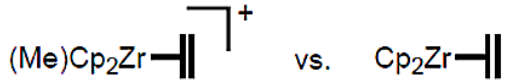
CHEM 412: II. Kinetics

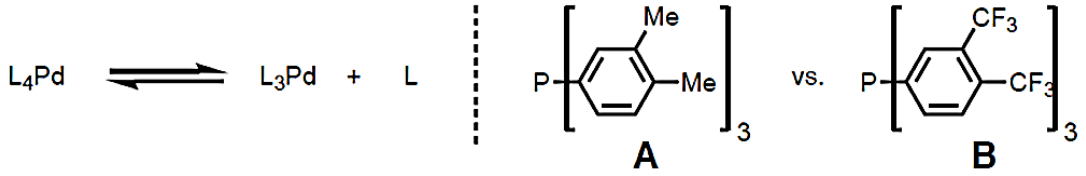
Practice Problems

Name: _____ **Roll No.** _____ **Submission date:** _____

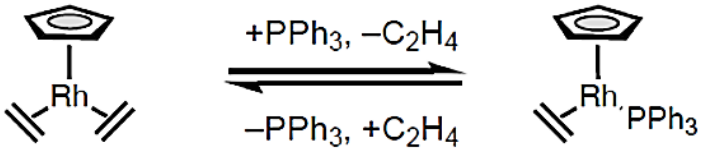
1. Consider the following two complexes and the ability of the metal in both cases to participate in back-bonding. **Provide an explanation for why one of the species results in a more stable complex than the other.**



2. Consider the following two ligands. **Propose which of the two ligands would be expected to give a larger equilibrium constant.**

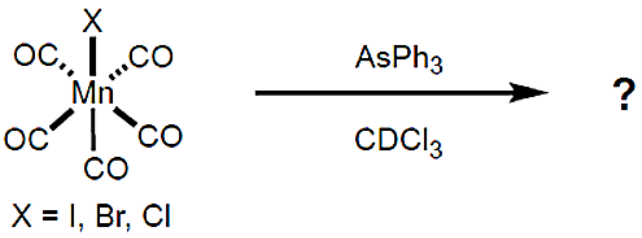


3. Consider the following ligand exchange process:



   A. **Give the coordination number, oxidation state, and total electron count for both complexes.**
   B. **Design one or more experiments to determine the mechanism of ligand exchange** (associative vs. dissociative).

4. Consider the following reaction:



   A. **Predict the product(s) and propose a mechanism.**
   B. **Order the three complexes in terms of expected reaction rate.**

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5. One the basis of the *trans* effect, **predict the products in the following reaction sequences:**