ETHYLENE POLYMERIZATION USING MGCL2/SIO2 SUPPORTED ZIEGLER-NATTA CATALYST

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The $MgCl_2/SiO_2$ - supported Zeigler-Natta catalyst was prepared by recrystallization method. Slurry polymerization of ethylene was carried out using the catalyst in dry hexane, while; TEA was used as cocatalyst. The effect of reaction conditions, such as cocatalyst/catalyst molar ratio, H_2 concentration, polymerization temperature and monomer pressure on activity of the catalyst were investigated. Ti concentration in solid catalyst was 0.95% wt. Structural study was carried out using FTIR, SEM, XRF,GPC and BET techniques. The morphology of the polymers was evaluated through scanning electron microscopy (SEM) images. GPC results were used for molecular weight (Mw) evaluation. It was found that the polydispersity index of polyethylene could be adjusted over a wide range of 3-15 through regulating the [Mg]/[Si] ratio and polymerization temperature, and especially when the [Mg]/[Si] ratio was unity, the polydispersity index could be reached over 14. The results showed the addition of hydrogen caused to decrease the activity of catalyst, while; increasing monomer pressure caused to have an increase in activity.