

ACIDIC IONIC LIQUIDS

REFERENCES	ACIDIC IONIC LIQUIDS
ImSF1705c	1-(4-sulfobutyl)-3-methylimidazolium trifluoromethanesulfonate, 98% [(CH ₂) ₄ SO ₃ HMIIm][CF ₃ SO ₃]
ImSF1213c	1-(4-sulfobutyl)-3-methylimidazolium hydrogen sulfate, 98% [(CH ₂) ₄ SO ₃ HMIIm][HSO ₄]
ImSF1808c	1-(4-sulfobutyl)-3-methylimidazolium bis(trifluoromethanesulfonyl)imide, 98% [(CH ₂) ₄ SO ₃ HMIIm][N(CF ₃ SO ₂) ₂]

Experimental aspect :

- Hydrophilic
- Liquid at room temperature
- Brønsted acids
- Stable with water and oxygen
- Non-corrosive
- Easily recyclable

Solubility :

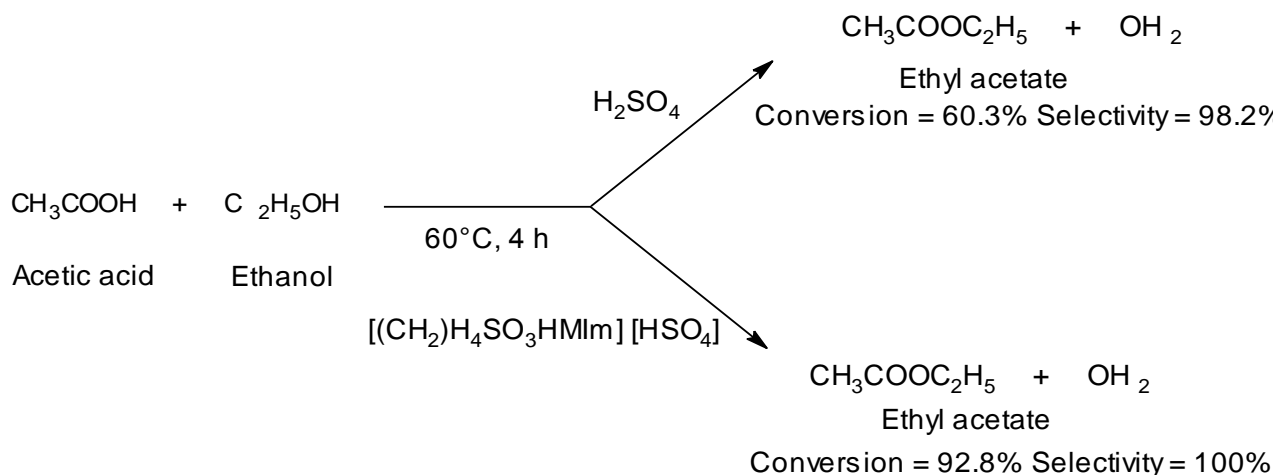
SOLVENT	MISCIBILITY
Water	Miscible
Hexane	immiscible
Ester	immiscible

Applications :

These ionic liquids are used as acid catalysts in the following reactions : Esterification, Oxidation, Alkylation, Beckmann Rearrangement, Cyclotrimerisation...

Esterification of ethanol by acetic acid¹:

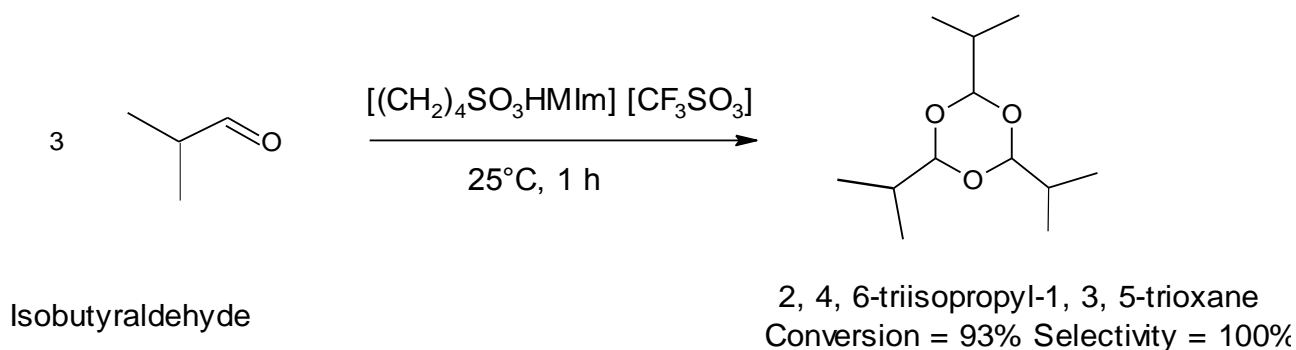
Catalyzed by a Brønsted acidic ionic liquid



The 1-(4-sulfobutyl)-3-methylimidazoliumhydrogensulfate is a more effective catalyst than a conventional catalyst (sulphuric acid H_2SO_4). The ester formed is extracted by a simple separation and the acidic ionic liquid may then be recycled without any loss of activity (at the 5th recycling, Conversion=88.5% and Selectivity=100%).

Cyclotrimerization of aldehydes²:

Catalyzed by an acidic ionic liquid with no addition of any organic solvent



The Isobutyraldehyde (60 mol) is catalyzed by the 1-(4-sulfobutyl)-3-methylimidazolium trifluoromethanesulfonate (1 mol) in only one hour at room temperature. The product from the reaction is isolated by liquid-liquid extraction with hexane and the acidic ionic liquid is easily recycled without any loss of activity (at the 5th recycling, Conversion=93% and Selectivity=100%).

¹ Jianzhou Gui, Xiaohui Cong, Dan Liu, Xiaotong Zhang, Zhide Hu b, Zhaolin Sun, Catalysis Communications, 5, 473–477, (2004)

² Jianzhou Gui, Dan Liu, Xiaomei Chen, Xiaotong Zhang, Lijuan Song, and Zhaolin Sun, React.Kinet.Catal.Lett., Vol. 90, No. 1,35–43 (2007)