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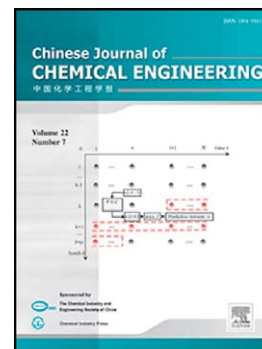
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Research Progress in Ionic Liquids Catalyzed Isobutane/butene Alkylation*

GAN PANXUE(甘攀学)¹, TANG SHENGWEI(唐盛伟)^{1,†}

¹Multi-phase Mass Transfer and Reaction Engineering Lab, College of Chemical Engineering, Sichuan University, Chengdu 610065, China

Abstract: The complicated reaction mechanism and the character of competitive reactions leads to a stringent requirements for the catalyst of C₄ alkylation process. Due to their unique properties, ionic liquids (ILs) are thought to be new potential acid catalysts for C₄ alkylation. An analysis of the regular and modified chloroaluminate ILs, novel Brønsted ILs and composite ILs used in isobutane/butene alkylation shows that the use of either ILs or ILs coupled with mineral acid as homogeneous catalysts can help greatly adjust the acid strength. By modifying the structural parameters of the cations and anions of the ILs, the solubility of the reactants could also be adjusted, which in turn displays a positive effect on improving the activity of ILs. Immobilization of ILs is an effective way to modulate the surface adsorption/desorption properties and acid strength distribution of the solid acid catalysts. Such a process has a tremendous potential to reduce the deactivation of catalyst and enhance the activity of the solid acid catalyst. The development of novel acid catalysts for C₄ alkylation is a comprehensive consideration of acid strength and its distribution, interfacial properties and transport characteristics.

Keywords alkylation, isobutane, butene, catalyst, ionic liquid

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† Corresponding author.

E-mail address: tangdynasty@scu.edu.cn; Tel: 86-28-85405201

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