

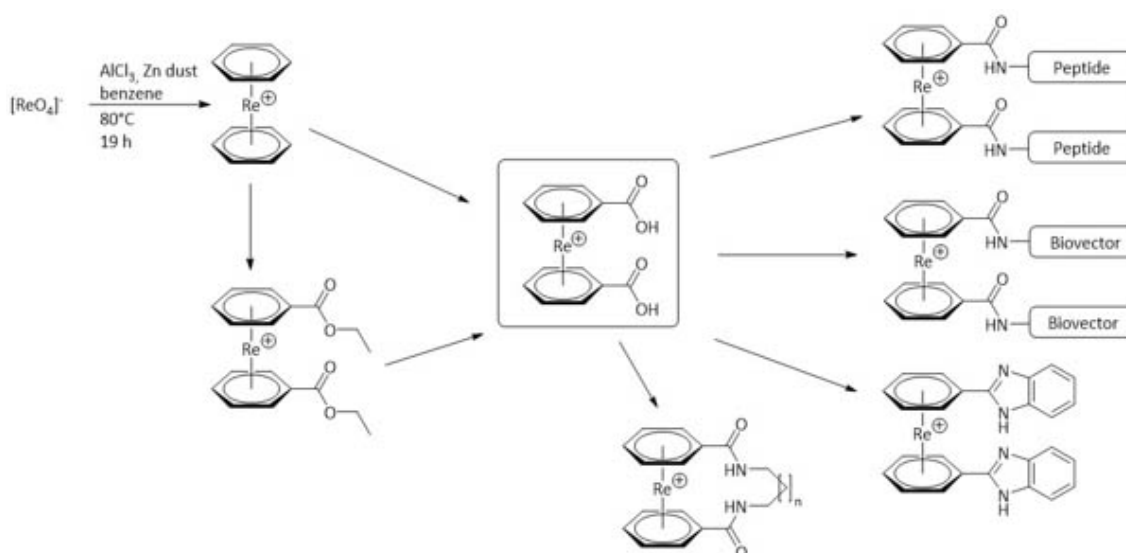
## Synthesis and Derivatisations of $[\text{Re}(\eta^6\text{-C}_6\text{H}_5\text{COOH})_2]^+$

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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.<sup>[1-4]</sup> Recently, functionalised  $[\text{M}(\eta^6\text{-arenes})_2]^{n+}$  sandwich complexes, containing the  $d^6$ - $\{\text{Ru}\}^{2+}$  and  $\{\text{Os}\}^{2+}$  cores attracted attention as potential anti-cancer agents.<sup>[1,5]</sup> 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.<sup>[1]</sup>

Searching for new organometallic building blocks for imaging ( $^{99\text{m}}\text{Tc}$ ) and therapy (Re) in the context of theranostics, our group introduced a new synthetic route for the synthesis of the precursor complex  $[\text{Re}(\eta^6\text{-C}_6\text{H}_6)_2]^+$  directly from  $[\text{ReO}_4]^-$ .<sup>[1,6]</sup>



This work focuses on an improved synthetic pathway to  $[\text{Re}(\eta^6\text{-C}_6\text{H}_5\text{COOH})_2]^+$ . 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.

[1] G. Meola, H. Braband, P. Schmutz, M. Benz, B. Spingler, R. Alberto, *Inorg. Chem.*, **2016**, 55, 11131-11139 [2] M. Benz, H. Braband, P. Schmutz, J. Halter, R. Alberto, *Chem. Sci.*, **2015**, 6, 165-169 [3] E.A. Trifonova, D.S. Perekalin, K.A. Lyssenko, A.R. Kudinov, *J. Organomet. Chem.*, **2013**, 727, 60-63 [4] G. Pampaloni, *Coord. Chem. Rev.*, **2010**, 254, 402-419 [5] D.S. Perekalin, A.P. Molotkov, Y.V. Nelyubina, N.Y. Anisimova, A.R. Kudinov, *Inorganica Chimica Acta.*, **2014**, 409, 390-393 [6] G. Meola, H. Braband, D. Hernández-Valdés, C. Gotzmann, T. Fox, B. Spingler, R. Alberto, *Inorg. Chem.*, **2017**, accepted