

Fragmentable Heterogeneous Cocatalysts for the Metallocene-Catalyzed Polymerization of Olefins, II [1]. Preparation, Characterization and Testing of the Cocatalysts and Microscopic Evaluation of the Polyethylene

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Surface modified silica were reacted with different aluminiumalkyls AlR_2R' ($R = Me, Et, i-Bu$, $R' = H, Me, Et, i-Bu$), oligomeric methylaluminoxane (MAO) and combinations of both, to yield heterogeneous cocatalysts. These cocatalysts were employed to polymerize ethylene using zirconocene dichloride as the catalyst. The polymerization activity profiles have been recorded and compared with the information gained from the scanning electron microscopy (SEM) images of the polymers. The fragmentation of the heterogeneous cocatalysts upon polymerization has been demonstrated. The degree of fragmentation and the polymerization activity depend on the preparation of the silica supports and on the preparation of the heterogeneous cocatalysts using these supports. The most reactive, fragmentable heterogeneous cocatalysts show polymerization activities slightly higher than MAO in homogeneous solution and almost 1.5 times higher than commercially available MAO on silica (= MAO on Sylopol).

Key words: Cocatalyst, Heterogenization, Polymerization, Catalyst, Aluminiumorganyl