

Poster Presentation

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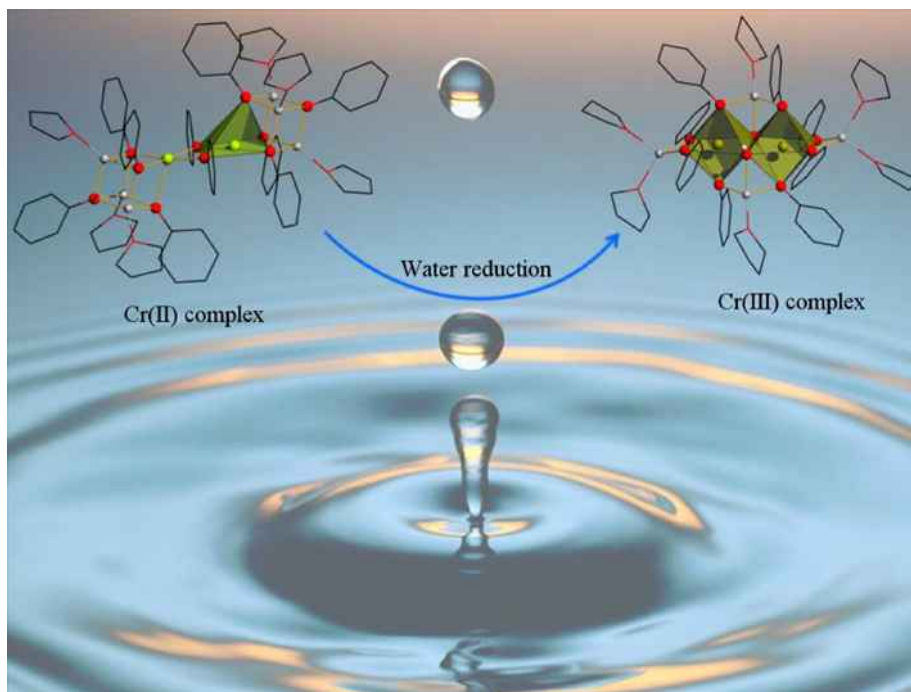
Cr(II) complex: water reductant and starting compound for new Cr(III) compounds

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The use of alkali aryloxide reagents in organo-metallic synthesis often depends on their solubility, a property derived from their structure. The regain of interest of alkali aryloxides also originates from the discovery of high-temperature superconducting compounds, which has generated a great interest in the formation of oxide materials and other ceramics. Thus, many alkoxides of yttrium and copper are common precursors for oxide materials. Moreover, the synthesis of heterobimetallic alkoxides has provided a facile route for obtaining soluble, volatile, and generally monomeric species. These heterobimetallic complexes can thus serve as valuable precursors for making metal oxides but it is not the only possible application for this type of compounds. These complexes can be used as starting compounds for syntheses of more complex structures. In this work, the salt elimination and ligand exchange reaction of chromium(II) chloride with lithium phenoxide yields a mixed metal lithium-chromium(II) phenoxide. Using this latter as intermediately formed starting material and combining the substitution reaction with an oxidation process, we have gained access to new polynuclear chromium(III) aryloxide complexes. While a 1D coordination polymer based on chromium(III) is obtained in a first reaction by serendipity, the controlled addition of water to the Cr(II) complex leads to three new discrete chromium(III) cluster compounds. The use of deuterated species allowed to confirm the oxidation based on the addition of water by detection of H₂, HD and D₂. During these investigations, we have also identified a THF-adduct of chromium(II) chloride, used in the literature as precursor in numerous syntheses, but with a hitherto unknown structure. Figure 1: Oxidation of a Cr(II) complex by water and formation of a new Cr(III) complex.

[1] J. J. H. Edema, A. Meetsma, S. Gambarotta, et al, *Inorg. Chem.* 1991, 30, 3639-46., [2] A. Crochet, J-P. Brog, K. M. Fromm, submitted.



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