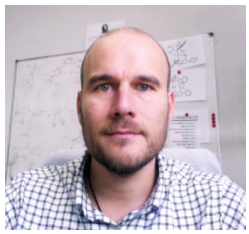

Cyclic amino alkyl carbenes — new avenues in catalysis

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Following pioneering work by our group in 1988,[1] and the isolation of the first *N*-heterocyclic carbene (NHC) by Arduengo,[2] the field of stable carbenes has witnessed outstanding breakthroughs and considerable developments.[3] Due to their strong σ-donating and π-accepting character, and their simple, yet versatile synthesis, NHCs have successfully challenged the stronghold of phosphines in transition metal catalysis.[4] In recent years, we have developed and studied a number of neutral two-electron donor ligands.[5] In 2005, we reported that Cyclic Alkyl Amino Carbenes (CAACs) ligands[6] are amongst the most nucleophilic (σ-donating) and also electrophilic (π-accepting) stable carbenes known. In fact, their low-lying LUMO and small singlet-triplet gap allows for the activation of small molecules, enthalpically strong bonds, and the stabilization of highly reactive main group and transition metal species.[7] We demonstrated that their unique electronics and steric properties allowed for the improvement of known processes (Pd,[6] Ru[8]) while promoting new reactions with coinage metals (Cu, Au).[9] Despite these advances, little has been done since their discovery, to further this ligand system. Hence, we will report new advances in the design and reactivity of CAAC ligands.

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