

Effect of physicochemical properties of silica support on PE polymerization

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It is widely known that olefin polymerization with unsupported metallocene causes a reactor contamination problem. Various kinds of materials such as silica, alumina, zeolite, clay minerals, graphene, etc. can be used as the metallocene support. Among them, silica is the most commonly used commercially because it has advantages in terms of sufficient specific surface area, thermal stability, and economy. In this study, physical and chemical properties were analyzed by varying the calcination temperature of silica, and PE polymerization was performed with a metallocene catalyst synthesized at each temperature. FT-IR, TG, SEM, and BET analysis equipment were used for silica analysis. PE polymerization proceeded through a high-pressure gas phase reactor equipped with a mechanical stirrer.