Dinuclear Nickel(II) and Palladium(II) Complexes in Combination with Different Co-Catalysts as Highly Active Catalysts for the Vinyl/Addition Polymerization of Norbornene

Vasile Lozan[a], Paul-Gerhard Lassahn[a], Cungen Zhang[a], Biao Wu[a], Christoph Janiak[a], Gerd Rheinwald[b], and Heinrich Lang[b]

[a] Institut für Anorganische und Analytische Chemie, Universität Freiburg, Albertstr. 21, D-79104 Freiburg, Germany
[b] Institut für Chemie, Lehrstuhl für Anorganische Chemie, Technische Universität Chemnitz, Straße der Nationen 62, D-09111 Chemnitz, Germany

Reprint requests to Prof. Dr. C. Janiak. Fax: +49(0)761-2036147. E-mail: janiak@uni-freiburg.de

Z. Naturforsch. **58b,** 1152 – 1164 (2003); received September 30, 2003

Dinuclear nickel(II) and palladium(II) complexes with Schiff-base ligands (derived form salicylaldehyde condensed with 2-amino-1-alcohols or from 2-hydroxy-5-methylisophthaldialdehyde and pyridine-2-carboxaldehyde condensed with semicarbazide, thiosemicarbazide, carbonodihydrazide, or thiocarbonodihydrazide) can be activated with the co-catalysts methylalumoxane (MAO) or tris(pentafluorophenyl)borane/triethylaluminium, $B(C_6F_5)_3/AlEt_3$ for the vinyl/addition polymerization of norbornene to reach activities of up to $2.4 \cdot 10^7$ $g_{polymer}$/mol(metal)·h (molar ratios metal:Al_{MAO} = 1:100, metal:borane:$AlEt_3$ = 1:9:10). Polymer characterization by GPC gave molar mass distributions of $M_w/M_n \approx 2$, thereby indicating a coordination polymerization with a single-site character of the active species.

Key words: Polymerization, Norbornene, Nickel, Palladium, Co-Catalyst