

## Electronic Supplementary information (ESI)

### Lipase catalysed mono and di-acylation of secondary alcohols with succinic anhydride in organic media and ionic liquids

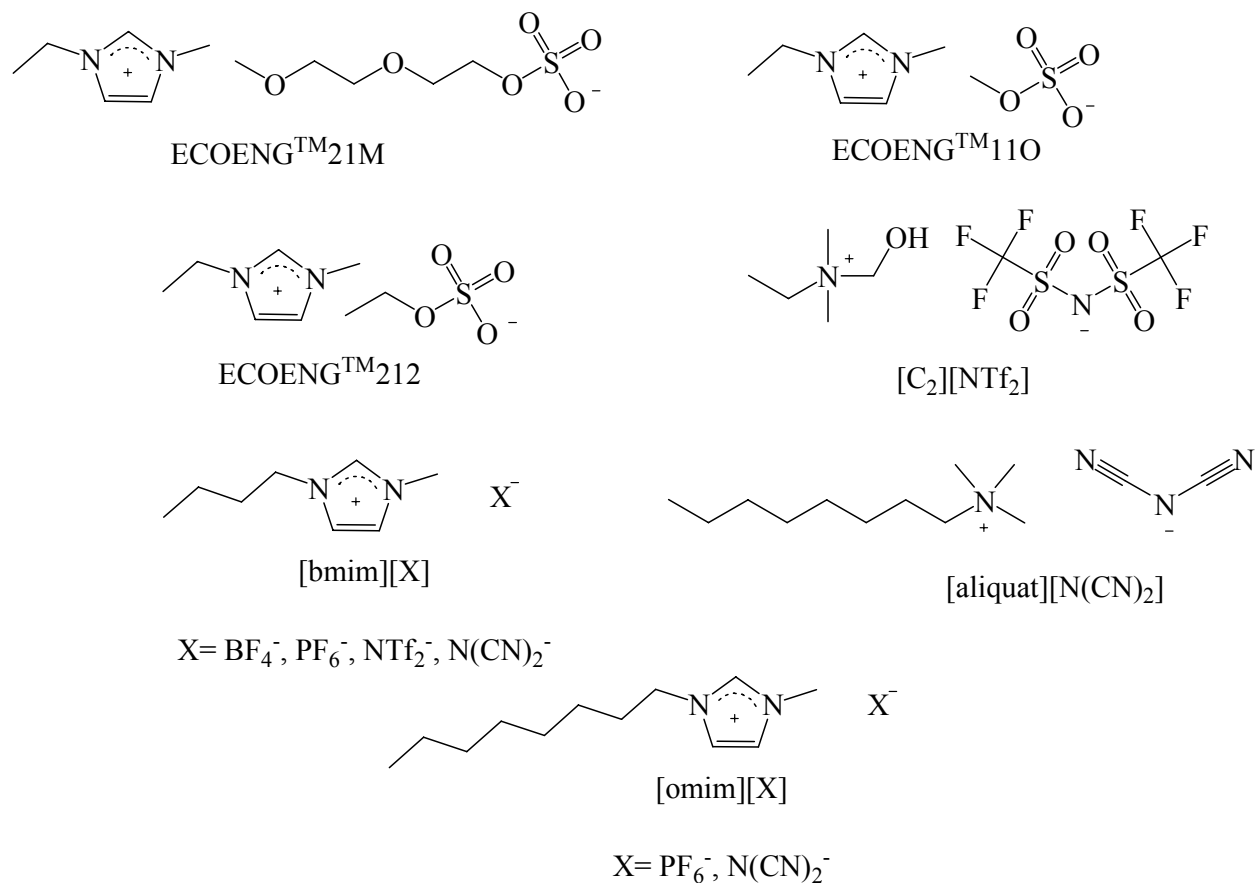
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### Reaction progress in different organic solvents and ionic liquids presented in scheme 1

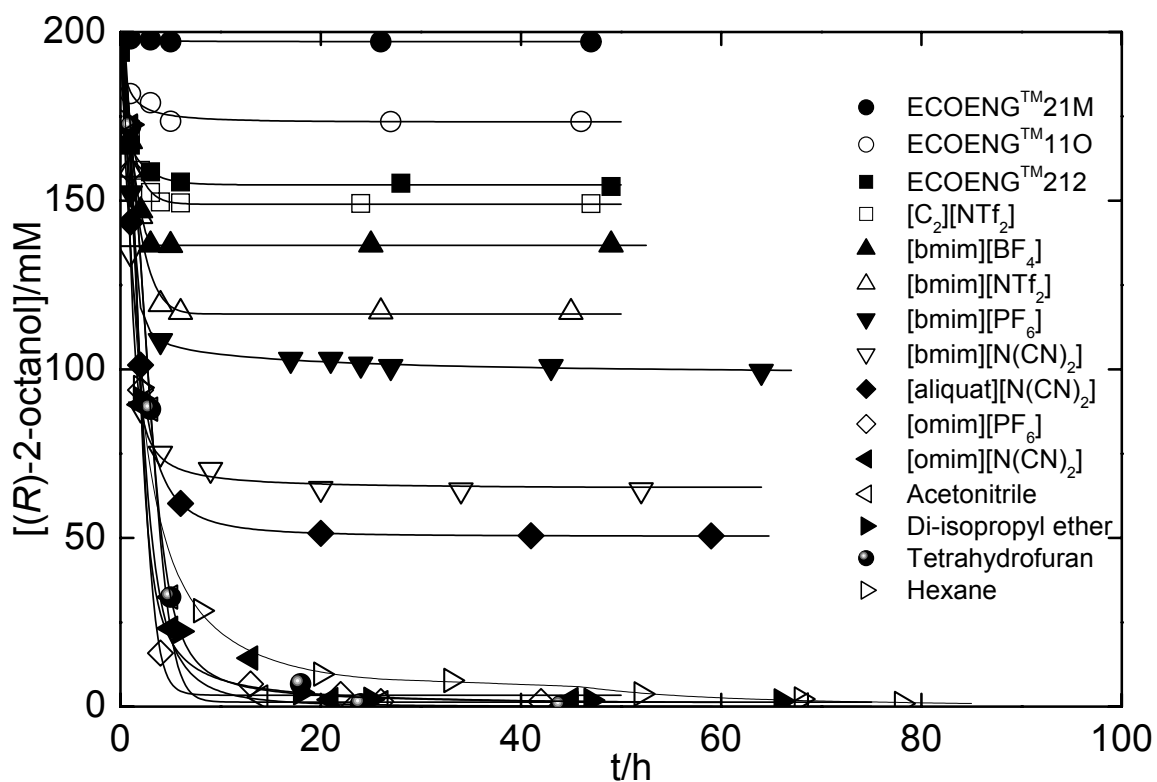
#### Scheme 1.



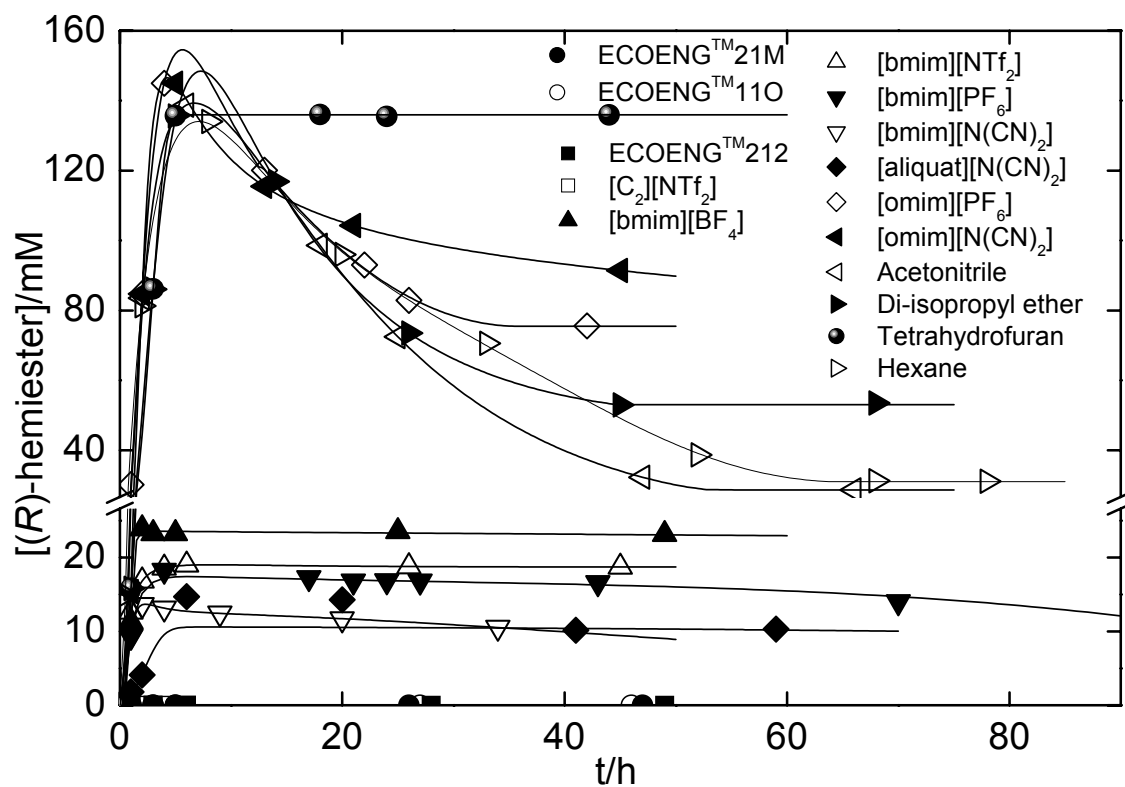
$^{13}\text{C}$ -NMR of  $[\text{C}_2][\text{NTf}_2]$  was carried out after reaction to show this RTIL did not react with succinic anhydride.

In some of the solvents, such as the ECOENG series, the enzyme was deactivated upon exposure to the solvent for less than 24 h.

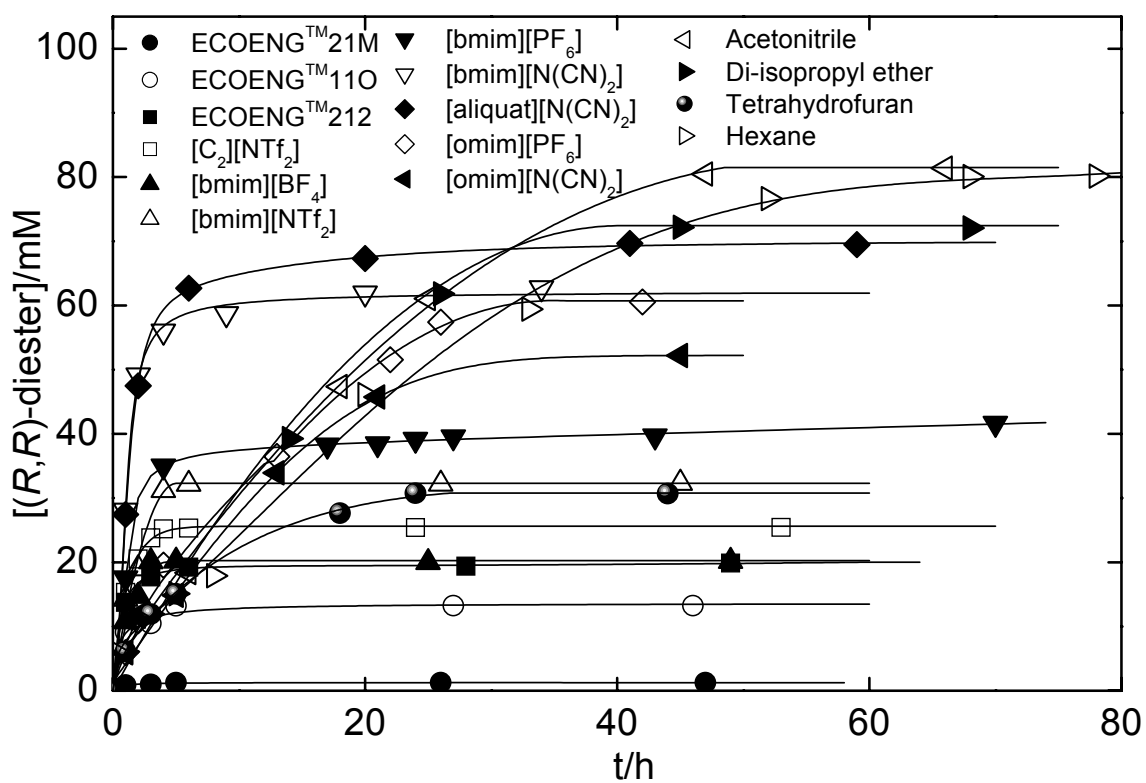
**Figure 1.** Reaction progress for (*R*)-2-octanol.  $[(R,S)\text{-}2\text{-octanol}] = 400 \text{ mM}$ .  $[\text{succinic anhydride}] = 800 \text{ mM}$ .  $a_w = 0.1$ .  $[\text{enzyme}] = 40 \text{ g L}^{-1}$ .  $T = 35 \text{ }^\circ\text{C}$ .



**Figure 2.** Reaction progress for the (*R*)-hemiester. [(*R,S*)-2-octanol] = 400 mM. [succinic anhydride] = 800 mM.  $a_w = 0.1$ . [enzyme] = 40 g L<sup>-1</sup>. T = 35 °C.



**Figure 3.** Reaction progress for the (*R,R*)-diester. [(*R,S*)-2-octanol] = 400 mM. [succinic anhydride] = 800 mM.  $a_w = 0.1$ . [enzyme] = 40 g L<sup>-1</sup>. T = 35 °C.



Conversion of the (*R*)-hemiester in *n*-hexane.

**Figure 4.** Conversion of the (*R*)-hemiester in *n*-hexane. [(*R*)-hemiester] = 134 mM.  $a_w = 0.1$ . [enzyme] = 40 g L<sup>-1</sup>. T = 35 °C.

