

## **Polymerization of Ethylene Using Metallocene and Aluminoxane Systems**

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### ABSTRACT

This paper describes ethylene polymerization using a number of metal-locene and aluminoxane catalyst systems,  $Cp_2MR_2$  and methylaluminoxane [ $M = Zr, W, Nb$ ;  $R = Cl, CH_3$ ]. Two types of methylaluminoxane, MAO (1) and MAO (2), were used as cocatalysts.

The polymerization activities of the complexes  $Cp_2WCl_2$  and  $Cp_2NbCl_2$  were compared with that of  $Cp_2ZrCl_2$ . The Nb and W complexes were found to be less active than the Zr complex. Polyethylene characterization was also carried out by the following methods: gel permeation chromatography (GPC), differential scanning calorimetry (DSC) and nuclear magnetic resonance (NMR).

Key words: metallocene, aluminoxanes, Ziegler-Natta catalysis, ethylene polymerization, active centres