

Supporting Information

Synthesis and Fluorescence of 9-Benzyl-9H-Carbazole Derivatives and Its Application for Recognition of Rare Earth Cations

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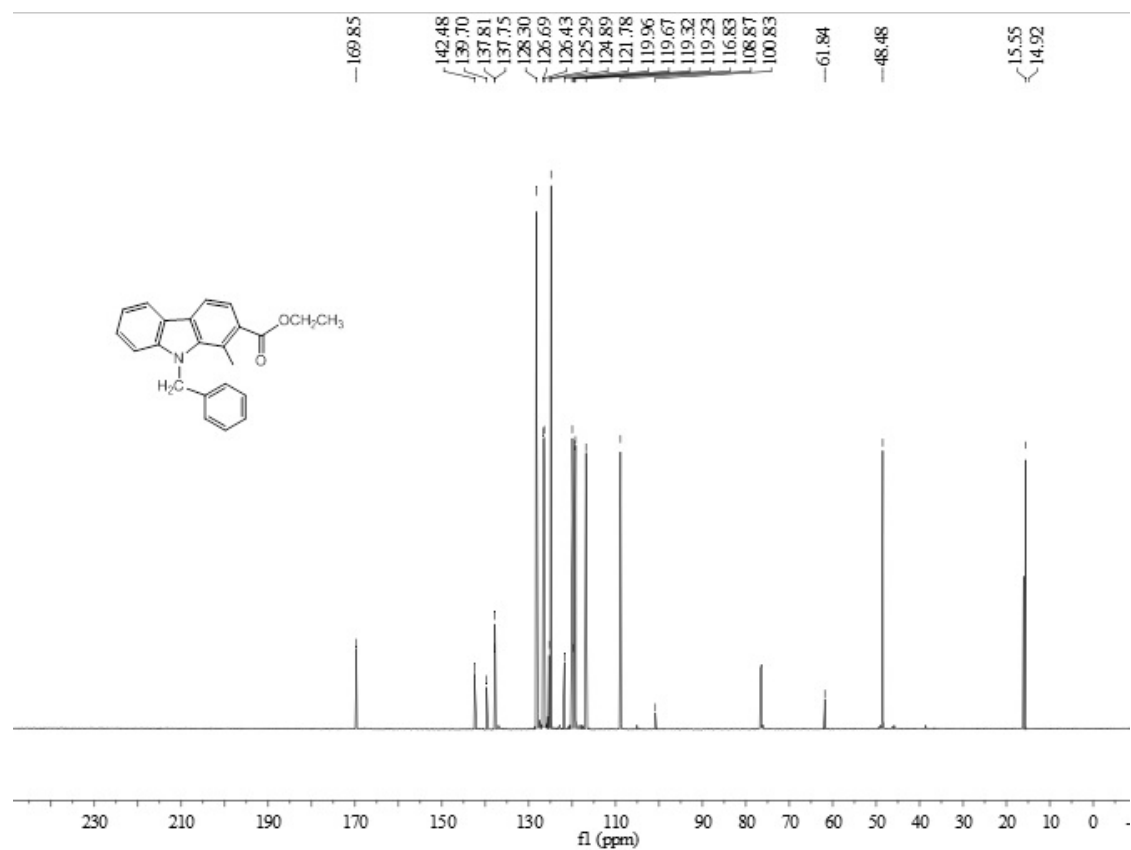
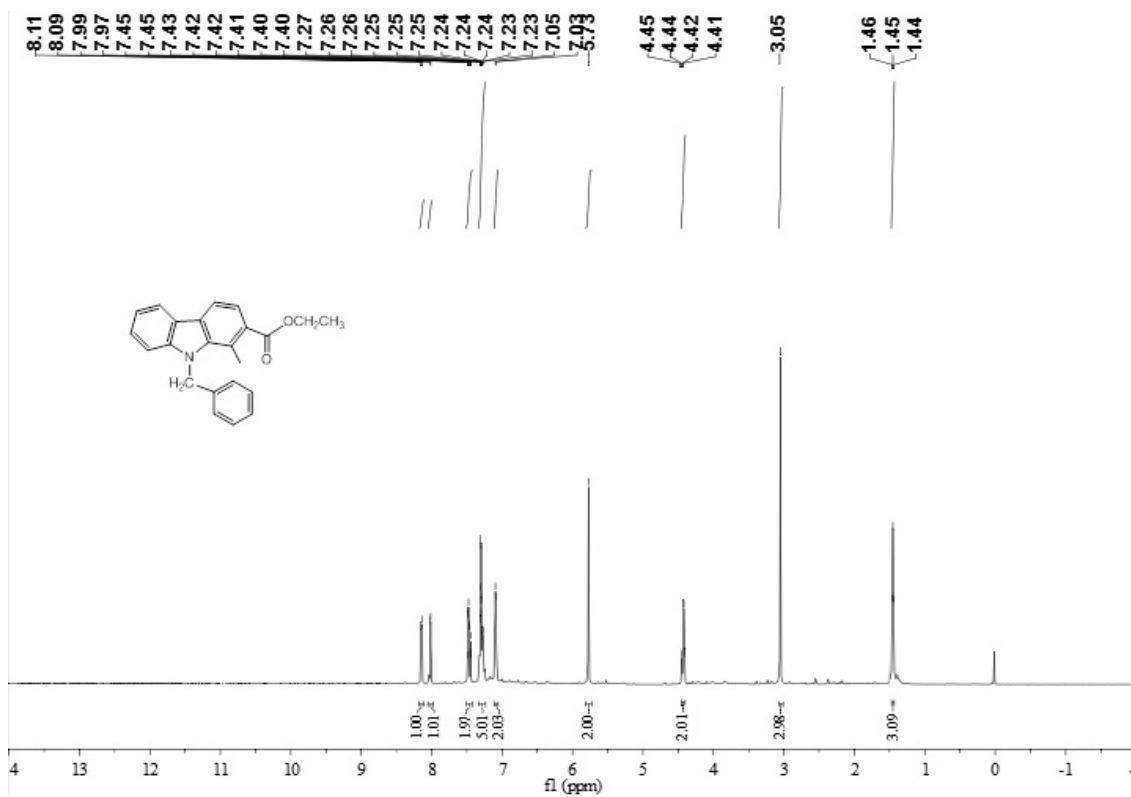
1. Spectroscopic data of compounds

Ethyl 9-benzyl-1-methyl-9H-carbazole-2-carboxylate (**Bncz 1**): 55.8 mg, 65%; colorless oil; ¹H NMR (500 MHz, CDCl₃, 25 °C, TMS): δ = 1.45 (t, J = 7.5 Hz, 3H), 3.05 (s, 3H), 4.43 (q, J = 7.0 Hz, 2H), 5.73 (s, 2H), 7.03–7.05 (d, 2H), 7.23–7.27 (m, 5H), 7.40–7.45 (m, 2H), 7.98 (d, 1H), 8.10 (d, 1H) ppm; ¹³C NMR (125 MHz, CDCl₃, 25 °C): δ = 14.9, 15.6, 48.5, 61.8, 100.8, 108.9, 116.8, 119.2, 119.3, 119.7, 120.0, 121.8, 124.9, 125.3, 126.4, 126.7, 128.3, 137.8, 137.8, 139.7, 142.5, 169.9 ppm; IR: ν = 2977, 1715, 1559, 1461, 1413, 1375, 1201, 1040, 916, 813, 745 cm⁻¹; Anal. Calcd for C₂₃H₂₁NO₂: C, 80.44; H, 6.16. Found: C, 80.33; H, 6.10.

1-(9-Benzyl-1-methyl-9H-carbazol-2-yl)ethanone (**Bncz 2**): 65.0 mg, 83%; yellow oil; ¹H NMR (500 MHz, CDCl₃, 25 °C, TMS): δ = 2.67 (s, 3H), 2.73 (s, 3H), 5.78 (s, 2H), 7.08 (d, 2H), 7.26–7.32 (m, 5H), 7.45–7.49 (m, 2H), 8.02 (d, 1H), 8.14 (d, 1H) ppm. ¹³C NMR (125 MHz, CDCl₃, 25 °C): δ = 14.1, 30.9, 49.1, 101.4, 109.5, 117.4, 119.8, 119.9, 120.3, 120.5, 122.4, 125.5, 125.9, 127.0, 127.3, 128.9, 138.3, 138.4, 140.3, 143.1, 203.7 ppm. IR: ν = 2965, 2923, 2852, 1656, 1498, 1452, 1416, 1127, 1031, 801, 741 cm⁻¹; Anal. Calcd for C₂₂H₁₉NO: C, 84.31; H, 6.11. Found: C, 84.17; H, 6.03.

2. ^1H NMR and ^{13}C NMR spectra

Ethyl 9-benzyl-1-methyl-9H-carbazole-2-carboxylate (**Bncz 1**):



1-(9-Benzyl-1-methyl-9H-carbazol-2-yl)ethanone (**Bncz 2**):

