Supplementary Material (ESI) for Green Chemistry

Imidazolium dialkylphosphates - a class of versatile, halogen-free and hydrolysis stable ionic liquids

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Supporting Information

1-vinylimidazole hydrogenation - additional kinetic information

For estimating the temperature dependency of the reaction rate, four experiments were carried out at different temperatures (15 °C, 22 °C, 35 °C and 40 °C) at equal catalyst concentrations (0.188wt% Pd/C) and 30 bar hydrogen pressure. Figure S1 shows the concentration-time-profiles for the hydrogenation of 1-vinylimidazole to 1-ethylimidazole at 22 °C. After the determination of the rate constants and the reaction order, 0.8 in respect to 1-vinylimidazole, we calculated an activation energy of 11 kJ/mol. This value indicates that the reaction is influenced by mass transport phenomena within the temperature range investigated. The product 1-ethylimidazole is obtained in high quality. It is separated from the catalyst by simple filtration and is distilled prior to use in ionic liquid synthesis.

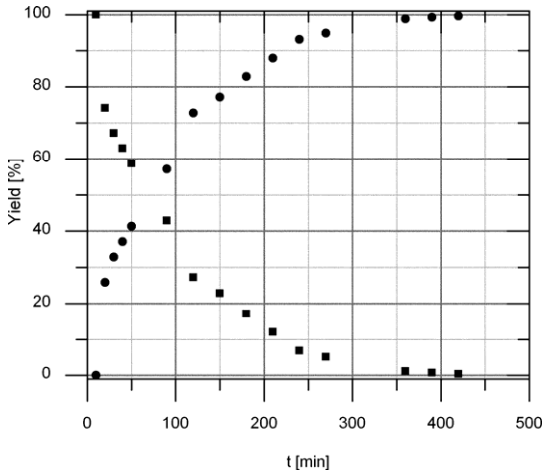

Fig. S1 Rates of formation and depletion for 1-vinylimidazole (▪) and 1-ethylimidazole (•) respectively. Reaction conditions: T = 22°C; P = 30 bar; catalyst concentration Pd/C (5 wt% on charcoal) = 0.188 wt%.