Supplementary Material for Organic & Biomolecular Chemistry
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Acetyl nitrate nitrations in [bmpy][N(Tf)$_2$] and [bmpy][OTf], and the recycling of ionic liquids

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Kinetic data

All reactions were performed at 25 ºC under a nitrogen atmosphere. Graphs of concentration against time were plotted, and from these, the initial rate of reaction (V_0) was estimated. These data are reported below for the nitration of toluene in dichloromethane where $[Ac_2O]_0$ was held constant (table S1) and where $[HNO_3]_0$ was held constant (table S2).

Likewise, data are reported for the nitration of chlorobenzene in [bmpy][N(Tf)$_2$] where $[Ac_2O]_0$ was held constant (table S3) and where $[HNO_3]_0$ was held constant (table S4).

By plotting $\log_{10} V_0$ against $\log_{10} [X]_0$, it is possible to estimate the order of reaction with respect to [X]. This has been done, and is reported in each table.

Table S1 Nitration of toluene in CH_2Cl_2 with varied $[HNO_3]_0$; $[Ac_2O]_0$ *ca.* 0.84 M.

$[HNO_3]_0$ / M	V_0 / M min^{-1}	Approx. order wrt $[HNO_3]_0$
0.39	0.05	
0.44	0.06	3
0.65	0.25	

Table S2 Nitration of toluene in CH_2Cl_2 with varied $[Ac_2O]_0$; $[HNO_3]_0$ *ca.* 0.43 M.

$[Ac_2O]_0$ / M	V_0 / M min^{-1}	Approx. order wrt $[Ac_2O]_0$
0.56	0.012	
0.88	0.060	3
1.0	0.070	

Table S3 Nitration of chlorobenzene in [bmpy][N(Tf)$_2$] with varied $[HNO_3]_0$; $[Ac_2O]_0$ *ca.* 0.82 M.

$[HNO_3]_0$ / M	V_0 / M min^{-1}	Approx. order wrt $[HNO_3]_0$
0.43	0.067	
0.48	0.083	2
0.49	0.083	
0.67	0.17	

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Table S4 Nitration of chlorobenzene in [bmpy][$N(Tf)_2$] with varied $[Ac_2O]_0$; $[HNO_3]_0$ *ca.* 0.56 M.

$[Ac_2O]_0$ / M	V_0 / M min^{-1}	Approx. order wrt $[Ac_2O]_0$
0.67	0.011	
0.74	0.020	5 or higher
1.0	0.10	