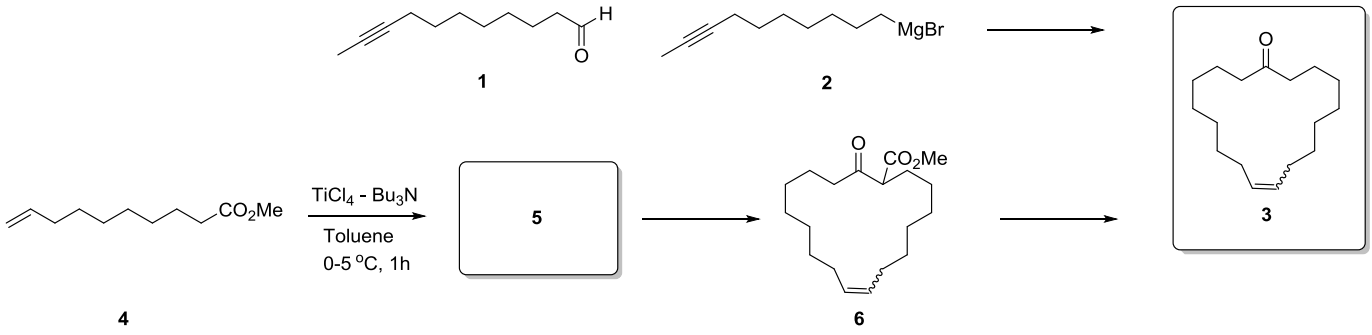
Vivien Tang October 2013

Spivey Group Problem Session: Synthesis of Macrocylic Musks

Synthetic musks are a class of artificial aromachemicals that emulate the scent of Muscone, a compound secreted by the musk deer. Macrocyclic musks consist of a single ring, often containing around 10-15 carbons, and are essential to the perfume industry. The large molecules are relatively involatile, lingering on the skin to form the base note foundation of most perfume formulas.

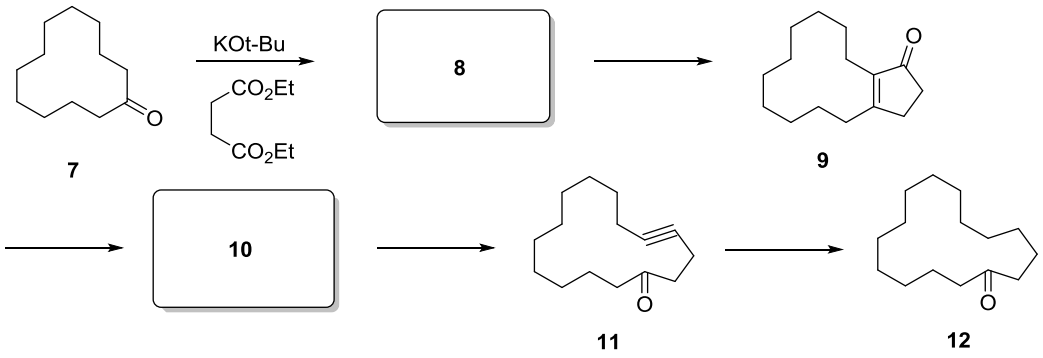
Below are some syntheses for popular macrocyclic musks, please provide reagents/conditions and intermediates where missing, and mechanisms for all steps!

Two approaches for synthesizing Civetone



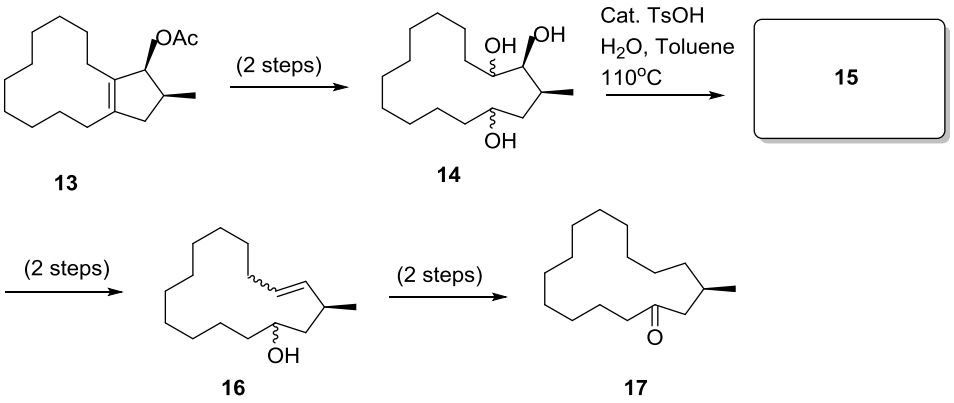
Civetone is a pheromone from the African Civet. Field biologists have attracted jaguars to camera traps by spraying 'Calvin Klein's Obsession For Men', as the civetone in the cologne resembles a territorial marking.

Formation of Exaltone



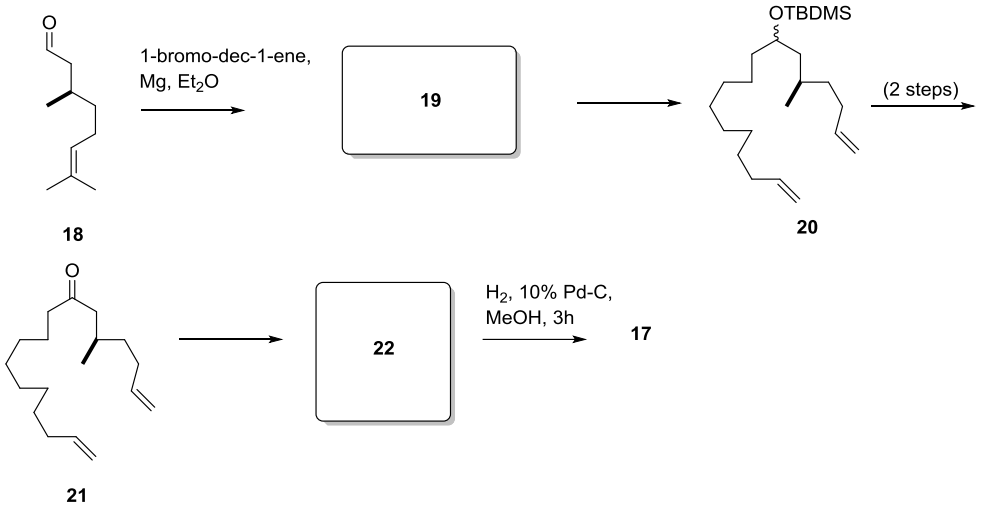
Synthesis of (R)-Muscone

Approach 1:

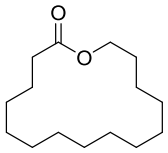


Vivien Tang October 2013

Approach 2:



Please propose a synthetic route for Exaltolide:



23