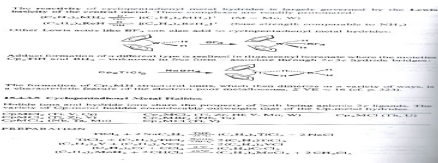
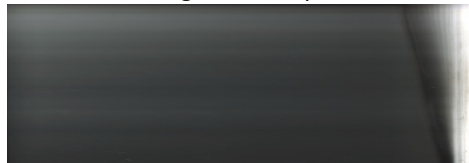
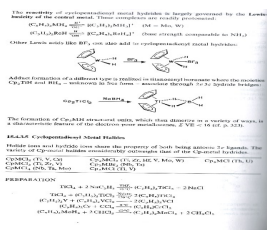
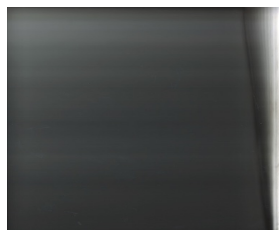


– Cyclopentadienyl metal hydrides can react in 3 different ways

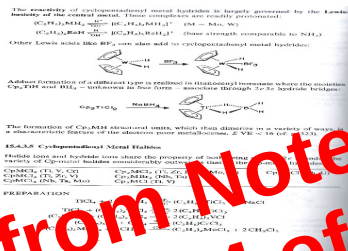
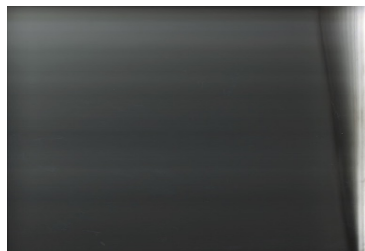
1. **Protonation**, governed by the Lewis basicity of the central metal



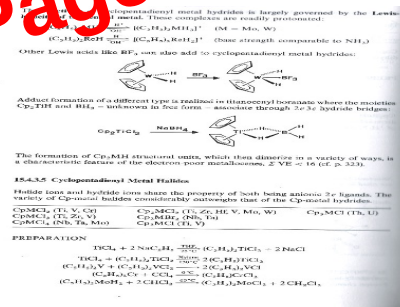
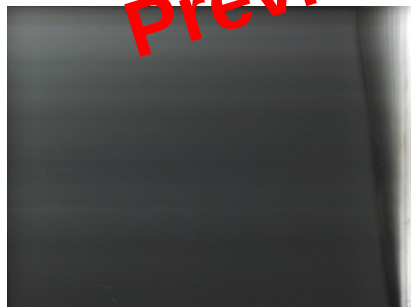
2. Using Lewis acids like BF_3 , which can add to cyclopentadienyl metal halides



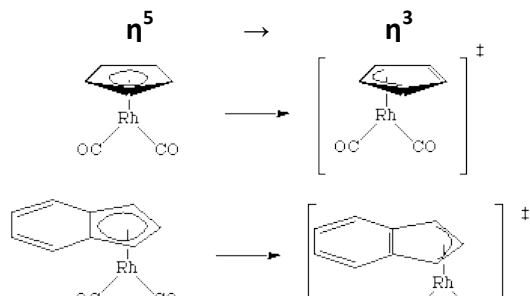
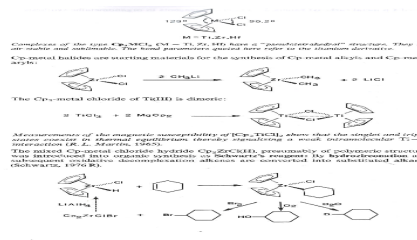
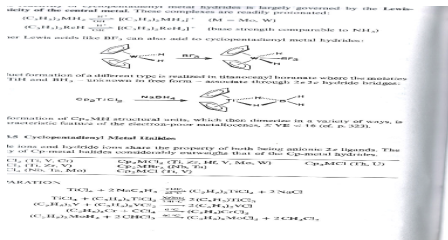
3. **Adduct formation**, when moieties associate through hydride bridges. The formation of Cp_2MH units which then dimerize in various ways is a *characteristic* feature of electron-poor metallocenes, where the number of valence electrons is *less* than 16



– Cyclopentadienyl metal halides can be synthesized by Wilkinson's reaction



– Cyclopentadienyl metal halides can react to form Cp-metal alkyls/Cp-metal aryls:



Ring Slippages

Cp rings can move from being pentahapto (bound 5 carbons) to being trihapto (bound through 3 carbons).