Catalytic Properties of Zeolites in Petrochemical Processes

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Abstract. This study explores the catalytic properties of various zeolites in petrochemical processes. We have examined the efficiency and selectivity of different zeolite structures in cracking and reforming reactions. The results indicate significant improvements in yield and product distribution when utilizing specific zeolite frameworks. These findings offer insights into optimizing industrial petrochemical applications, potentially reducing costs and environmental impact.

Keywords: Zeolites, Catalysis, Petrochemical, Cracking, Reforming

Introduction

Zeolites, a class of microporous, aluminosilicate minerals, have been extensively studied for their catalytic properties in petrochemical processes. Their unique structure, comprising a three-dimensional framework of SiO4 and AlO4 tetrahedra, creates a network of pores and channels that can accommodate various cations, molecules, and complexes. This structural characteristic makes zeolites particularly effective in catalyzing cracking and reforming reactions, which are pivotal in converting crude oil into valuable products. In this study, we investigate different zeolite structures to determine their catalytic efficiency and selectivity. By optimizing these parameters, the petrochemical industry can achieve more sustainable and economically viable processes.

References

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