Electronic Supplementary Information

Title: Direct HPLC Analysis of Cellulose Depolymerisation in Ionic Liquids

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Saccharides (0.5 wt%) were added to 0.2 g of $[C_2mim][(MeO)(H)PO_2]$ and the samples were gently stirred at 25 °C to obtain a clear homogeneous solution. The composition of glucose and cellulose was changed from 0 : 1.0 to 1.0 : 0 by weight and analysed with HPILC. In the obtained chromatograms, the peaks of glucose and cellulose were completely separated and their peak height was calculated independently. As shown in Fig. S1, there are linear correlations, and their concentration can be detected from the peak height. As mentioned in our previous paper,[1)] the relation between glucose fraction and the peak area of saccharides was also linear. These results indicate that HPILC can analyse the cellulose and its hydrolysate quantatively.

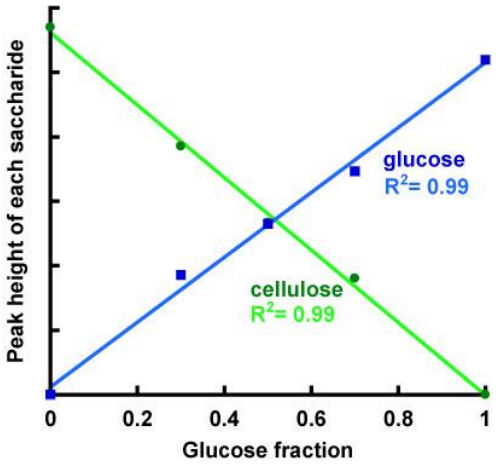

Fig. S1 Relation between glucose fraction in mixed samples composed of cellulose and glucose at each peak height.

1) Y. Fukaya, A. Tsukamoto, K. Kuroda and H. Ohno, *Chemical Communications*, 2011, **47**, 1994-1996.

The results in Fig. S2 show that each plot is at a different retention volume and size exclusion effect

was confirmed from 800,000 to 180. While the plot of glucose is at a slightly lower retention volume than expected, the plots of pullulan (Mw: 5,000) and glucose were well separated. To confirm the performance of HPILC, standard relation of HPILC and that of usual HPLC with water as an eluent were compared. While the slope of the standard relation of HPILC was slightly larger, two standard relations were similar. This indicated that relatively high resolution was obtained even when using ionic liquids, which are viscous liquids. These results show complicated samples such as hydrolysed cellulose can be analysed by HPILC in a single scan.

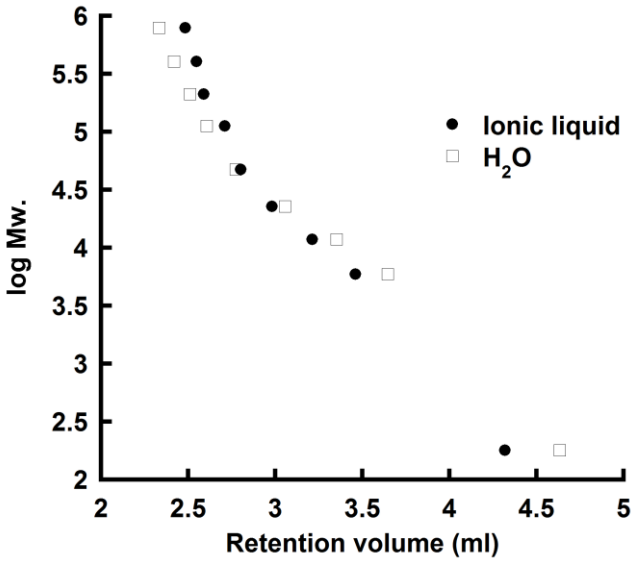

Fig. S2 Standard relation between retention volume and logarithm of molecular weight using pullulan (Mw: 800,000 to 5,000) and glucose (Mw: 180) as standard substance.