



## **Development of starches as support of metallocene catalyst for ethylene polymerization**

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Polyethylene is a large volume commodity polymer. Metallocene catalyst is one of the most popular catalysts for polyethylene production. It produces polyethylene with narrow molecular weight distribution and presents high activity. However, homogeneous metallocene system has some disadvantages that are lack of polymer morphology control leading to a reactor fouling. Thus, an immobilization of metallocene catalyst on a support can solve these problems. Organic materials are interesting alternative to apply as a support for this catalyst because they are more environmentally friendly than inorganic supports. In this work, cassava and corn starches were employed as supports for a metallocene/MAO catalyst. Moreover, these supports were modified with various amounts of gallium. These catalyst systems were investigated an activity in in situ ethylene polymerization. The results shown that gallium was well-dispersed over the starches surfaces analyzed by SEM/EDX. An activity of a metallocene catalyst supported non-modified corn starch was 18,364 kg polymer/mol Zr·h which was higher than that supported non-modified cassava starch about 3 times. The cassava starches modified with 1, 3, and 5%wt of gallium could enhance the activity to 10,754, 14,357, and 20,413 kg polymer/mol Zr·h, respectively. However, the corn starches modified gallium decreased the activity.

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