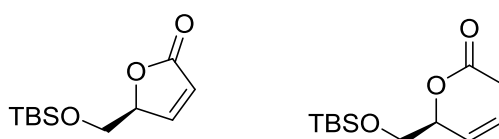


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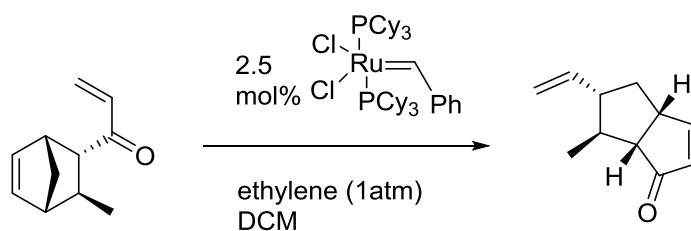
The following examples are taken from the book *Domino Reactions: Concepts for Efficient Synthesis* by Lutz F. Tietze.

Ene-Ene metathesis

1.) It is often beneficial to disconnect while maintaining a degree of symmetry in a synthesis – find a C_2 -symmetrical precursor to the following two lactones. What is the benefit of this symmetry? How would you make them?

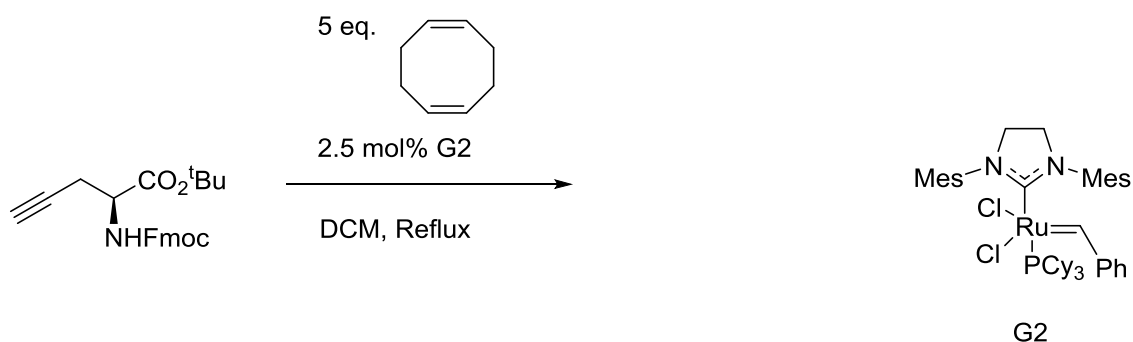


2.) Now have a look at the following scheme. The authors of this study managed to synthesize the product in only 3 steps from commercial starting materials! Draw a mechanism of the following reaction. How would you make the starting material (racemic is fine).

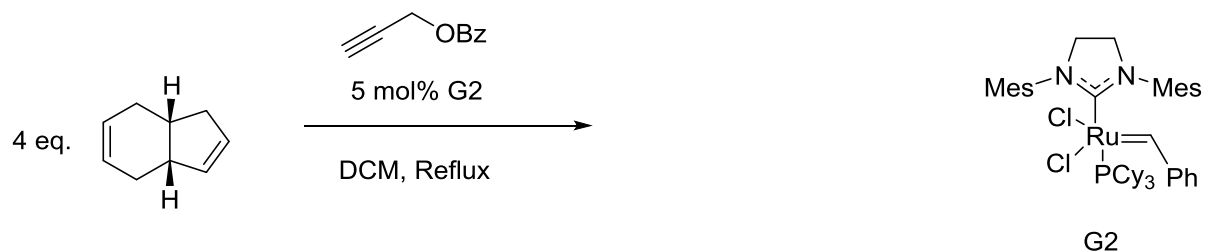


En-yne metathesis

3.) What is the product of the following reaction, developed by the Diver group?

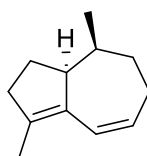


4.) Predict the product of the following reaction:



5.) The big finale: Retrosynthesis.

The marine sesquiterpenoids (-) clavukerin A has been made in 4 steps from commercial starting materials (chiral pool). Using the knowledge gained in this problem sheet, provide a concise total synthesis of the target (<10 steps, ideally <6).



Hint: Try to think of a starting material that brings the methyl group in the right configuration in. It is very popular with the food and fragrances industry.