

Comparative study of structural aspects of monocyclopentadienyl Niobium and Tantalum Complexes. Synthesis and reactivity

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Cyclopentadienyl complexes of early transition metals are well established as important types of olefin polymerization catalysts. Recently a spectacular development of a new generation "non-metallocene" catalysts have been designed and several systems capable of catalyzing the living polymerization of olefins was made. Alternatively, this kind of compounds also provided convenient routes to synthetic applications by unsaturated organic derivatives coupling reactions, via metallacyclic intermediates.

The broad success of early transition metal based organic synthesis is due in part to the unique ability of the metal to activate ligands to which it is directly bound through organometallic transformations than are often highly chemo-, regio- and stereoselective processes. In the group 5, niobium and tantalum alkynes complexes, via metallacyclic compounds, have provided good examples of that behaviour [1].

We report herein the synthesis and the structural study of monocyclopentadienyl alkyl and chloro azatantalacyclo-propane,-pentane and -pentene derivatives, their reactivity in the insertion of isocyanides and the intramolecular rearrangements processes observed in the resulting complexes. Comparative studies with the alkyl Niobium complexes will be presented .

[1] Galakhov M., Gómez M., Gómez-Sal P., Velasco P., *Organometallics*, 2005, **24**,848.

Keywords: organometallic reactivity, group 5 metals, catalysis