Questions:

1. In the paper I am presenting, Weinreb amides are effectively reduced to aldehydes with Schwartz’s reagent. Provide a method and associated mechanism to generate a Weinreb amide.

2. Again, in the paper I am presenting, the following occurred:

\[
\text{NEt}_2\text{O} + \text{ZrCl}_4 \rightarrow \text{NEt}_2\text{O} + \text{ZrCl}_4 + H_2\text{O}
\]

\[
\text{ZrHCl} \text{THF} \rightarrow 13\% + 9\%
\]

\[+67\% \text{ recovered starting material}\]

Focusing only on the alkene produced, what happened and why? Provide the mechanism of the competing reaction.

3. When alcohol A was subjected to the following reactions, B was formed (B. Schmidt, Org. Lett. 2000, 2, 791). Provide a structure for B, including stereochemistry.

1. NaH, then MeCO_2Et
2. i-Bu_2AlH, -78 °C
3. Ph_3PCH_2I, KN(SiMe_3)_2
4. Cl_2(PCy_3)_2Ru=CHPh

\[\text{A} \rightarrow B\]

C_{12}H_{14}O