

"Frisky protons with a silver lining: new methods in heterocyclic synthesis".

Abstract: Our work on 5-endo-trig iodocyclisations inspired us to look for alternative electrophiles to trigger such reactions. We have now defined suitable acidic conditions (i.e. using protons as the electrophile) for pyrrolidine synthesis. This method can also be applied to cascade reactions, related to those which occur in terpene biosynthesis, and to hydroxylamine derivatives, resulting in a novel 'transfer hydroamination' sequence. In contrast, 5-endo-dig cyclisation of both alcohols and amines can be triggered by various silver salts, in remarkably high yields. We have developed flow systems from these initial results and also applied the method to a few targets. Also included will be brief discussions of practical work-ups which avoid chromatography for both Mitsunobu reactions and Grubbs' metathesis chemistry.