Synthesis and Derivatisations of $[Re(\eta^6\text{-}C_6H_5COOH)_2]^+$

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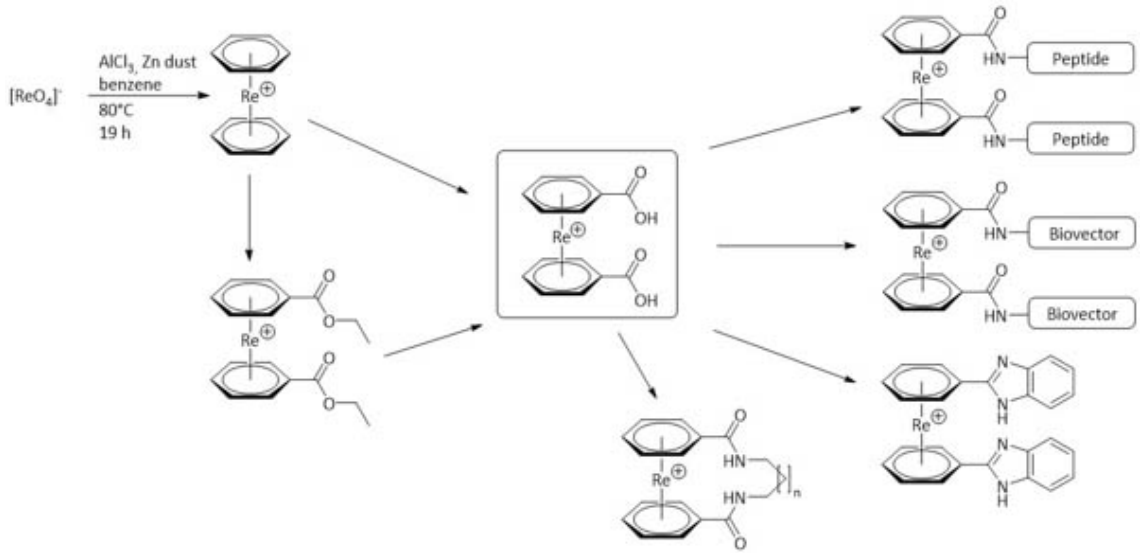
Functionalised bis-arene complexes of transition metals are used as precursors for numerous reactions with applications in different fields, including medicinal inorganic chemistry and bioorganometallic chemistry.[1-4] Recently, functionalised $[M(\eta^6\text{-arenes})_2]^{n+}$ sandwich complexes, containing the d^6-$\{Ru\}^{2+}$ and $\{Os\}^{2+}$ cores attracted attention as potential anti-cancer agents.[1,5] The introduction of functionalities in d^6-metal bis-arene complexes with chromium and molybdenum has also been described but studies with those complexes are comparably rare in bioorganometallic chemistry. Studies with group 7 bis-arene compounds (Re and Tc) are very rare in any respect, although their syntheses were already described in the 1960s.[1]

Searching for new organometallic building blocks for imaging (^{99m}Tc) and therapy (Re) in the context of theranostics, our group introduced a new synthetic route for the synthesis of the precursor complex $[Re(\eta^6\text{-}C_6H_6)_2]^+$ directly from $[ReO_4]^-$.[1,6]



This work focuses on an improved synthetic pathway to $[Re(\eta^6\text{-}C_6H_5COOH)_2]^+$. Beside the high chemical stability of these complexes and its inertness towards oxidation and hydrolysis, the carboxylic groups represent a core feature for derivatisations with targeting moieties via amid bond formation. Amino acids, peptides or other biomolecules can conveniently be introduced along this approach.

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