Brønsted Acid Ionic Liquids (BAILs) as Efficient and Recyclable Catalysts in the Conversion of Glycerol to Solketal at Room Temperature

Brønsted acid ionic liquids (BAILs) have been prepared and applied for the first time - to the best of our knowledge - as efficient catalysts in the acetylation of glycerol with acetone to form solketal ((2,2-dimethyl-1,3-dioxolan-4-yl)methanol) at very mild reaction conditions (room temperature) and short reaction times. The BAILs showed a superior catalytic performance in terms of both conversion and selectivity compared to the common mineral acid methanesulfonic acid as well as to other reported homogeneous and heterogeneous catalysts. Catalyst reusability was demonstrated with one of the BAILs (BAIL-1), which was recovered and reused by a simple procedure in four consecutive reaction runs without any loss of catalytic activity and selectivity. Thus, the BAILs combine the advantages of both homogeneous and heterogeneous catalysis with respect to excellent conversion and selectivity as well as easy recyclability.

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