Titel des Beitrags: Gold(I) Complexes with "Normal" 1,2,3-Triazolylidene Ligands: Synthesis and Catalytic Properties

Abstract: 1,2,3-Triazolylidenes as versatile, strong donor ligands have currently experienced a boost in complex synthesis as well as catalytic applications. Although many examples of "abnormal" 1,2,3-triazolylidenes have been described, their "normal" congeners have been barely examined to date (for abnormal carbenes the resonance structures of the carbenes cannot be drawn without adding additional charges, but this is possible for normal carbenes). Furthermore, no instance of utilization of this new ligand class in homogeneous catalysis can be found. Therefore, this work presents a variety of potential precatalysts descending from "normal" 1,2,3-triazolylidene Au chloride complexes. Synthesis and thorough characterization of the new compounds are presented, together with special ligand features such as buried volume and suspected anagostic interactions. The activity of the isolated precatalysts is examined in the intramolecular hydroamination of alkynes and compared with that of a popular imidazolylidene system. It is found that the activity of the best-performing "normal" 1,2,3-triazolylidene systems is quite similar to that of the imidazolylidene systems. However, mercury drop poisoning experiments suggest that improvements in ligand design are required to enhance catalyst stability.
We thank the TUM graduate school and the Bavarian Network of Excellence (NANOCAT) for generous financial support.