IMAM LIGANDS FOR LOW-COORDINATE LATE TRANSITION METAL COMPLEXES

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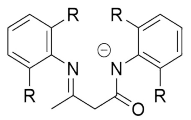
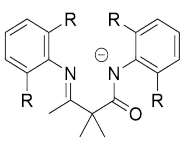
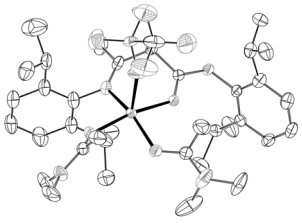
The design of new catalysts for the functionalization of inert C-H bonds is a compelling goal to be able to take advantage of hydrocarbon-based feedstock in a more selective, cost-effective and environmentally friendly way.[1] The synthesis of biomimetic complexes inspired by active oxidant species involved in enzymatic catalytic cycles, notably metal-oxo intermediates, is one important route of investigation to overcome this limit.[2] Late transition metal-oxo complexes (groups 9, 10, 11) are postulated to be potentially stronger oxidants than early-transition ones, but they have so far been elusive due to electronic structural requirements.[3] One possible strategy to override this "Oxo Wall"[3] is to synthesize low-coordinate precursors in square planar, tetrahedral or trigonal planar geometries. Bulky β-diketiminate ligands are widely investigated in order to access metal complexes with low coordination numbers and have been used to synthesize trigonal planar mononuclear Ni(II)[4] and Cu(II) superoxo and bis(μ-oxo) complexes.[5] Herein we propose a novel IMAM (IMinoAMido) ligands family (**1**) to access low-coordinate precursors and bearing an anionic donor to stabilize the high-valent late transition metal-oxo species. The new compounds were fully characterized through IR, NMR, HRMS, and their coordination properties with Fe, Ni, Co and Cu (**2**) were explored.





^{H,H}IMAM1: R=iPr ^{H,H}IMAM 2: R=Me ^{Me,Me}IMAM1: R=iPr ^{Me,Me}IMAM 2: R=Me

(1)



(2)

References:
1) Labinger, J.A., Bercaw, J.E., *Nature* **2002**, *417*, 507
2) Que, L. Jr., Tolman, W.B., *Nature* **2008**, *455*, 333
3) Winkler, J.R, Gray, H.B., *Struct. Bond.* **2012**, *142*, 17
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