

Introduction to Organometallic Chemistry

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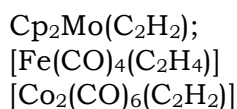
III) Questions based on η^m (m=even) ligands

12. Metal alkene complexes
13. Alkynes η^2 bonding
14. Metal dihydrogen and hydrides
15. Migratory Insertion reaction with alkynes
16. η^m (m=4 dienes and m=2n, polyenes)

2. Explain the following observations

- (a) Olefins have different chemical shifts and ^{13}C - ^1H coupling constants on binding to a metal.
- (b) Cyclooctatetraene forms a η^4 complex with $\text{Fe}(\text{CO})_3$. Uranium forms a η^8 complex with the same ligand.
- (c) The IR spectra of $[(\text{C}_2\text{H}_4)\text{PtCl}_2]_2$ shows a C=C stretching frequency of 1506 cm^{-1} whereas the first organometallic compound synthesized by Zeise shows a C=C stretching frequency at 1516 cm^{-1}

3. Suggest suitable methods for the preparation of



4. Draw the molecular orbitals of cyclobutadiene and match them with the orbitals on a 3d transition metal.

5. Complete the following equations giving the structure and electron count of the organometallic products

