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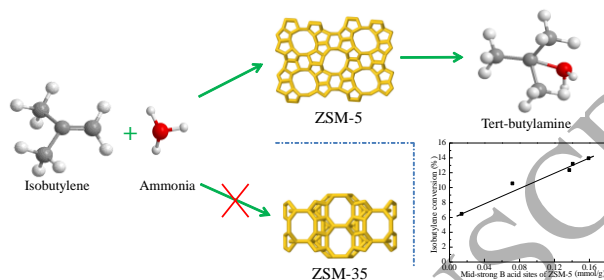
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Direct amination of isobutylene over zeolite catalysts with various topologies and acidities were studied under mild reaction conditions and the activity-acidity linear correlation provided good guidance for developing high-efficient amination catalyst available for industrial use.

Abstract

The atomically economic and green chemical reaction of direct amination of isobutylene to tert-butylamine, particularly under the relative mild reaction conditions available for future industrial use, was carried out over zeolite catalysts possessing different topological structures, from one dimensional to three dimensional pore system, and from small 8-member ring pore (MRP) to medium 10 MRP and further to large 12 MRP zeolites, to disclose the relationship between the zeolite properties/topologies and their amination performance systematically under the mild reaction conditions. It was discovered that the pore structure and the acidities of zeolite catalysts played crucial roles in the isobutylene amination process, and suitable pore diameter (larger than 0.5 nm or with large side pockets/cups in the outside surface) and a certain number of mid-strong acid sites are indispensable to catalyze the amination reaction, while too strong acid strength was not conducive to the process of isobutylene amination. Among them, zeolites with

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