Carbohydrate-functionalised transition metal–NHC catalysts

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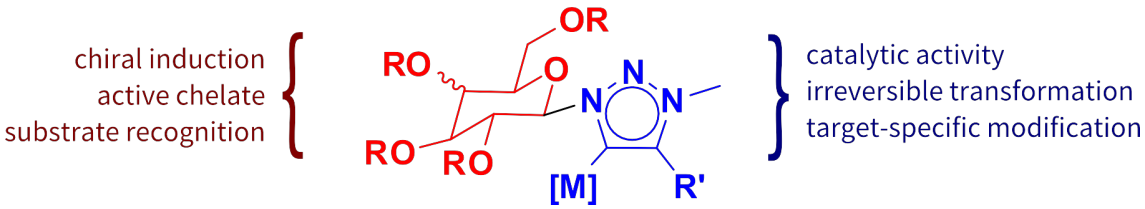
N-Heterocyclic carbenes (NHC) have been demonstrated to be very versatile ligands in various catalytic systems[1]. We have shown the promise of 1,2,3-triazolylidines as a class of NHC with broad applications for materials science and biochemistry[2] in addition to catalysis. Facile preparation through Cu(I)-catalysed CuAAC 'click' chemistry, and subsequent alkylation, makes these ligands very attractive. Here we report transition metal–NHC complexes with incorporated carbohydrate functionality in the ligand structure (see general structure in Figure 1).



Representing a natural pool of chirality and functionality, carbohydrates are an attractive class of substituent for providing defined stereochemistry and geometry to ligands, as well as being readily available. Their use as phosphine and phosphinite ligand scaffolds has previously shown promise in asymmetric catalysis.[3] However, similar work with NHCs is quite scarce.[4] Combining these two important classes of compound into a hybrid complex system will give rise to synergistic advantages for catalysis. Catalytic activity of these complexes is presented.

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