Supplementary Information

Ionic liquid 1,3-disulfonic acid imidazolium hydrogen sulfate: a novel and highly efficient catalyst for the preparation of 1-carbamatoalkyl-2-naphthols and 1-amidoalkyl-2-naphthols

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Experimental

All chemicals were purchased from Merck, Aldrich or Fluka Chemical Companies. All known compounds were identified by comparison of their melting points and NMR data with those reported in the literature. The ^{1}H NMR (300 or 400 MHz) and ^{13}C NMR (75 or 100 MHz) were run on Bruker Avance DPX FT-NMR spectrometers (δ in ppm). Mass spectra were obtained with Shimadzu GC-MS-QP 1100 EX model. Melting points were recorded on a Büchi B-545 apparatus in open capillary tubes.

Selected spectral data of the products

Methyl (2-hydroxynaphthalen-1-yl)(phenyl)methylcarbamate (1a)

^{1}H NMR (400 MHz, DMSO-d_6): δ 3.59 (s, 3H), 6.90 (d, J = 8.8 Hz, 1H), 7.17-7.19 (m, 1H),7.24-7.30 (m, 6H), 7.41 (t, J = 7.6 Hz, 1H), 7.68 (d, J = 5.6 Hz, 1H), 7.77-7.83 (m, 2H), 7.95 (d, J = 8.0 Hz, 1H), 10.14 (s, 1H); ^{13}C NMR (100 MHz, DMSO-d_6): δ 50.8, 52.1, 118.9, 119.3, 123.0, 126.5, 126.8, 127.0, 128.5, 128.8, 129.0, 129.7, 132.5, 142.8, 153.3, 157.0.

Methyl (2-hydroxynaphthalen-1-yl)(4-nitrophenyl)methylcarbamate (1c)

^{1}H NMR (400 MHz, DMSO-d_6): δ 3.62 (s, 3H), 6.99 (d, J = 8.4 Hz, 1H), 7.24-7.32 (m, 2H), 7.53 (t, J = 8.0 Hz, 1H), 7.50 (d, J = 8.8 Hz, 2H), 7.83 (t, J = 8.4 Hz, 2H), 7.88 (s, 1H), 7.93 (d, J = 6.4 Hz, 1H), 8.16 (d, J = 8.8 Hz, 2H), 10.25 (s, 1H); ^{13}C NMR (100 MHz, DMSO-d_6): δ 50.7, 52.2, 118.4, 118.8, 123.1, 123.2, 123.8, 127.3, 127.6, 128.8, 129.1, 130.3, 132.4, 146.5, 151.1, 153.6, 157.2.

Methyl (4-bromophenyl)(2-hydroxynaphthalen-1-yl)methylcarbamate (1e)

^{1}H NMR (400 MHz, DMSO-d_6): δ 3.59 (s, 3H), 6.85 (d, *J* = 8.8 Hz, 1H), 7.19 (d, *J* = 8.0 Hz, 1H), 7.23-7.31 (m, 2H), 7.41 (t, *J* = 8.0 Hz, 2H), 7.47 (d, *J* = 8.4 Hz, 2H), 7.72 (d, *J* = 5.2 Hz, 1H), 7.78-7.83 (m, 2H), 7.91 (d, *J* = 7.2 Hz, 1H), 10.18 (s, 1H); ^{13}C NMR (100 MHz, DMSO-d_6): δ 50.4, 52.1, 118.8, 118.9, 119.9, 123.0, 127.1, 128.7, 128.8, 129.0, 130.0, 131.4, 132.4, 142.4, 153.4, 157.1; MS (*m/z*): 386 (M^+).

N-[(2-Hydroxynaphthalen-1-yl)(4-bromorophenyl)methyl)]acetamide (2d)

^{1}H NMR (300 MHz, DMSO-d_6): δ 1.98 (s, 3H), 6.98-7.34 (m, 8H), 7.61-7.67 (m, 2H), 7.86 (d, *J* = 10.1 Hz, 1H), 8.27 (d, *J* = 8.1 Hz, 1H), 9.74 (s, 1H); ^{13}C NMR (75 MHz, DMSO-d_6): δ 23.7, 46.5, 117.8, 118.7, 121.2, 122.4, 123.8, 126.9, 128.4, 128.7, 129.3, 130.2, 131.0, 133.2, 139.8, 152.6, 168.4.

N-[(2-Hydroxynaphthalen-1-yl)(*p*-tolyl)methyl]acrylamide (2f)

^{1}H NMR (300 MHz, DMSO-d_6): δ 2.21 (s, 3H), 5.59 (d, *J* = 9.6 Hz, 1H), 6.12 (d, *J* = 16.8 Hz, 1H), 6.59 (dd, *J* = 15.9, 10.2 Hz, 1H), 7.04-7.35 (m, 8H), 7.74-7.85 (m, 3H), 8.68 (d, *J* = 7.5 Hz, 1H), 10.00 (s, 1H); ^{13}C NMR (75 MHz, DMSO-d_6): δ 21.0, 49.5, 118.9, 119.1, 122.8, 123.8, 126.0, 126.5, 126.8, 128.9, 129.3, 131.8, 132.3, 135.7, 139.6, 153.7, 164.9.

N-[(2-Hydroxynaphthalen-1-yl)(4-methoxyphenyl)methyl]benzamide (2i)

^{1}H NMR (400 MHz, DMSO-d_6): δ 3.69 (s, 3H), 6.86 (d, *J* = 8.4 Hz, 2H), 7.24-7.34 (m, 5H), 7.47-7.57 (m, 4H), 7.80-7.89 (m, 4H), 8.12 (d, *J* = 8.4 Hz, 2H), 10.39 (s, 1H); ^{13}C NMR (100 MHz, DMSO-d_6): δ 49.4, 55.5, 114.1, 118.9, 119.2, 123.2, 127.2, 127.6, 127.9, 128.2, 128.7, 128.9, 129.0, 129.7, 131.8, 132.7, 134.3, 134.9, 153.5, 158.5, 166.0.