

**CHE 173**

**Winter, 2005**

**Specific Objectives for Quiz 7**

1. Understand the nature of the C-M bond in organometallic compounds.
2. Know how to prepare organolithium compounds and Grignard reagents.
3. Understand that organolithium compounds and Grignard reagents are good sources of nucleophilic carbon species, but that they're also Bronsted basic and will react with Bronsted acids (protons,  $H^+$ ).
4. Be able to synthesize a given alcohol from the reaction of an organometallic compound with a carbonyl compound (aldehyde or ketone).
5. Be able to show the mechanism for the reaction of an organometallic compound with a carbonyl compound (aldehyde or ketone).
6. Understand what is meant by "retrosynthetic analysis" and be able to apply this reasoning process in synthesis problems.
7. Understand how to synthesize alkanes using organocopper reagents and alkyl halides, aryl halides and vinylhalides.
8. Be able to show the synthesis of cyclopropane compounds from the reaction of organozinc reagents with alkenes (Simmons-Smith reaction).
9. Be able to apply the above reactions (as well as other reactions you've already learned) in multi-step synthesis problems.