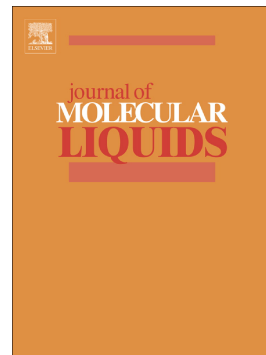


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How do isomeric ortho, meta and para dicationic ionic liquids give impact to the production of 5-hydroxymethylfurfural?

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Abstract

This research involves the investigation on how the dicationic ionic liquids (ILs) that differ in ortho, meta and para position influence the catalytic activity of production of 5-hydroxymethylfurfural (HMF). The development of this research was started with synthesizing new dicationic ILs with simple procedure then followed by characterization and measuring the acidity properties by using Hammett method. Throughout the screening process, the results exposed that substituent on three different position (ortho, meta and para) in cationic site give a remarkably effect on the overall catalytic performance. Highly efficient and selective dehydration of D-fructose to HMF was obtained by Brønsted IL at ortho position with fructose conversion of 95.7% and yielding 90.5% of HMF in 60 min at 100 °C. From the results, it revealed that the geometry shape behaviour of the isomer ILs influenced the yield of HMF. The effects of reaction time, temperature, catalyst concentration and reusability of the dicationic ILs are also studied in this work.

Keywords: dicationic ionic liquids, ortho-meta-para position, fructose, 5-hydroxymethylfurfural

1. Introduction

It is something noteworthy to find a way to make fuels and chemicals from renewable sources that is promising alternatives for future energy supply. Recently, biomass-derived

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