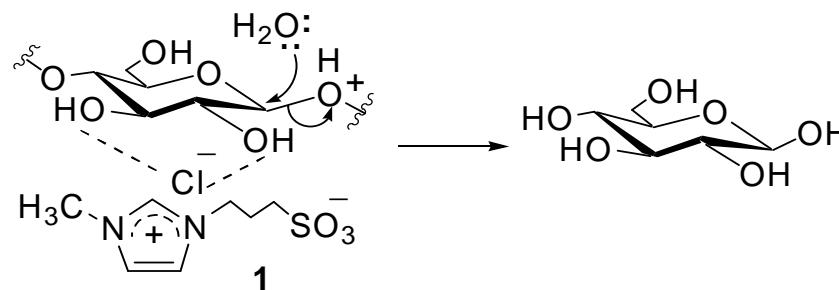


Cellulose Dissolution and Hydrolysis in Acidic Ionic Liquids

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Dilute aqueous solutions of 1-(1-propylsulfonic)-3-methylimidazolium chloride and *p*-toluenesulfonic acid are shown to be better catalysts than aqueous sulfuric acid of the same H⁺ ion concentration for the degradation of cellulose at moderate temperatures and pressures. For example, Sigmacell cellulose (DP ~ 450) in aqueous solutions of 1-(1-propylsulfonic)-3-methylimidazolium chloride (**1**), *p*-toluenesulfonic acid, and sulfuric acid of the same acid strength (0.0321 mole H⁺ ion /L) produced total reducing sugar (TRS) yields of 28.5, 32.6, and 22.0 % respectively, after heating at 170 °C for 3.0 hr.

Mechanism



Proposed mechanism for the hydrolysis of cellulose to reducing sugars and glucose in the aqueous acidic ionic liquid medium