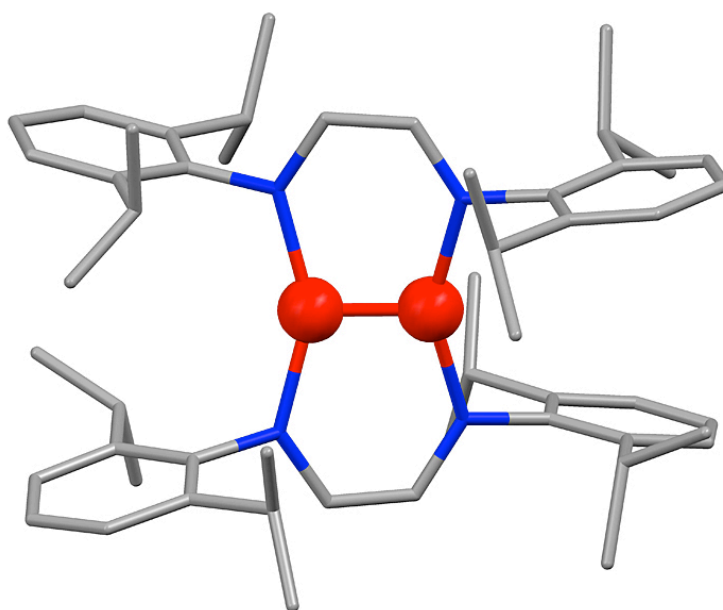


ORDANOCHROMIUM CHEMISTRY SUPPORTED BY α -DIIMINE LIGANDS

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α -Diimine ligands can accept up to two electrons; thus they can be used to stabilize organometallic compounds in unusually low formal oxidation states of the central metal. This redox ambiguity may be useful for facilitating catalytic reactions involving different oxidation states. We are exploring the organometallic chemistry of chromium with such ligands, and one of our initial, unexpected discoveries was a ‘quintuply’ bonded dinuclear species with a very short Cr-Cr distance (1.803 Å), see below.¹



This molecule is a low-valent, coordinatively unsaturated chromium synthon accommodating variable oxidation states of the metal. It isomerizes and reacts with various small molecules (e. g. alkenes, alkynes and arenes) to produce novel organometallic molecules. It also catalyzes the selective trimerization of ethylene. The synthesis, structure, and reactivity of a variety of compounds encountered in this investigation will be described.

Reference

¹ Kreisel, K. A.; Yap, G. P. A.; Dmitrenko, O.; Landis, C. R.; Theopold, K. H. *J. Am. Chem. Soc.* **2007**, *129*, 14162-14163.