

IPr*diNHC: Sterically Adaptable Dinuclear N-Heterocyclic Carbenes

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Streszczenie

N-Heterocyclic carbenes (NHCs) have been established as the predominant ligand class in inorganic and organometallic chemistry. Simultaneously, there has been a major interest in dinuclear ligands, where cooperative effects between the metal centers have been widely exploited across numerous research avenues. Herein, we report the synthesis of dinuclear sterically hindered and adaptable N-heterocyclic ligands based on the modular IPr* framework. These ligands are distinguished by (1) the bridging group between the N-heterocyclic carbene donors and (2) the steric and electronic characteristics of the N-aromatic wingtips. The net effect is a remarkably broadly ranging steric environment around the metal center (%V_{bur} of 33.9 up to 60.4%) as well as versatile conformation ranging from the perfectly linear (3.2°) to almost fully perpendicular (79.3°) between the carbene donors. The ligands have been evaluated in the gold(I)-catalyzed hydration and carboxylation of alkynes, where they show enhanced catalytic reactivity over mononuclear gold(I) complexes. Considering the importance of dinuclear N-heterocyclic carbenes across different research fields, we expect that this ligand class will be of broad interest in inorganic and organometallic chemistry.

Słowa kluczowe

Carbene compounds, Catalysis, Conformation, Ligands, Metals

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