

Supporting Information

NaF Regulated Aqueous Phase Synthesis of Aromatic Amides and Imines Catalyzed by Au/HT

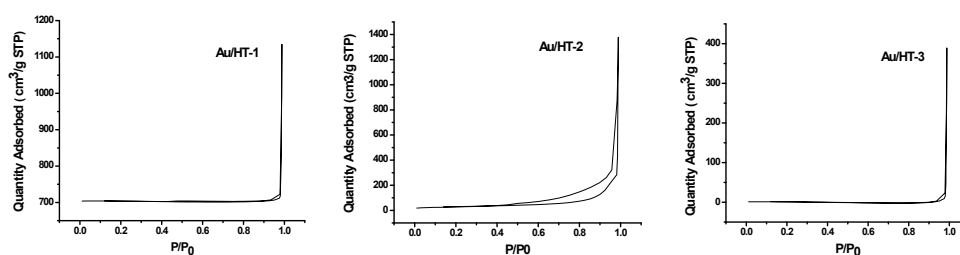
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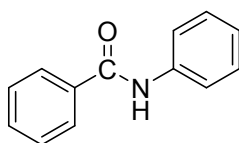
Table S1 Composition and porosity parameters of Au/HT with various Mg/Al molar ratios.

Catalyst	Au loading (wt.%)	S _{BET} (m ² g ⁻¹) ^b	Pore Size(nm) ^b	Pore Volume (cm ³ g ⁻¹) ^b
Au/HT-1	3.40	7.1	116.2	0.67
Au/HT-2	3.67	96.2	34.88	2.1
Au/HT-3	3.39	2.6	111.9	0.60



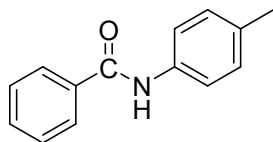
HMR

N-phenylbenzamide: (Table 2, Entry 1)



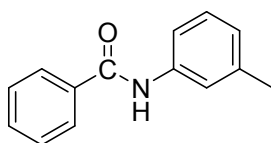
This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 21/9, v/v; Silica Gel: 200-300 mesh;) to give the product as a white solid. m.p. 162-163 °C. ¹H NMR (400MHz, CDCl₃, ppm): δ 7.11-7.15 (t, 1H), δ 7.33-7.37 (t, 2H), δ 7.43-7.47 (t, 2H), δ 7.51-7.54 (t, 1H), δ 7.62-7.64 (d, 2H), δ 7.83-7.85 (d, 2H), δ 7.91 (s, 1H); *m/z* (rel. int.) 198(7), 197(5), 106(8), 105(100), 77(46), 51(11).

N-p-phenylbenzamide: (Table 2, Entry 2)



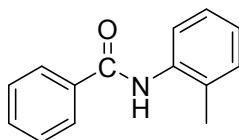
This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 1/9, v/v; Silica Gel: 200-300 mesh;) to give the product as a white solid. m.p. 157-158 °C. ¹H NMR (400MHz, CDCl₃, ppm): δ 2.34 (s, 3H), δ 7.15-7.17 (d, 2H), δ 7.46-7.53 (m, 5H), δ 7.82-7.86 (m, 3H); *m/z* (rel. int.) 212(11), 211(67), 106(9), 105(100), 77(41), 51(7).

N-m-phenylbenzamide: (**Table 2, Entry 3**)



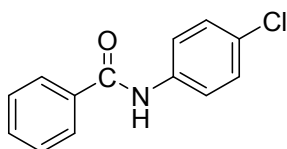
This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 1/9, v/v; Silica Gel: 200-300 mesh;) to give the product as a white solid. m.p. 119-120 °C. ¹H NMR (400MHz, CDCl₃, ppm): δ 2.36 (s, 3H), δ 6.95-6.97 (d, 1H), δ 7.22-7.26 (m, 1H), δ 7.40-7.55 (m, 5H), δ 7.86-7.88 (d, 3H); *m/z* (rel. int.) 212(11), 211(71), 106(9), 105(100), 77(41), 51(7)

N-o-phenylbenzamide: (**Table 2, Entry 4**)



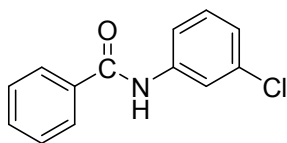
This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 1/9, v/v; Silica Gel: 200-300 mesh;) to give the product as a white solid. m.p. 142-143 °C. ¹H NMR (400MHz, CDCl₃, ppm): δ 2.33 (s, 3H), δ 7.10-7.14 (t, 1H), δ 7.22-7.24 (m, 2H), δ 7.47-7.58 (m, 3H), δ 7.70 (s, 1H), δ 7.87-7.89 (m, 2H), δ 7.93-7.94 (d, 1H); *m/z* (rel. int.) 212(10), 211(65), 106(12), 105(100), 77(41), 51(7)

N-(4-chlorophenyl)phenylbenzamide: (**Table 2, Entry 5**)



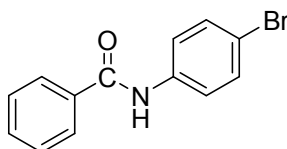
This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 1/9, v/v; Silica Gel: 200-300 mesh;) to give the product as a white solid. m.p. 199-200 °C. ¹H NMR (400MHz, D⁶-DMSO, ppm): δ 7.36-7.39 (m, 2H), δ 7.48-7.59 (m, 3H), δ 7.77-7.80 (m, 2H), δ 7.90-7.92 (t, 2H), δ 10.36 (s, 1H); *m/z* (rel. int.) 233(14), 232(7), 231(41), 106(8), 105(100), 77(39), 51(8)

N-(3-chlorophenyl)phenylbenzamide: (Table 2, Entry 6)



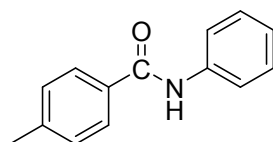
This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 1/9, v/v; Silica Gel: 200-300 mesh;) to give the product as a white solid. m.p. 122-123 °C. ¹H NMR (400MHz, CDCl₃, ppm): δ 7.11-7.13 (d, 1H), δ 7.25-7.29 (m, 1H), δ 7.46-7.49 (t, 3H), δ 7.63-7.67 (m, 1H), δ 7.77 (s, 1H), δ 7.83-7.85 (d, 2H), δ 7.93 (s, 1H); *m/z* (rel. int.) 233(9), 231(25), 106(8), 105(100), 77(46), 51(12)

N-(4-bromophenyl)phenylbenzamide: (Table 2, Entry 7)



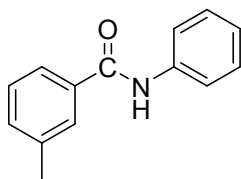
This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 1/9, v/v; Silica Gel: 200-300 mesh;) to give the product as a white solid. m.p. 201-202 °C. ¹H NMR (400MHz, D⁶-DMSO, ppm): δ 7.11 (s, 1H), δ 7.36 (s, 2H), δ 7.76 (s, 4H), δ 7.90-7.92 (d, 2H), δ 10.31 (s, 1H); *m/z* (rel. int.) 277(17), 275(19), 227(8), 207(11), 106(8), 105(100), 77(38), 51(11)

4-methyl-N-phenylbenzamide: (Table 2, Entry 8)



This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 1/9, v/v; Silica Gel: 200-300 mesh;) to give the product as a white solid. m.p. 147-148 °C. ¹H NMR (400MHz, CDCl₃, ppm): δ 2.39 (s, 3H), δ 7.10-7.14 (t, 1H), δ 7.23-7.25 (t, 2H), δ 7.32-7.35 (t, 2H), δ 7.61-7.63 (d, 2H), δ 7.73-7.75 (d, 2H), δ 7.88 (s, 1H); *m/z* (rel. int.) 212(7), 211(44), 120(10), 119(100), 91(37), 90(5), 65(18), 39(5)

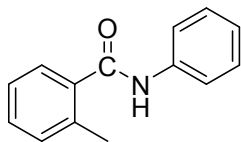
3-methyl-N-phenylbenzamide: (Table 2, Entry 9)



This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 1/9, v/v; Silica Gel: 200-300 mesh;) to give the product

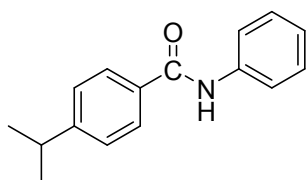
as a white solid. m.p. 124-125 °C. ¹H NMR (400MHz, CDCl₃, ppm): δ 2.41 (s, 3H), δ 7.12-7.16 (t, 1H), δ 7.34-7.38 (t, 4H), δ 7.83-7.88 (t, 4H), δ 7.87 (s, 1H); *m/z* (rel. int.) 212(9), 211(60), 120(9), 119(100), 91(37), 65(13).

2-methyl-N-phenylbenzamide: (Table 2, Entry 10)



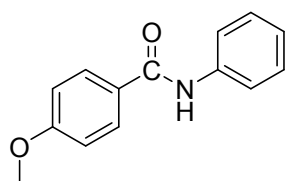
This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 1/9, v/v; Silica Gel: 200-300 mesh;) to give the product as a white solid. m.p. 125-126 °C. ¹H NMR (400MHz, CDCl₃, ppm): δ 2.48 (s, 3H), δ 7.12-7.15 (t, 1H), δ 7.21-7.25 (m, 2H), δ 7.33-7.37 (t, 3H), δ 7.44-7.46 (d, 1H), δ 7.55 (s, 1H), δ 7.59-7.61 (d, 2H); *m/z* (rel. int.) 211(24), 194(8), 120(9), 119(100), 91(46), 65(20), 39(7).

4-isopropyl-N-phenylbenzamide: (Table 2, Entry 11)



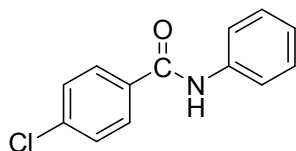
This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 1/9, v/v; Silica Gel: 200-300 mesh;) to give the product as a white solid. m.p. 1117-118 °C. ¹H NMR (400MHz, CDCl₃, ppm): δ 1.26-1.28 (m, 6H), δ 2.93-3.00 (m, 1H), δ 7.11-7.15 (t, 1H), δ 7.30-7.37 (m, 4H), δ 7.63-7.66 (d, 2H), δ 7.78-7.80 (d, 2H), δ 7.90 (s, 1H), δ 7.59-7.61 (d, 2H); *m/z* (rel. int.) 239(32), 148(12), 147(100), 91(9).

4-methoxy-N-phenylbenzamide: (Table 2, Entry 12)



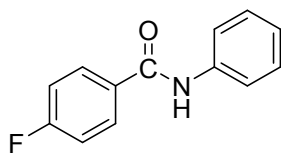
This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 1/9, v/v; Silica Gel: 200-300 mesh;) to give the product as a white solid. m.p. 173-174 °C. ¹H NMR (400MHz, CDCl₃, ppm): δ 3.87 (s, 3H), δ 6.96-6.97 (d, 2H), δ 7.12-7.15 (t, 1H), δ 7.34-7.38 (d, 4H), δ 7.62-7.64 (d, 2H), δ 7.79 (s, 1H), δ 7.83-7.85 (d, 2H); *m/z* (rel. int.) 227(21), 136(9), 135(100), 107(6), 92(12), 77(15), 65(5), 64(6).

4-chloro-N-phenylbenzamide: (Table 2, Entry 13)



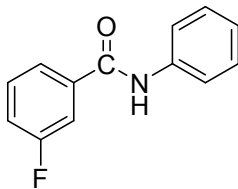
This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 1/9, v/v; Silica Gel: 200-300 mesh;) to give the product as a white solid. m.p. 200-201 °C. ¹H NMR (400MHz, D⁶-DMSO, ppm): δ 7.10-7.13 (t, 1H), δ 7.34-7.38 (t, 2H), δ 7.60-7.62 (d, 2H), δ 7.76-7.78 (d, 2H), δ 7.98-8.00 (d, 2H), δ 10.31 (s, 1H); *m/z* (rel. int.)

4-fluoro-N-phenylbenzamide: (Table 2, Entry 14)



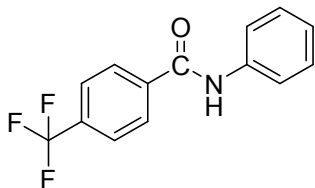
This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 1/9, v/v; Silica Gel: 200-300 mesh;) to give the product as a white solid. m.p. 182-183 °C. ¹H NMR (400MHz, D⁶-DMSO, ppm): δ 7.08-7.12 (t, 1H), δ 7.33-7.39 (m, 4H), δ 7.75-7.77 (d, 2H), δ 8.02-8.05 (m, 2H), δ 10.28 (s, 1H); *m/z* (rel. int.) 215(39), 207(14), 124(8), 123(100), 95(35), 75(8), 28(7).

3-fluoro-N-phenylbenzamide: (Table 2, Entry 15)



This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 1/9, v/v; Silica Gel: 200-300 mesh;) to give the product as a white solid. m.p. 151-152 °C. ¹H NMR (400MHz, CDCl₃, ppm): δ 7.14-7.18 (t, 1H), δ 7.22-7.26 (m, 1H), δ 7.35-7.38 (t, 2H), δ 7.41-7.47 (m, 1H), δ 7.56-7.83 (m, 4H), δ 7.88 (s, 1H); *m/z* (rel. int.) 216(15), 215(39), 207(14), 124(8), 123(100), 95(35), 75(8), 28(7).

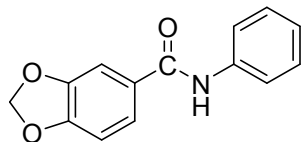
N-phenyl-4-(trifluoromethyl)benzamide: (Table 2, Entry 16)



This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 1/9, v/v; Silica Gel: 200-300 mesh;) to give the product as a white solid. m.p. 194-195 °C. ¹H NMR (400MHz, D⁶-DMSO, ppm): δ 7.09-7.11 (t, 1H), δ 7.32-7.36 (t,

2H), δ 7.74-7.76 (d, 2H), δ 7.87-7.90 (d, 2H), δ 8.10-8.12 (d, 2H), δ 10.46 (s, 1H); m/z (rel. int.) 266(8), 265(47), 174(9), 173(100), 145(53), 95(6), 65(6).

N-phenylbenzo[d][1,3]dioxole-5-carboxamide: (**Table 2, Entry 17**)



This compound was prepared following the above general procedure and purified by column chromatography (ethyl acetate / petroleum ether = 1/9, v/v; Silica Gel: 200-300 mesh;) to give the product as a white solid. m.p. 145-146 °C. ^1H NMR (400MHz, CDCl_3 , ppm): δ 6.02 (s, 2H), δ 6.81-6.83 (d, 1H), δ 7.09-7.13 (t, 1H), δ 7.31-7.37 (m, 4H), δ 7.58-7.60 (d, 2H), δ 7.81 (s, 1H); m/z (rel. int.) 227(21), 136(9), 135(100), 107(6), 92(12), 77(15), 65(5), 64(6).

