

# Synthesis of Styrenes and Propargyl Amides

*Tyler Chong Chemistry Senior Seminar*

## **Styrenes**

When  $\alpha,\alpha$ -dialkylated aldehydes are treated with trimethylsilyl trifluoromethanesulfonate (TMSOTf), ionization occurs to form enolate precursors. These enolate precursors attack aromatic aldehydes to produce aldol intermediates that are incapable of dehydration. Subjection of this aldol intermediate to the reaction conditions produces  $\beta,\beta$ -dialkylated styrenes, likely via formation of a carbocation and a 4- or 6-membered ring intermediate.

## **Propargyl Amides**

When propargyl propionates are treated with TMSOTf, ionization occurs to form propargyl carbocations. These propargyl carbocations are attacked by nucleophilic silyl imidates - formed in situ from primary or secondary amides - to yield propargyl amides. These novel one-pot organic synthesis reactions hold important implications for pharmaceuticals, agriculture, and industry.