Electronic Supplementary Information

Shape-dependent Catalytic Activity of Fe_3O_4 Nanostructures under the Influence of External Magnetic Field for the Multicomponent Reactions in Aqueous Media

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Spectroscopic Data of the Synthesized Compounds in the Table 4:

Entry 1, 2, 2, 4, 5-triphenyl-1H-imidazole: m. p. 273 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 7.18–8.07 (m, 15H), 12.30 (s, 1H) ppm.

Entry 3, 2-(4-Methyl-phenyl)-4,5-dipheny-1H-imidazole: m. p. 241 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 2.36 (s, 3H, CH_3), 7.31–7.65 (m, 12H, Ar–H), 8.06-8.09 (m, 2H, Ar–H), 12.67 (s, 1H, NH), ppm.

Entry 4, 2–(4–Methoxy–phenyl)–4,5 diphenyl–1H-imidazole: m. p. 227 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 3.84 (s, 3H, OCH_3), 7.19–7.24 (m, 2H, Ar–H), 7.42–7.55 (m, 10H, Ar–H), 8.11–8.18 (m, 2H, Ar–H) 12.48 (s, NH) ppm.

Entry 5, 2-(3,4-Dimethoxyphenyl)-4,5-diphenyl-1H-imidazole: m. p. 216 °C; ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 3.81 (s, 3H, OCH_3), 3.88 (s, 3H, OCH_3), 7.19–7.82 (m, 13H, Ar–H), 12.50 (brs, 1H, NH) ppm.

Entry 6, 2-(2-Methoxyphenyl)-4,5-diphenyl-1H-imidazole: m. p. 210–211 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 3.89 (s, 3H, OCH_3), 7.04–7.50 (m, 13H, Ar–H), 7.97–8.05 (m, 1H), 11.78 (s, 1H, NH) ppm.

Entry 7, 2-(3,5-Dimethylphenyl)-1,4,5-triphenyl-1H-imidazole: m. p. 175–177 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): 2.31 (s, 3H, CH_3), 2.56 (s, 3H, CH_3), 7.03–7.60 (m, 13H, Ar–H), 12.97 (brs, 1H, NH) ppm.

Entry 8, 2-(3,5-Dimethoxyphenyl)-1,4,5-triphenyl-1H-imidazole: m. p. 181–182 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 3.82 (s, 3H, OCH_3), 3.89 (s, 3H, OCH_3), 7.40–8.12 (m, 13H, Ar–H), 11.87 (brs, 1H, NH) ppm.

Entry 9, 2-(2-Naphthyl)-4,5-diphenyl-1H-imidazole: m. p. 273–274 °C, ^{1}H NMR (d_6-DMSO, TMS, 400 MHz): δ = 7.23 (t, 1H, J = 7.60 Hz, Ar–H) 7.30 (t, 2H, J= 7.90 Hz, Ar–H), 7.40 (t, 1H,

J=7·60 Hz, Ar–H), 7.45 (t, 2H, J = 7.90 Hz, Ar–H), 7.55–7.63 (m, 6H, Ar–H) 7.90–8.05 (m, 3H, Ar–H), 8.17–8.28 (m, 1H, Ar–H), 8.57 (s, 1H, Ar–H), 12.78 (s, 1H, NH) ppm.

Entry 10, [4- (4, 5-Diphenyl-1H-imidazole-2-yl)-phenyl]-dimethylamine: m. p. 257–259 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 2.94 (s, 6H, CH_3), 6.77 (d, J = 8.4 Hz, 2H, Ar–H), 7.19–7.52 (m, 10H, Ar–H), 7.87 (d, J = 8.4 Hz, 2H, Ar–H), 12.31 (s, 1H, NH) ppm.

Entry 11, 2-Isopropyl-4,5-diphenyl-1H-imidazole: m. p. 233–234 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 1.30 (d, J=7.2 Hz, 6H, CH_3), 2.98 (q, J=7.2 Hz, 1H, CH), 7.15–7.50 (m, 10H, Ar–H), 11.97 (s, 1H, NH) ppm.

Entry 12, 2-(4,5-Diphenyl-1H-imidazol-2-yl)-phenol: m. p. 202–203 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 7.49–6.91 (m, 13H, Ar–H), 8.07 (brs, 1H, OH), 12.93 (s, 1H, Ar–H), 12.98 (s, 1H, NH) ppm.

Entry 13, 3-(4,5-Diphenyl-1H-imidazol-2-yl)-phenol: m. p. 259–261 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 7.47–7. 23 (m, 14H, Ar–H), 9.61 (s, 1H, OH), 12.57 (s, 1H, NH) ppm.

Entry 14, 4-(4,5-Diphenyl-1H-imidazol-2-yl)-phenol: m. p. 232–234 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 6.85 (d, J=8.4 Hz, 2H, Ar–H), 7.19–7.51 (m, 10H, Ar–H), 7.88 (d, J=8.4 Hz, 2H, Ar–H), 9.69 (s, 1H, OH), 12.37 (s, 1H, NH) ppm.

Entry 15, 2-(4,5-Diphenyl-1H-imidazol-2-yl)-5-nitrophenol: m. p. 218–220 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 7.16–7.54 (m, 12H, Ar–H), 8.18 (s, 1H, Ar–H), 9.14 (s, 1H, Ar–H), 13.84 (s, 1H, NH) ppm.

Entry 16, 2-(3-Nitrophenyl)-4,5-diphenyl-1H-imidazole: m. p. 300-301 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 7.52–7.32 (m, 10H, Ar–H), 7.80 (m, 1H), 8.24 (d, J = 7.8 Hz, 1H, Ar–H), 8.53 (d, J = 7.5 Hz, 1H, Ar–H), 8.95 (s, 1H, Ar–H), 13.10 (s, 1H, NH) ppm.

Entry 17, 2-(2-Nitrophenyl)-4,5-diphenyl-1H-imidazole: m. p. 230–232 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 7.20–8.00 (m, 14H, Ar–H), 12.93 (s, 1H, NH) ppm.

Entry 18, 2-(4-Nitrophenyl)-4,5-diphenyl-1H-imidazole: m. p. 199–201 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 7.40–8.00 (m, 14H, Ar–H), 12.78 (s, 1H, NH), ppm.

Entry 20, 2-(4-Chlorophenyl)-4,5-diphenyl-1H-imidazole: m. p. 264–265 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 7.08–7.37 (m, 10H, Ar–H), 7.43–7.52 (m, 2H, Ar–H), 7.74–7.89 (m, 2H, Ar–H), 12.74 (brs, 1H, NH) ppm.

Entry 21, 2-(2-Chlorophenyl)-4,5-diphenyl-1H-imidazole: m. p. 190–192 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 7.04 (d, J=7.8 Hz, 2H, Ar–H), 7.20–7.55 (m, 10H, Ar–H), 8.02 (d, J = 7.8 Hz, 2H, Ar–H), 12.51 (s, 1H, NH) ppm.

Entry 22, 2-(4-Bromophenyl)-4,5-diphenyl-1H-imidazole: m. p. 249–251 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 7.19–7.69 (m, 10H, Ar–H), 7.68 (d, J = 8.2 Hz, 2H, Ar–H), 8.00 (d, J = 8.2 Hz, 2H, Ar–H), 11.55 (brs, 1H, NH) ppm.

Entry 23, 3-(4,5-Diphenyl-1H-imidazol-2-yl)pyridine: m. p. 221–222 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): 7.38–7.50 (m, 10H, Ar–H), 7.55 (t, J = 7.1 Hz, 1H, Ar–H), 8.40 (d, J = 6.0 Hz, 1H, Ar–H), 8.68 (d, J = 6.0 Hz,1H, Ar–H) 9.22 (s, 1H, Ar–H), 12.98 (s, 1H, NH) ppm.

Entry 24, 4-(4,5-Diphenyl-1H-imidazol-2-yl)pyridine: m. p. 219 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): 7.39–7.52 (m, 10H, Ar–H), 8.24 (d, J = 7.5 Hz, 2H, Ar–H), 8.73 (d, J = 7.5 Hz, 2H, Ar–H), 12.89 (s, 1H, NH), ppm.

Entry 25, 2-Methyl-4,5-diphenyl-1H-imidazole: m. p. 240–241 °C, ^{1}H NMR (d_6-DMSO, TMS, 300 MHz): δ = 2.31 (s, 3H, CH_3), 7.21–8.08 (m, 10H, Ar–H), 12.05 (s, 1H, NH), ppm.

Entry 26, 2-Propyl-4,5-diphenyl-1H-imidazole: m. p. 256–257 °C, ^{1}H NMR ($CDCl_3$, 300 MHz) δ = 0.94 (t, J = 7.1 Hz, 3H, CH_3), 1.60–1.71 (m, 2H, CH_2), 2.53 (t, J = 7.2 Hz, 2H, CH_2), 7.21–7.89 (m, 10H, Ar–H), 13.36 (s, NH).

Entry 27, 2-Octyl-4,5-diphenyl-1H-imidazole: m. p. 281–282 °C, ^{1}H NMR ($CDCl_3$, 300 MHz) δ = 0.88 (t, J = 7.0 Hz, 3H, CH_3), 1.26–1.71 (m, 12H, CH_2), 2.87 (t, J = 6.7 Hz, 2H, CH_2), 7.20–7.87 (m, 10H, Ar–H), 13.36 (s, NH).