Fabrication of ZSM-5 On Al_2O_3 By Mechanical-Alloying For FTS

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Cobalt based catalysts are favored materials for the Fischer-Tropsch synthesis to produce long-chain hydrocarbons, which are suitable as diesel fuel. But hydrocarbons need be further hydrocracking and isomerization reaction to produce branched hydrocarbon. In order to improve the branched hydrocarbons selectivity, we focused on the hybrid catalysts by membrane coating with zeolite. The mechanical-alloying (MA) technique was introduced to apply Al2O3 based hybrid catalyst. Despite many advantages, the detailed metallic coatings and influence was still unknown due to the variation of charge separation between materials. The objective of this work is to design eggshell type catalysts using granular type alumina. We also investigated the variation effect of volume and ball milling time on the thickness of the ZSM-5 shell with variation effect of volume and ball milling time. The results were well correlated with SEM, FT-IR, XRD and TPD analysis. The volume ratio, milling time and the morphology of Alumina has direct impact on selectivity. It was also found that the increased residence time and number of weak acid sites leads to have higher iso-paraffin(Olefin) to normal paraffin ratio