An N-Heterocyclic Carbene Ligand with an Oxalamide Backbone

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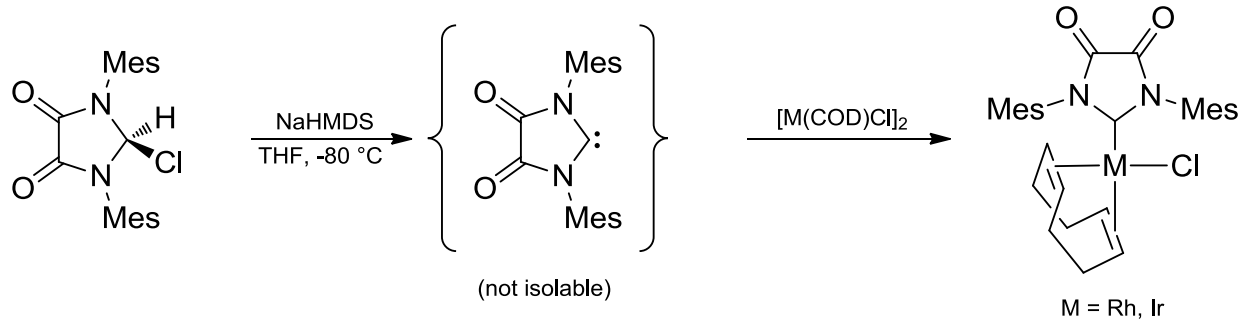
Since their isolation by Arduengo[1] in 1991, N-heterocyclic carbenes (NHCs) have found widespread and spectacular applications as ligands in transition-metal catalysis[2] and as organocatalysts[3]. In addition to application, understanding and modifying the electronic structure of NHCs is an attracting field of current research. The net donor properties of NHCs have been modified, for example, by introduction of electron releasing or withdrawing groups to either the N-bonded aryl groups or the C4 and C5 atoms of imidazol-2-ylidene rings[4]. In addition to the typical NHC-behaviour as nucleophilic ligands towards transition metal fragments, some π-acceptor character was also observed for some of these carbenes[6]. In contrast to a very recent study by Roesler[7], we were able to isolate and examine the reactivity and electronic properties of a new type of NHC ligand with an oxalamide backbone.



Literature:

[1] Arduengo, A.J.; Harlow, R.L.; Kline, M.; *J.Am.Chem.Soc.* **1991**, *113*, 361. [2] Díez-González, S.; Marion, N.; Nolan, S.P*. Chem. Rev*. **2009**, *109*, 3612. [3] Enders, D.; Niemeier, O.; Henseler, A.; Chem. Rev. **2007**, *107*, 5606. [4] e.g. Khramov, D.M.; Lynch, V.M.; Bielawski, C.W. *Organometallics* **2007**, *26*, 6042. [5] César, V.; Lugan, N.; Lavigne, G.; *Eur.J.Inorg.Chem.* **2010**, 361. [6] Srebro, M.; Michalak, A.; *Inorg. Chem.*, **2009**, *48*, 5361. [7] Hobbs, M.G.; Forster, T.D.; Borau-Garcia, J.; Knapp, C.J.; Tuononen, H.N.; Roesler, R.; *New. J. Chem*. **2010**, *34*, 1295.