

Electronic supplementary information

Chloromethylated polystyrene immobilized ruthenium complex of 2-(2-Pyridyl)benzimidazole catalyst for the synthesis of bioactive disubstituted ureas by carbonylation reaction

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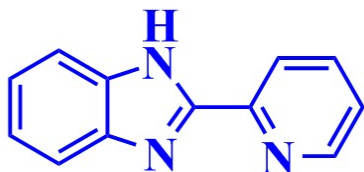
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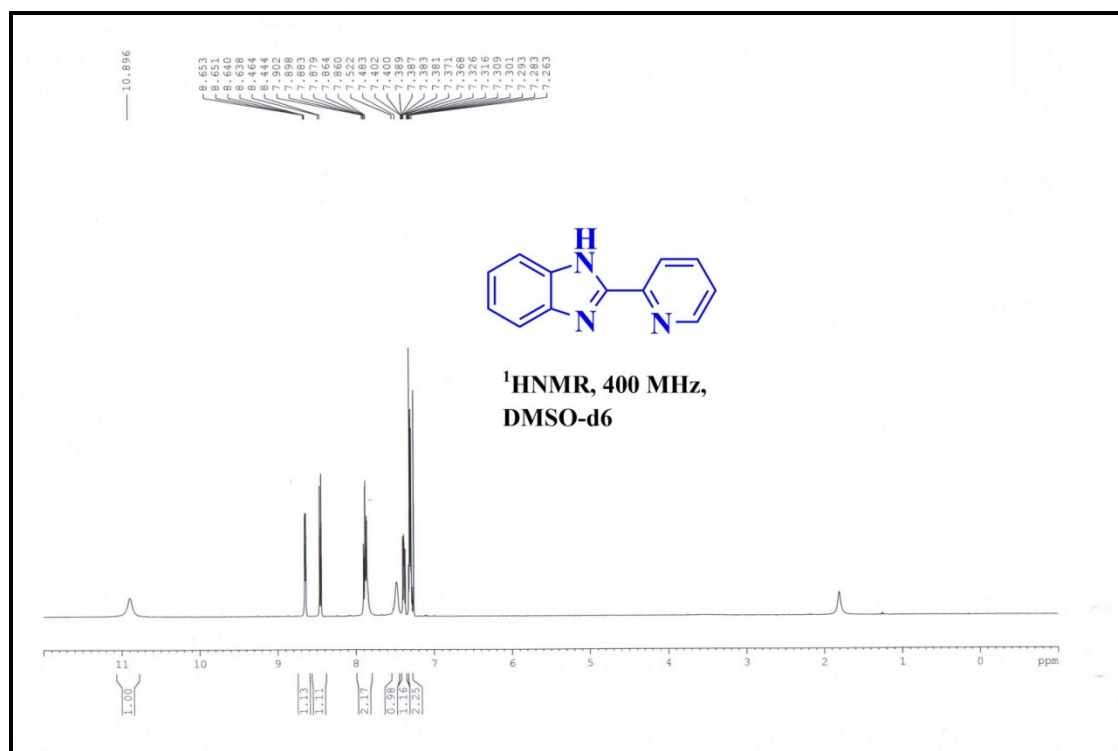
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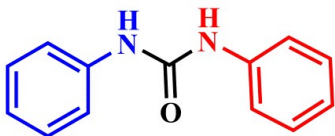
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¹HNMR of 2-(2-Pyridyl)benzimidazole

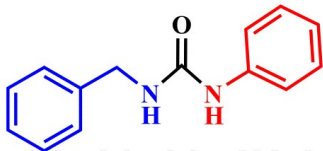


¹HNMR (400 MHz, CDCl₃): δ 7.263-7.326 (m, 2H), 7.368-7.402 (m, 1H), 7.483-7.522 (d, *J* = 15.6 Hz, 1H), 7.860-7.902 (m, 2H), 8.444-8.464 (d, *J* = 8 Hz, 1H), 8.368-8.653 (m, 1H), 10.896 (s, 1H) ppm.

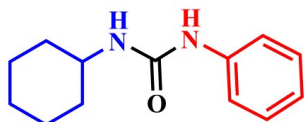




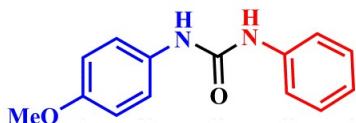
^1H NMR (400 MHz, DMSO- d_6): δ 6.982-7.019 (t, J = 7.6 Hz, 2H), 7.220-7.298 (m, 4H), 7.428-7.448 (d, J = 8 Hz, 4H), 7.994 (s, 2H) ppm.



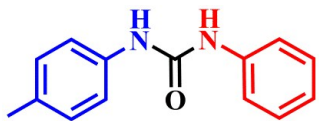
^1H NMR (400 MHz, DMSO- d_6): δ 4.384-4.399 (d, J = 6Hz, 2H), 5.694 (s, 1H), 7.216-7.330 (m, 10H) ppm.



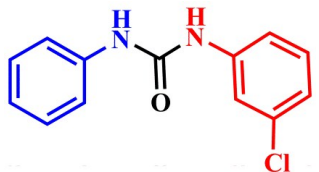
^1H NMR (400 MHz, DMSO- d_6): δ 1.077-1.191 (m, 2H), 1.254-1.380 (m, 2H), 1.564-1.594 (t, 3.6 Hz, 1H), 1.663-1.695 (t, 3.6 Hz, 1H), 1.882-1.905 (d, 9.2 Hz, 1H), 3.492-3.511 (t, 3.6 Hz, 1H), 4.726 (s, 1H), 4.928-4.945 (d, 6.8 Hz, 1H), 6.975-7.012 (t, 7.2 Hz, 1H), 7.255-7.344 (m, 2H), 7.441-7.462 (d, 8.4 Hz, 2H) ppm.



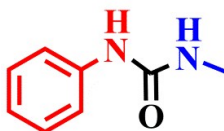
^1H NMR (400 MHz, DMSO- d_6): δ 3.783 (s, 3H), 6.833-6.893 (m, 3H), 7.025-7.047 (d, 8.8 Hz, 1H), 7.177-7.223 (m, 3H), 7.470-7.490 (d, 8 Hz, 2H) ppm.



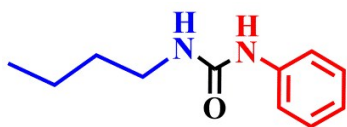
^1H NMR (400 MHz, DMSO- d_6): δ 2.244 (s, 3H), 6.895-6.916 (d, 8.4 Hz, 3H), 7.005-7.122 (m, 3H), 7.261-7.353 (m, 4H), 8.524-8.553 (d, 11.6 Hz, 1H) ppm.



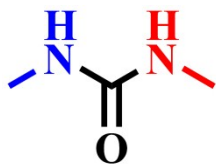
^1H NMR (400 MHz, DMSO- d_6): δ 6.984-7.020 (t, 7.2 Hz, 2H), 7.260-7.300 (t, 8.4 Hz, 5H), 7.436-7.457 (d, 8.4 Hz, 4H), 7.993 (s, 1H) ppm.



^1H NMR (400 MHz, DMSO- d_6): δ 2.942 (s, 3H), 6.975-7.012 (t, 7.2 Hz, 1H), 7.255-7.295 (t, 8 Hz, 2H), 7.441-7.462 (d, 8.4 Hz, 2H), 8.123 (s, 1H) ppm.



^1H NMR (400 MHz, DMSO- d_6): δ 0.899-0.951 (m, 3H), 1.317-1.410 (m, 2H), 1.434-1.551 (m, 2H), 2.883-2.896 (d, 5.2 Hz, 2H), 4.501 (s, 1H), 5.747 (s, 1H), 6.955-7.004 (t, 8 Hz, 1H), 7.234-7.285 (t, 5.2 Hz, 2H), 7.411-7.431 (d, 8 Hz, 2H) ppm.



^1H NMR (400 MHz, CDCl_3): δ 2.737-2.757 (m, 6H), 5.483 (s, 2H) ppm.

