

SUPPLEMENTARY INFORMATION

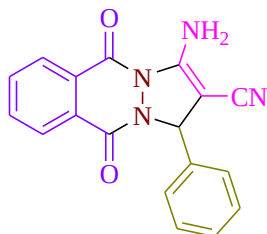
Carboxymethyl cellulose (CMC) as a recyclable green catalyst promoted eco-friendly protocol for the solvent-free synthesis of 1*H*-pyrazolo[1,2-*b*]phthalazine-5,10-dione derivatives

Farzaneh Mohamadpour *

School of Engineering, Apadana Institute of Higher Education, Shiraz, Iran

** Corresponding author. mohamadpour.f.7@gmail.com*

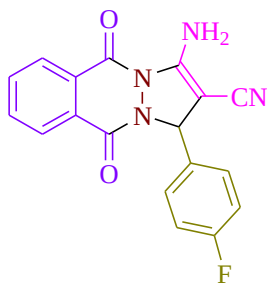
3-Amino-1-(phenyl)-5,10-dihydro-5,10-dioxo-1H-pyrazolo[1,2-*b*]phthalazine-2-carbonitrile (5d)



5d

Yield: 91%; M.p. 271-273 °C; ¹H NMR (300 MHz, DMSO-*d*₆): 6.14 (1H, s, CHAr), 7.33-7.48 (3H, m, ArH), 7.46 (2H, d, *J*=8.4 Hz, ArH), 7.97-8.29 (6H, m, NH₂ and ArH).

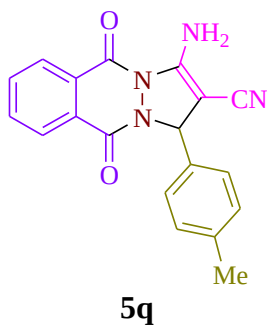
3-Amino-1-(4-fluorophenyl)-5,10-dihydro-5,10-dioxo-1H-pyrazolo[1,2-*b*]phthalazine-2-carbonitrile (5o)



5o

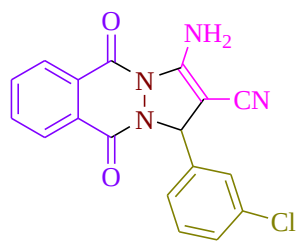
Yield: 94%; M.p. 261-263 °C; ¹H NMR (400 MHz, DMSO-d₆): 6.17 (1H, s, CHAr), 7.20 (2H, t, *J*=8.8 Hz, ArH), 7.53-7.57 (2H, m, ArH), 7.96-8.26 (6H, m, NH₂ and ArH).

3-Amino-1-(4-methylphenyl)-5,10-dihydro-5,10-dioxo-1*H*-pyrazolo[1,2-*b*]phthalazine-2-carbonitrile (5q)



Yield: 89%; M.p. 255-257 °C; ¹H NMR (400 MHz, DMSO-d₆): 2.30 (3H, s, CH₃), 6.10 (1H, s, CHAr), 7.18 (2H, d, *J*=8.0 Hz, ArH), 7.34 (2H, d, *J*=8.0 Hz, ArH), 7.97-8.28 (6H, m, NH₂ and ArH).

3-Amino-1-(3-chlorophenyl)-5,10-dihydro-5,10-dioxo-1*H*-pyrazolo[1,2-*b*]phthalazine-2-carbonitrile (5r)



5r

Yield: 78%; M.p. 264-266 °C; ^1H NMR (300 MHz, DMSO- d_6): 6.15 (1H, s, CHAr), 7.39-7.41 (2H, m, ArH), 7.44-7.48 (1H, m, ArH), 7.65 (1H, s, ArH), 7.88-8.29 (6H, m, NH_2 and ArH).

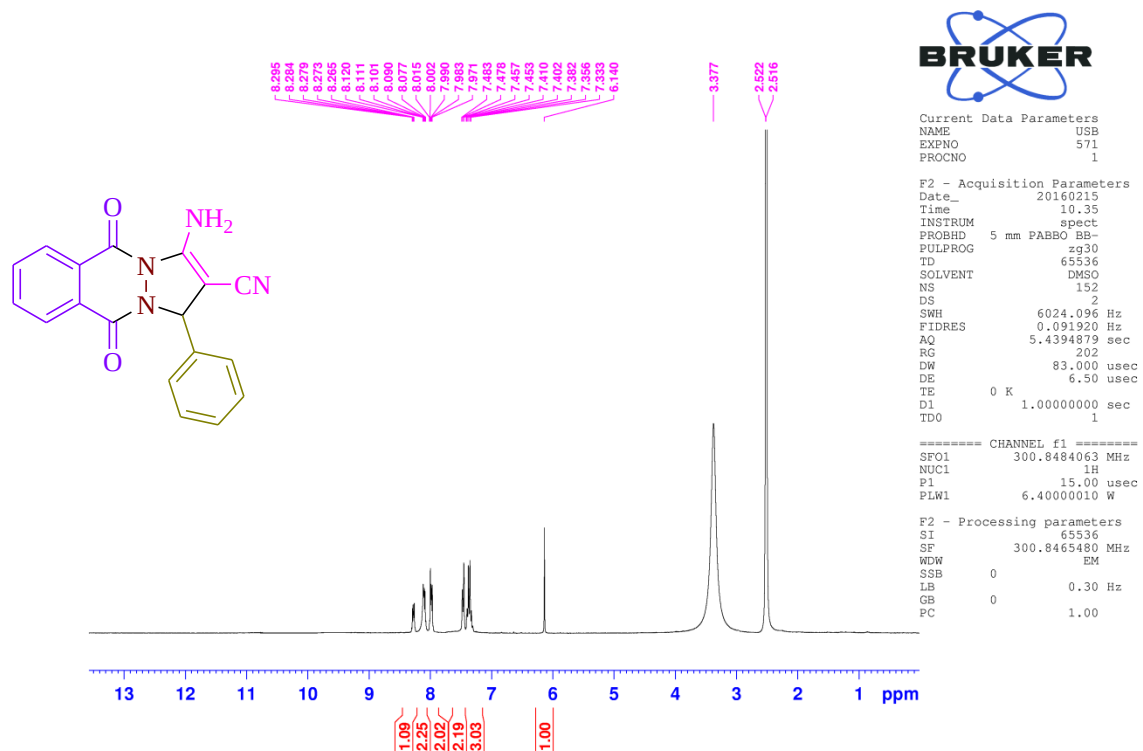


Fig. S-1. ^1H NMR Spectrum of compound (300 MHz, DMSO-d_6) of **5d**

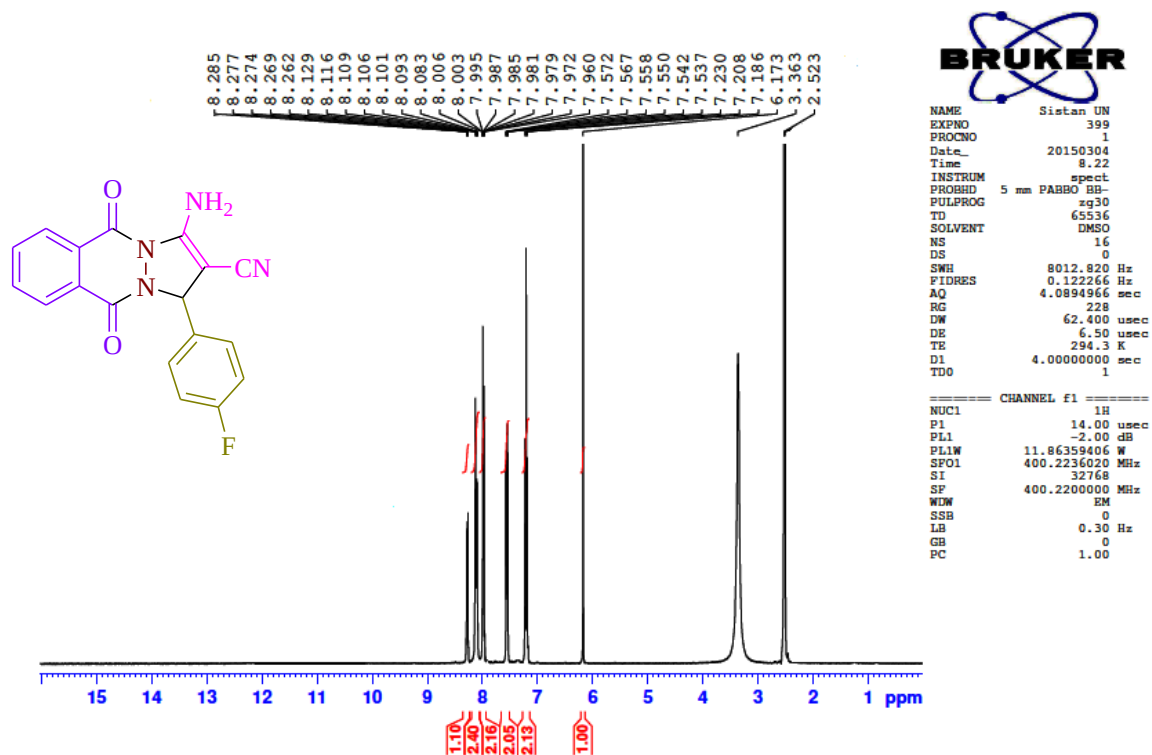


Fig. S-2. ¹H NMR Spectrum of compound (400 MHz, DMSO-d₆) of **50**

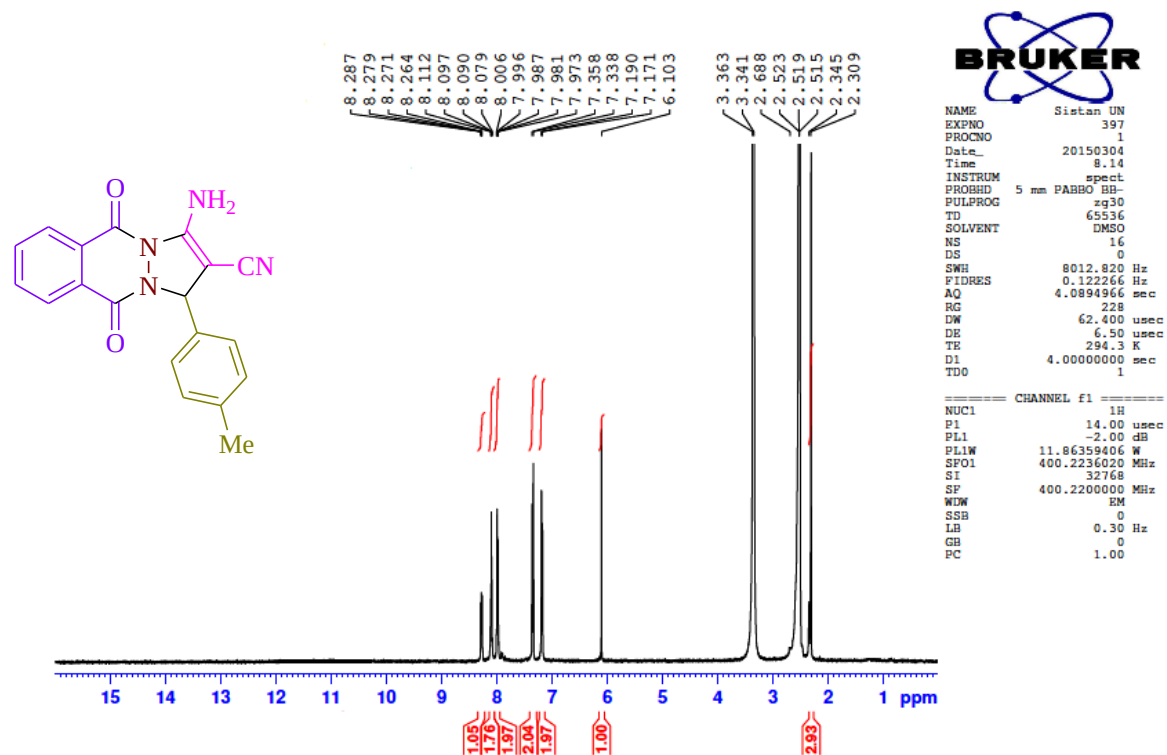


Fig. S-3. ¹H NMR Spectrum of compound (400 MHz, DMSO-d₆) of **5q**

