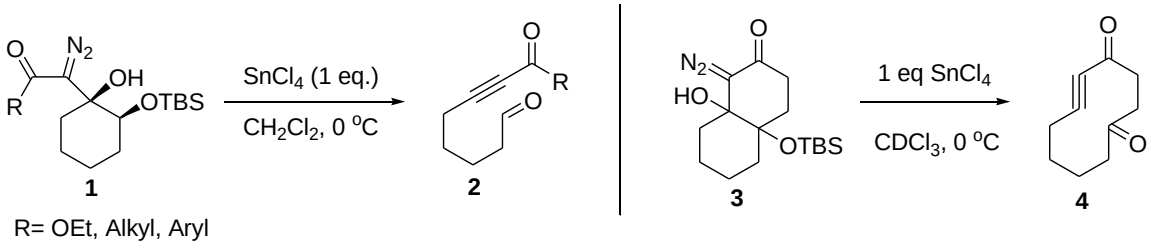
The goal of this research is to develop methods to prepare medium sized rings and macrocyles. Furthermore these methods will be utilized in the synthesis of complex natural products. We previously reported that cyclic γ-silyloxy-β-hydroxy-α-diazoesters (e.g. **1**, R=OEt) undergo efficient ring fragmentation upon treatment with Lewis acids to provide tethered aldehyde ynoate products (e.g. **2**, R=OEt). More recently we have also shown that cyclic γ-silyloxy-β-hydroxy-α-diazoketones (e.g. **1**, R= Alkyl, Aryl) can easily be made and that these also fragment efficiently to provide aldehyde tethered ynone products in good overall yield (e.g. **2**, R= Alkyl, Aryl).



We have recently applied this ring fragmentation methodology to the synthesis of medium ring systems. We hypothesized that bicyclic γ-silyloxy-β-hydroxy-α-diazocarbonyl compounds (e.g. **3**) fused through the β-γ bond would fragment in the presence of Lewis acids to provide ynones (e.g. **4**) and ynoates contained in medium and large rings. For example we prepared diazo bicycle [4.4.0] decane (**3**) as a fragmentation precursor and this compound productively fragmented into ten member cyclodec-5-yne-1, 4-dione (**4**) in good yield upon treatment with one equivalent of tin tetrachloride. We will report our current results in making medium sized lactones which are a common structural feature in many natural products, using aforementioned ring fragmentation methodology.