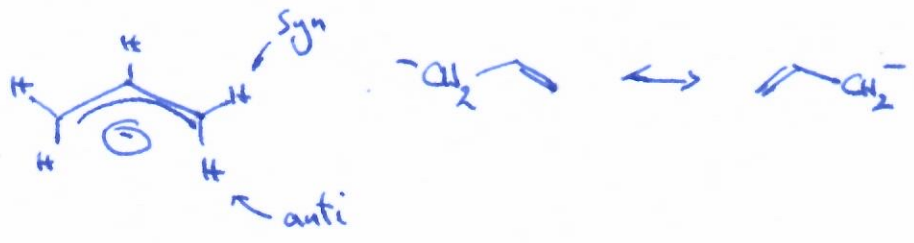


other π -ligands

η^3 -allyl



π -acceptor



π -donor



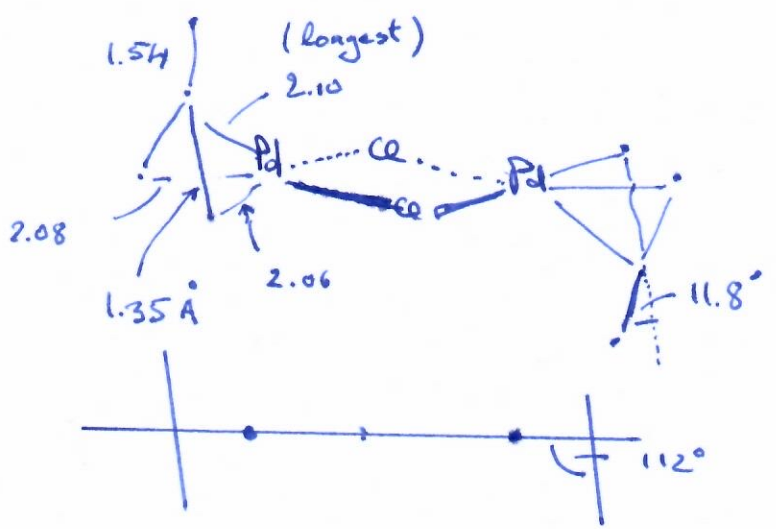
σ -donor

lecture 10



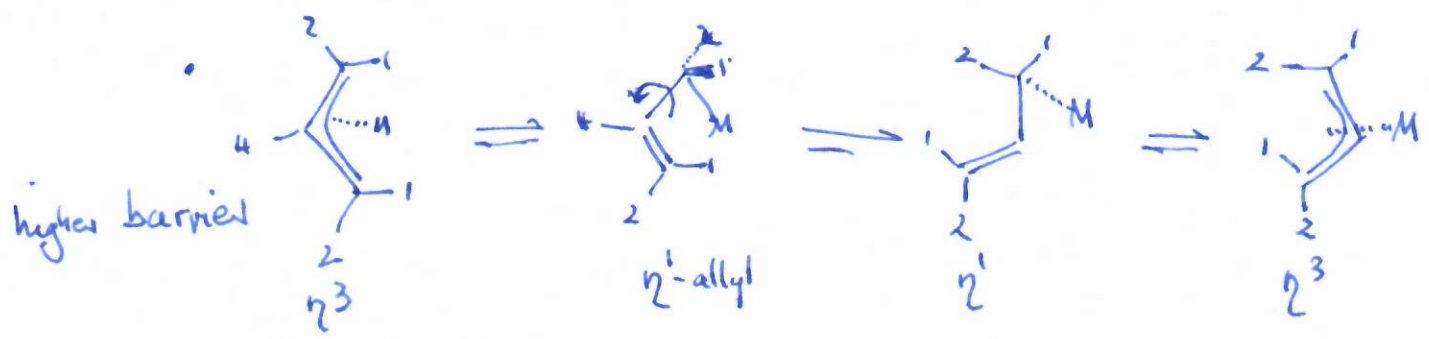
Mo^{\pm}, d^4

bridging allyl!



dynamics:

- η^3 -allyl can rotate about



reactivity: regioselective nucleophilic attack (org. synth.)

cylopentadienyls, $\eta^5-C_5R_5$ $R=H$ 'Cp' $R=Me$, Cp* ²

'ancillary' ligand, very strong bond ($D_{M-Cp} \sim 100$ kcal/mol)

unreactive: $D_{C-H}(Et) \approx 114$ kcal/mol

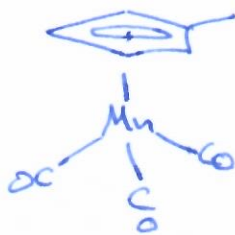
good NMR handle

Singlet (5H) @ 4-5.5 ppm, σ -donor, steric saturation

(electronic)
stabilizes complexes



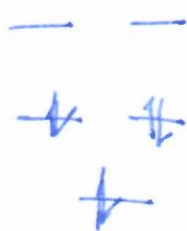
forms metallocenes (Cp₂M), half sandwich complexes



a 'three-legged piano stool'

5 p-orbitals, Cp⁻

$2n + 2\pi$ -electrons, aromatic



σ -acceptor \leftarrow weak interaction (poor overlap)

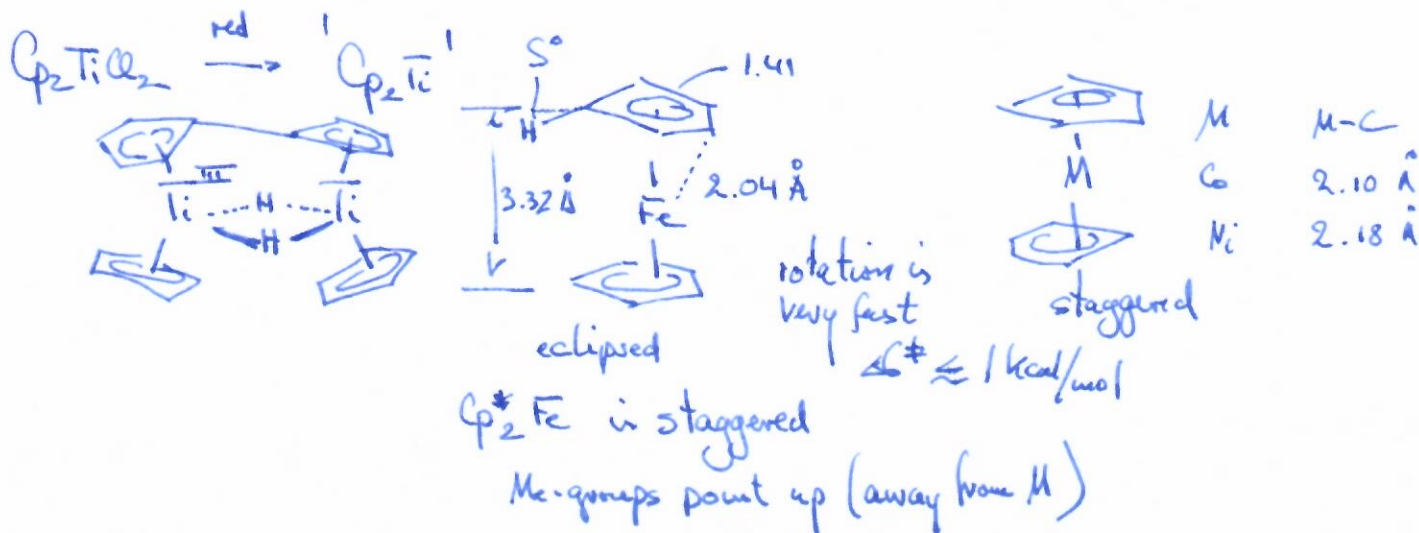
π -donor



σ -donor

} both σ - and π -donation
Cp's are strong donors

metallocenes review: A. Haaland Acc. Chem. Res. 1978, 12, 415



electrochemistry:

