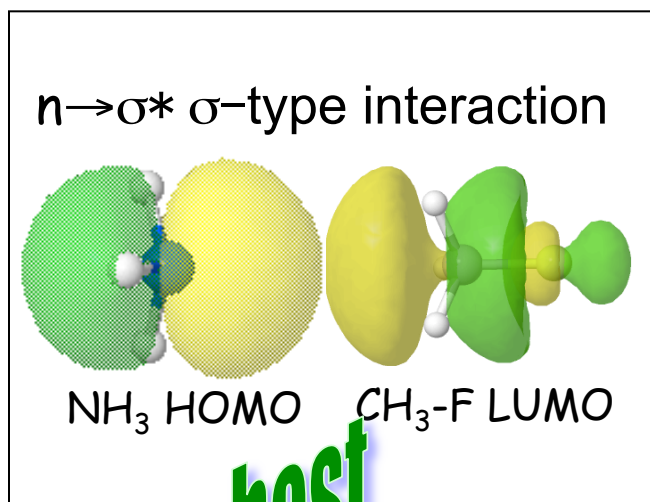


# Generalized Sigma and Pi-Type Interactions

Like the overlap of atomic orbitals to form molecular orbitals, the overlap of frontier orbitals can occur with  $\sigma$  (end-on or coaxial) and  $\pi$  (side-by-side) geometry. Coaxial overlap of atomic orbitals generally results in a lower-energy bonding orbital (the more stable bond compared to a side-by-side interaction). Consequently, coaxial overlap of the frontier orbitals generally results in the lower-energy pathway from reactants to products. In multiple-lobe orbitals where the lobes have different sizes, the most efficient overlap occurs when the larger lobes of the two orbitals interact.



best

