

Protonation and complexation approaches for production of protic eutectic ionic liquids

ABSTRACT

4-formyl-N,N-dimethylbenzenaminium chloride (FDBC), carboxymethanaminium chloride (CMAC), 1,3-dihydroxy-2-(hydroxymethyl)propan-2-aminium chloride (DHPC), (R)-1-carboxy-2-mercaptoethanaminium chloride (CMEC) and 1-methyl-2-oxopyrrolidinium chloride (MOPC) were synthesised and complexed with either urea or oxalic acid at different molar ratios to form protic eutectic ionic liquids (PEILs). The melting point of the PEILs was measured using differential scanning calorimetry (DSC). Based on the melting point results, MOPC complexed with oxalic acid ([MOPC][O]) at a 1:1 molar ratio and DHPC complexed with urea ([DHPC][U]) at a 1:2 molar ratio were regarded as room temperature ionic liquids (RTILs). The solubility study showed that [MOPC][O] was able to fully dissolve soluble starch and rice starch (10 wt%) and partially dissolve sago starch.

Keyword: Protic eutectic ionic liquids (PEILs); Hydrochloride salts; Complexation; Protic ionic liquids; Deep eutectic solvent