

ISOBUTYL- AND ARYLOXYISOBUTYLALUMINOXANES AS ACTIVATORS FOR ZIRCONOCENE BASED CATALYTIC SYSTEMS IN OLEFIN POLYMERIZATION

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The development of new efficient and cheap activators for organometallic catalysts for ion-coordination polymerization of olefins is the actual branch of Metalorganic Chemistry and Polymer Science. Syntheses of isobutylalumoxanes and modified alumoxanes are a purposeful search for new effective activators which capable replace widely used metallocene activator methylaluminoxane (MAO). The discovery of new activators may allow significantly reduce the cost of the catalytic systems and give the new properties of the catalyst.

Isobutylalumoxane syntheses by triisobutylaluminum (TIBA) hydrolysis with water in different aggregate states (ice, liquid, vapor) and in the crystalline hydrate $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ were presented. It was shown that the most selective method of synthesis was TIBA hydrolysis by crystalline hydrate $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$. Tetraisobutylalumoxane (TIBAO) associated with TIBA ($\text{Al}/\text{H}_2\text{O} = 4$), dimeric TIBAO ($\text{Al}/\text{H}_2\text{O} = 2$), oligomeric ($\text{Al}/\text{H}_2\text{O} = 1.5$) and a polymer ($\text{Al}/\text{H}_2\text{O} = 1$) isobutylalumoxanes were received by controlled TIBA hydrolysis. It was found that the TIBA hydrolysis by liquid water, water vapor and ice led to the formation of the isobutylalumoxanes mixture. TIBAO associated with TIBA and oligomeric isobutylalumoxane were activators of *rac*- $\text{Me}_2\text{Si}(2\text{-Me}, 4\text{-PhInd})_2\text{ZrMe}_2$ (**1**) and *rac*- $\text{Et}(2\text{-MeInd})_2\text{ZrMe}_2$ (**2**) in propylene polymerization. It was shown that the activity of the catalytic systems activated by oligomeric isobutylalumoxane ($\text{Al} / \text{Zr} = 50\text{-}300$) were 2-10 times higher than ones with using MAO ($\text{Al}/\text{Zr} = 1000$).

For the first time synthesized aryloxyisobutylalumoxanes containing sterically bulky aryloxy groups. It was found that the catalytic systems **2** /aryloxyisobutylalumoxane showed high activity in the polymerization of ethylene and copolymerization of ethylene and propylene.

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