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## Efficient Conversion of Lignocellulosic Biomass to Levulinic Acid Using Acidic Ionic Liquids

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### Highlights

- Synthesis and characterization of anionic cluster based acidic ionic liquids.
- Efficient conversion of lignocellulose biomass to levulinic acid using acidic ionic liquids.
- Optimizations of process parameters for conversion of lignocellulosic biomass to levulinic acid.
- Up to 47.52 % yield of LA from bamboo biomass obtained at 100 °C in 60 min.

### Abstract

In the present research work, dicationic ionic liquids, containing 1,1-Bis(3-methylimidazolium-1-yl) butylene ( $[\text{C}_4(\text{Mim})_2]$ ) cation with counter anions  $[(2\text{HSO}_4)(\text{H}_2\text{SO}_4)_0]$ ,  $[(2\text{HSO}_4)(\text{H}_2\text{SO}_4)_2]$  and  $[(2\text{HSO}_4)(\text{H}_2\text{SO}_4)_4]$  were synthesised. ILs structures were confirmed using  $^1\text{H}$  NMR spectroscopy. Thermal stability, Hammett acidity, density and viscosity of ILs were determined. Various types of lignocellulosic biomass such as

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