

### Effect on the Catalytic Activity of Alkyl Substituents in ILs for Fructose Dehydration

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Dehydration of fructose into 5-hydroxymethylfurfural (5-HMF), a potential feedstock for fuel and chemical, was investigated using DMSO as a solvent, and ionic liquids (ILs) as catalysts. ILs based on alkyl-substituted imidazolium cations with a chloride anion were utilized as both homogeneous and heterogeneous catalysts. The reaction was carried out in oil bath at certain temperatures with magnetic stirring, and then fructose and 5-HMF were quantified by HPLC. Among the homogeneous catalysts, 1-ethyl-3-methylimidazolium chloride, [Emim]Cl, showed better activity than the other ones used in this study. It might be thought that the alkyl substituents in the ILs could affect the catalytic activity for fructose dehydration. In addition, heterogeneous catalysts immobilized on a silica aerogel were applied to the reaction.