Zirconium-Mediated Synthesis of Pyrroles

**Significance**: Liu and co-workers report the direct insertion of nitriles into zirconocene 1-aza-1,3-diene complexes for the synthesis of variously substituted N–H and N-substituted pyrroles in high yields.

**Comment**: The outcome of the reaction is determined by different cyclization patterns that depend on the relative stability and reactivity of the enamine–imine tautomers that are formed upon hydrolysis of the diazazirconacycles.

**Proposed mechanism**: The reaction is initiated by the insertion of nitriles into the zirconocene complex, followed by hydrolysis to yield the desired pyrrole products.

**Selected examples**: Products A and B are shown with their respective yields and reaction pathways.

**Key words**: zirconium, nitriles, cyclization