

Synthesis of C,N,N-Cyclometalated Gold(III) Complexes with Anionic Amide Ligands and Application to Catalytic Reactions.

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Gold catalysts can be classified into two types, Au(I) and Au(III). Catalytically active Au(I) complexes have been developed using various types of ligands, such as phosphines and *N*-heterocyclic carbenes (NHCs).¹ However, application of Au(III) complexes to catalytic reactions has been less explored. This is partly due to the instability of the complex. For the synthesis of stable Au(III) complexes, the use of rigid pincer ligands is an effective approach to suppress undesirable reductive elimination. One reliable synthetic method for stable Au(III) complexes with pincer ligands is a two-step process involving the formation of a mercury complex followed by transmetalation with gold. However, the mercury complex is toxic to handle. In contrast, direct complexation between a ligand and Au(III) salt *via* C–H auration is a convenient alternative method.

We developed a method for a novel C,N,N-cyclometalated Au(III) complexes with *N*-(8-quinoliny)benzamide derivatives as pincer ligands.² A simple synthesis of the pincer ligands, condensation of carboxylic acids and 8-aminoquinoline, and a complexation by direct C–H auration permitted changes to both the steric and electronic properties of the Au(III) complexes. Thus the catalytic activity of the Au(III) complexes could be tuned for promoting catalytic three-component coupling of an aldehyde, an amine, and an alkyne. Furthermore, the method could be applicable for the synthesis of chiral C,N,N-cyclometalated Au(III) complexes using chiral *N*-[2-(oxazolin-2-yl)phenyl]benzamide derivatives as ligands.



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