

Methane Chlorination using Zeolite Catalysts: Effect of Si/Al ratios and Framework Types on CH_3Cl Yield

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CH_4 can be chlorinated to a series of chloromethane compounds (i.e., CH_3Cl , CH_2Cl_2 , CHCl_3 and CCl_4) in the presence of molecular chlorine gas (Cl_2). Among the possible chlorinated products, CH_3Cl can be usefully converted to olefin and hydrocarbon though other chlorinated products did not. Accordingly, the selective chlorination of CH_4 using Cl_2 to produce CH_3Cl is very important, for which the heterolytic cleavage of Cl_2 molecule should be preferred to the homolytic cleavage to two chlorine radicals. In this work, effects of zeolite framework types and Si/Al ratios on the CH_3Cl productivity were investigated, which demonstrated that the CH_4 conversion, CH_3Cl selectivity, and hence CH_3Cl yield could be remarkably controlled by the catalysts properties. The details of CH_4 chlorination and the results are going to be discussed in this poster.