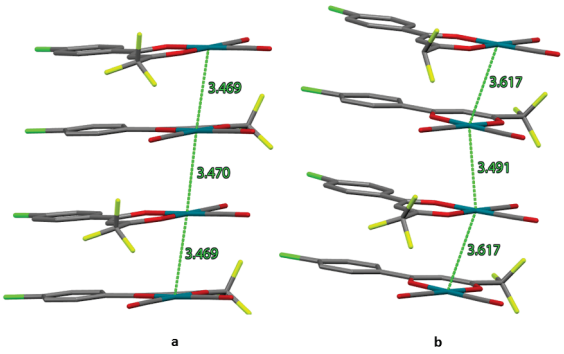

Figure 1. Rh•••Rh interactions observed for [Rh(F_3-4Clbzac)$(CO)_2$] were found alternating between two pairs of molecules. a) Rh1-Rh2 displayed interactions of 3.469(3) and 3.470(3) Å and b) Rh3-Rh4 have reported interactions of 3.491(3) and 3.617(3) Å.

Keywords: 1-D metal chains, metallophilic interactions, rhodium

MS31-O4 Rational design of heterometallic molecular precursors

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The major focus of the title research is a design of heterometallic compounds that can be used as single-source precursors for the low-temperature synthesis of energy-related materials. The ultimate goal is to create heterometallic precursor with discrete molecular structure and with a proper metal:metal ratio for the target material. Several new strategies for a rational design of heterometallic compounds such as mixed-valent, mixed-ligand, and asymmetric ligand approaches will be discussed. These techniques were shown to effectively bring about changes in the connectivity pattern within heterometallic assembly and to yield molecular precursors with required stoichiometry, while avoiding the formation of coordination polymers. The applicability of the above approaches to the synthesis of single-source precursors for multiferroic oxides,[1] oxygen evolution reaction catalysts,[2] and prospective cathode materials of rechargeable batteries[3] will be presented. X-ray crystallography serves as an efficient tool to rationalize the important features of heterometallic precursor structures such as oxidation states of transition metal atoms as well as the identities of elements with very close atomic numbers.

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Keywords: heterometallic compounds, molecular precursors, mixed-metal materials