EuCOMC 2019 Abstracts

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Ni (II) and Co (II) halide complexes with novel NNNO-heteroscorpionate ligands in ethylene oligomerization: the crucial role of AOC

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Heteroscorpionate complexes of different metals are widely used in catalysis[1]. Recently we have reported synthesis and catalytic oligomerization of ethylene on nickel (II) complexes with NNN-heteroscorpionate ligands[2].

In this study we report novel NNNO-heteroscorpionate ligands with 8-methoxyquinoline pendant arm, that are able to form complexes with nickel **1** and cobalt **2** halides strictly in 1:1 stoichiometry (Fig. 1), without regrouping to ionic compounds[2,3] of the following composition: $[MeL_2]^{2+}[MeHal_4]^{2-}$.

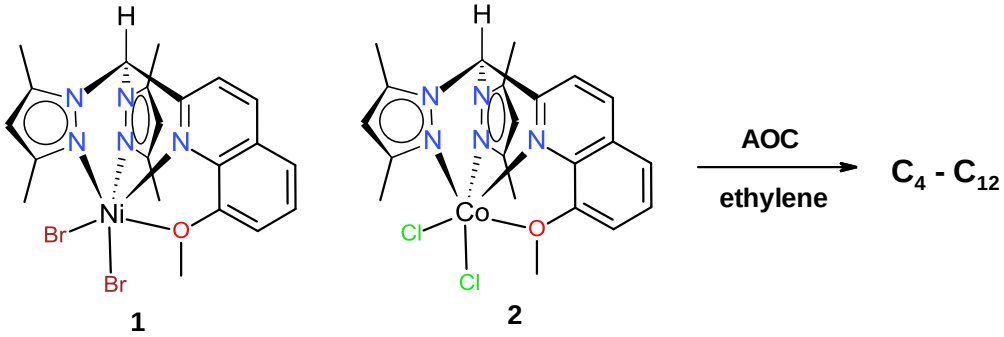

Figure 1. Scheme of ethylene oligomerization by complexes **1** and **2.**

These complexes yielded active systems only when activated with Et_2AlCl, $Et_3Al_2Cl_3$, $EtAlCl_2$ or MAO. The AOC plays a crucial role in determining the properties of these systems. So for complex **1** the activity ranges from 90 to 1900 kg[olig]·(mole[Ni]·h·atm)$^{-1}$, constantly increasing in the following sequence: MAO<Et_2AlCl<$Et_3Al_2Cl_3$<$EtAlCl_2$. The addition of 1 mol. equiv. of PPh_3 to the system raises the activity up to 4200 kg[olig]·(mole[Ni]·h·atm)$^{-1}$. According to GC/MS data, oligomeric mixtures consist of different isomers with chain lengths from C_4 to C_{12}, with predominant shares of butenes and hexenes (α-olefin share is up to 50% in each fraction).

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Literature

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