

Clustered Transition Metal Carbonyl Cations

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While monometallic transition-metal carbonyl cations (TMCCs) are known for almost every transition-metal,^[1] the isolation of homomultinuclear TMCCs remained challenging though the loss of CO-ligands.^[2] To access this new class of TMCCs, we reacted $\text{Ru}_3(\text{CO})_{12}$ with several typical inorganic oxidants like Ag^+ , $[\text{NO}]^+$ and Ag^+/I_2 . The treatment of the complex with these reagents has led to side-reactions. In contrast, the radical-cation of the commercially available 9,10-dichlorooctafluoroanthracene reacts under CO-pressure to the first homotrimeric TMCC (**Figure 1**).

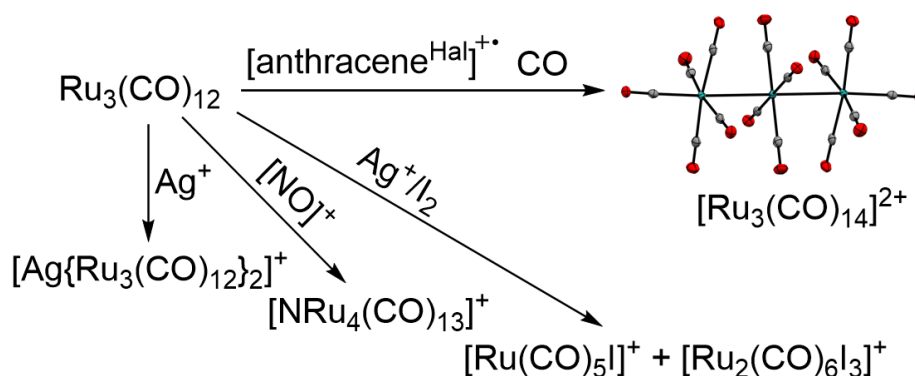


Figure 1. Reactions of triruthenium dodecacarbonyl with different inorganic oxidants and the innocent arenium cation.

Additionally, heterodinuclear TMCCs have been prepared though the reaction of $[\text{Fe}(\text{CO})_5]^+$ with neutral transition metal carbonyls to e.g. $[\text{MnFe}(\text{CO})_{10}]^+$.

References:

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 [2] M. Bodenbinder, G. Balzer-Jöllenbeck, H. Willner, R. J. Batchelor, F. W. B. Einstein, C. Wang, F. Aubke, *Inorg. Chem.* **1996**, *35*, 82-92.

