

## **Ionic Liquid-Based Aqueous Biphasic System for Lipase Extraction**

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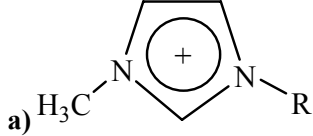
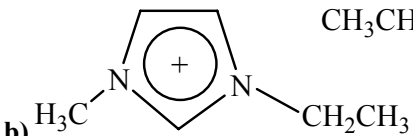
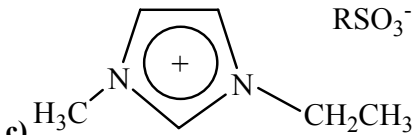
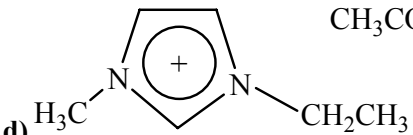
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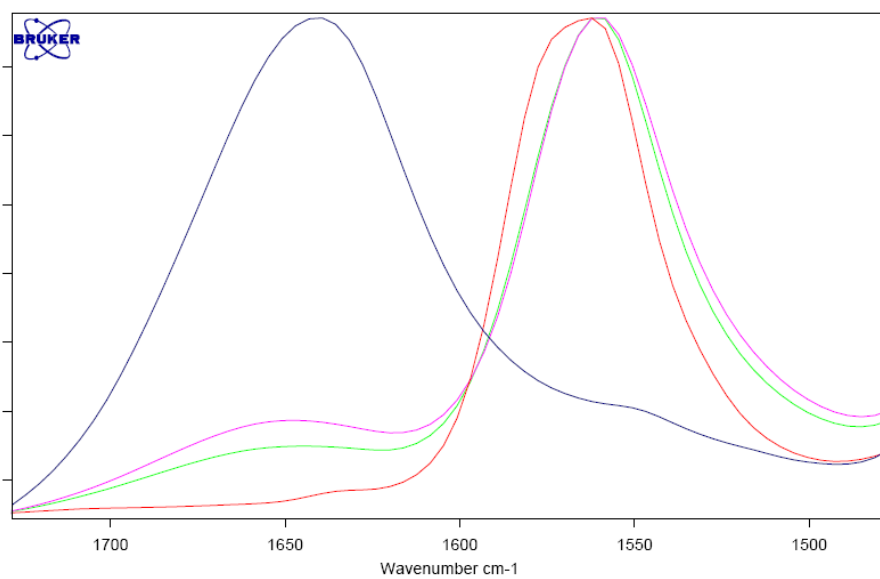
**Electronic Supplementary Information**

**TABLE 1** Schematic structure of ILs used. a) [RMIM] Cl ( $R = C_nH_{2n+2}$ ,  $n$  ranging from 2 to 5); b) [C<sub>2</sub>MIM] [ethylSO<sub>4</sub>]; c) [C<sub>2</sub>MIM] [RSO<sub>3</sub>] ( $R =$  ethyl and butyl); d) [C<sub>2</sub>MIM] [CH<sub>3</sub>COO].

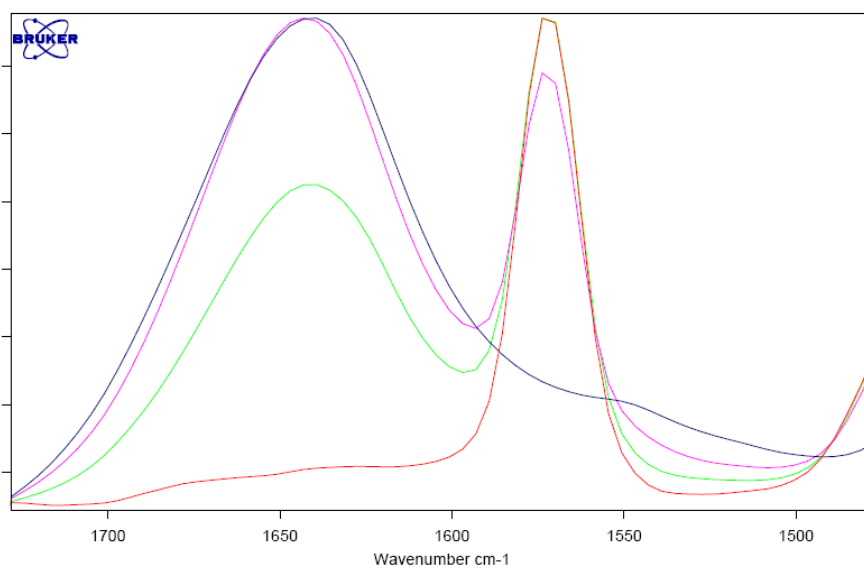
<p>a) </p>	<p>b) </p>
<p>c) </p>	<p>d) </p>

**Fig. 1** Comparison of the ATR-FTIR spectra of (blue) commercial *T. lanuginosus* lipase, (red) pure IL, (pink) lipase + IL after 15 min of incubation, (green) lipase + IL after 3 h of incubation. a) assays with [C<sub>2</sub>MIM] [CH<sub>3</sub>COO] and b) assays with [C<sub>2</sub>MIM] [C<sub>2</sub>SO<sub>4</sub>].

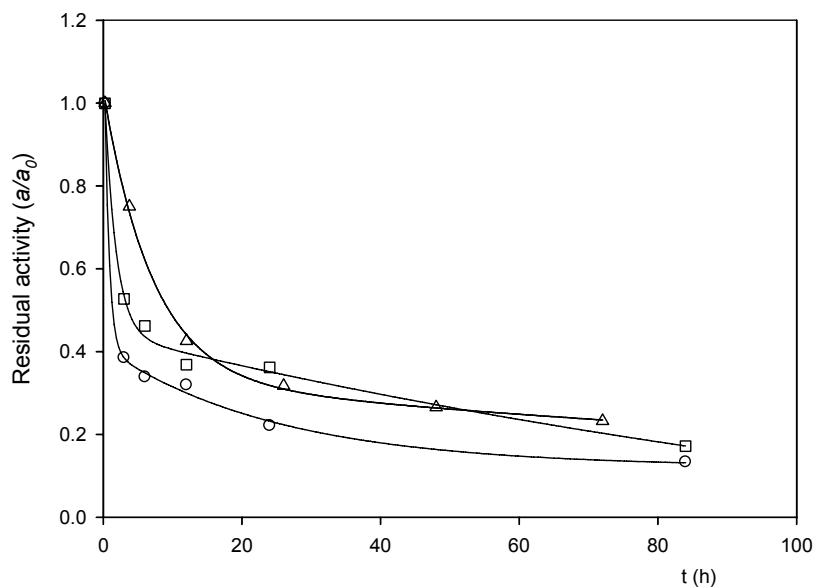
a)



b)



**Fig. 2** Thermal deactivation profiles of *T. lanuginosus* lipase in the presence of ( $\Delta$ ) Water, ( $\square$ ) [C<sub>2</sub>MIM] Cl and ( $\circ$ ) [C<sub>2</sub>MIM] [ethylSO<sub>4</sub>].



**Mathematical fittings**

An empirical mathematical model developed by Merchuk *et al.*<sup>37</sup> was used to fit the binodal using the following equation:

$$Y = M_1 \exp[(M_2^{0.5} + (M_3 X^3))] \quad (1)$$

where Y and X, are respectively, the IL and salt weight percentages, and  $M_1$ ,  $M_2$ , and  $M_3$  are constants obtained by regression.