

Electronic Supplementary Information for
Magnetic base catalysts for chemical fixation of carbon dioxide to
quinazoline-2,4(1H,3H)-diones

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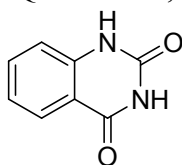
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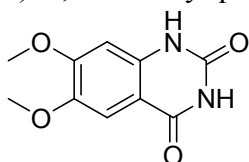
1. Characterization of quinaline-2,4(1H, 3H)-dinones

1). Quinaline-2,4(1H, 3H)-dinones



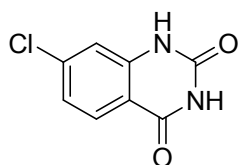
White solid; m.p. > 300 °C; ¹H NMR (d⁶-DMSO, 400 MHz) δ 11.29(s, 1H), 11.14(s, 1H), 7.88(d, ³J = 8 Hz, 1H), 7.63(t, ³J = 8 Hz, 1H), 7.17(t, ³J = 8 Hz, 2H); ¹³C NMR (d⁶-DMSO, 100.6 MHz) δ 162.8, 150.3, 140.8, 134.9, 126.9, 122.3, 115.3, 114.3; ESI-MS calcd for C₈H₆N₂O₂ 162.15, found 161.17(M-H)⁻.

2). 6,7-dimethylquinaline-2,4(1H, 3H)-dinones



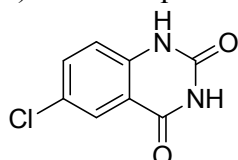
Light yellow solid; m.p. > 300 °C; ¹H NMR (d⁶-DMSO, 400 MHz) δ 11.12(s, 1 H), 10.94(s, 1 H), 7.24(s, 1 H), 6.68(s, 1 H), 3.79(s, 6 H); ¹³C NMR (d⁶-DMSO, 100.6 MHz) δ 162.4, 154.8, 150.35, 145.0, 136.5, 107.1, 106.1, 97.7, 55.7, 55.6. ESI-MS calcd for C₁₀H₁₀N₂O₄ 222.2, found 221.07(M-H)⁻.

3). 7- Chloroquinaline-2,4(1H, 3H)-dinones



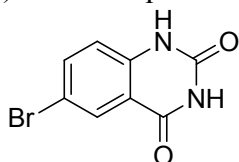
Light yellow solid; m. p. > 300 °C; ^1H NMR (d^6 -DMSO, 400 MHz) δ 11.46(s, 1 H), 11.32(s, 1 H), 7.80(s, 1 H), 7.65(dd, $^3J = 8.8$ Hz, 1 H), 7.18(d, $^3J = 8.4$ Hz, 1 H); ^{13}C NMR (d^6 -DMSO, 100.6 MHz) δ 162.0, 150.1, 139.5, 134.9, 126.5, 125.9, 117.6, 115.6; ESI-MS calcd for $\text{C}_8\text{H}_5\text{ClN}_2\text{O}_2$ 196.59, found 195.21(M-H) $^-$

4) 6-Chloroquinoline-2,4(*1H*, *3H*)-dinones



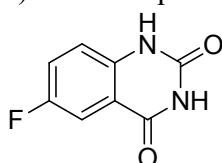
White solid; m. p. > 300 °C; ^1H NMR (d^6 -DMSO, 400 MHz) δ 11.42 (s, 1 H), 11.27 (s, 1 H), 7.87(d, $^3J = 8.4$ Hz, 1 H), 7.21(dd, $^3J = 8.4$ Hz, 1 H), 7.17(s, 1 H); ^{13}C NMR (d^6 -DMSO, 100.6 MHz) δ 161.7, 150.1, 138.7, 132.6, 124.0, 127.8, 119.6, 117.8. ESI-MS calcd for $\text{C}_8\text{H}_5\text{ClN}_2\text{O}_2$ 196.59, found 195.17 (M-H) $^-$.

5) 6-Bromoquinoline-2,4(*1H*, *3H*)-dinones



White solid; m. p. > 300 °C; ^1H NMR (d^6 -DMSO, 400 MHz) δ 11.46(s, 1 H), 11.30(s, 1 H), 7.93(s, 1 H), 7.80(dd, $^3J = 8.8$ Hz, 1 H), 7.11(d, $^3J = 8.8$ Hz, 1 H); ^{13}C NMR (d^6 -DMSO, 100.6 MHz) δ 161.8, 150.1, 140.1, 137.6, 128.9, 117.80, 116.2, 113.8; HRMS: calcd for $\text{C}_8\text{H}_5\text{BrN}_2\text{O}_2$ (M-H) $^-$ 238.9462, found 238.9455.

6) 6-Fluoroquinoline-2,4(*1H*, *3H*)-dinones

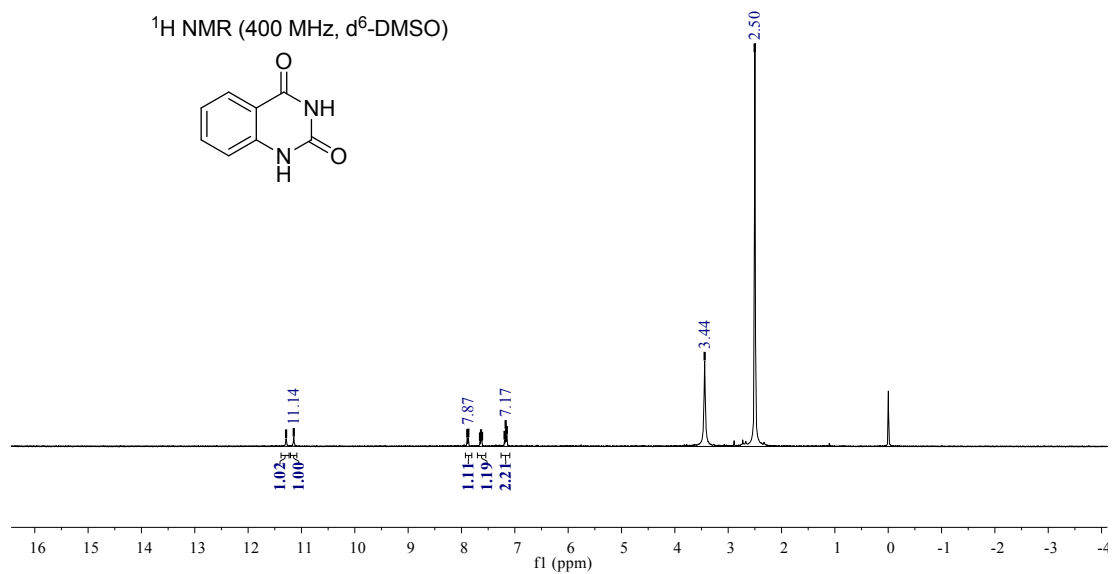


White solid; m. p. > 300 °C; ^1H NMR (d^6 -DMSO, 400 MHz) δ 11.32(s, 2 H), 7.60-7.52(m, 2 H), 7.21-7.18(m, 1 H); ^{13}C NMR (d^6 -DMSO, 100.6 MHz) δ 162.2, (158.5, 156.1), 150.1, 137.6, (123.1, 122.8), (117.7, 117.5), (115.5, 115.4), (112.1, 111.9); HRMS calcd for $\text{C}_8\text{H}_5\text{FN}_2\text{O}_2$ (M-H) $^-$ 179.0262, found 179.0255.

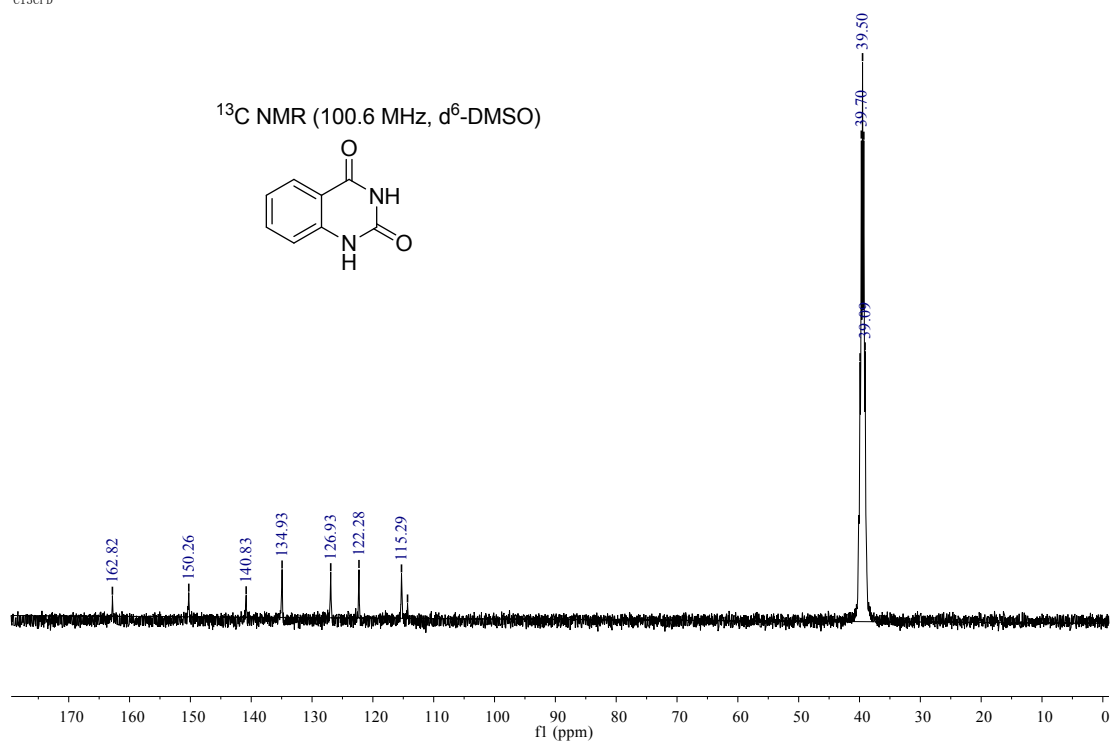
3. The ^1H and ^{13}C NMR Charts for quinaldine-2,4(1*H*, 3*H*)-dinones

Quinaldine-2,4(1*H*, 3*H*)-dinones

11-18
PROTON

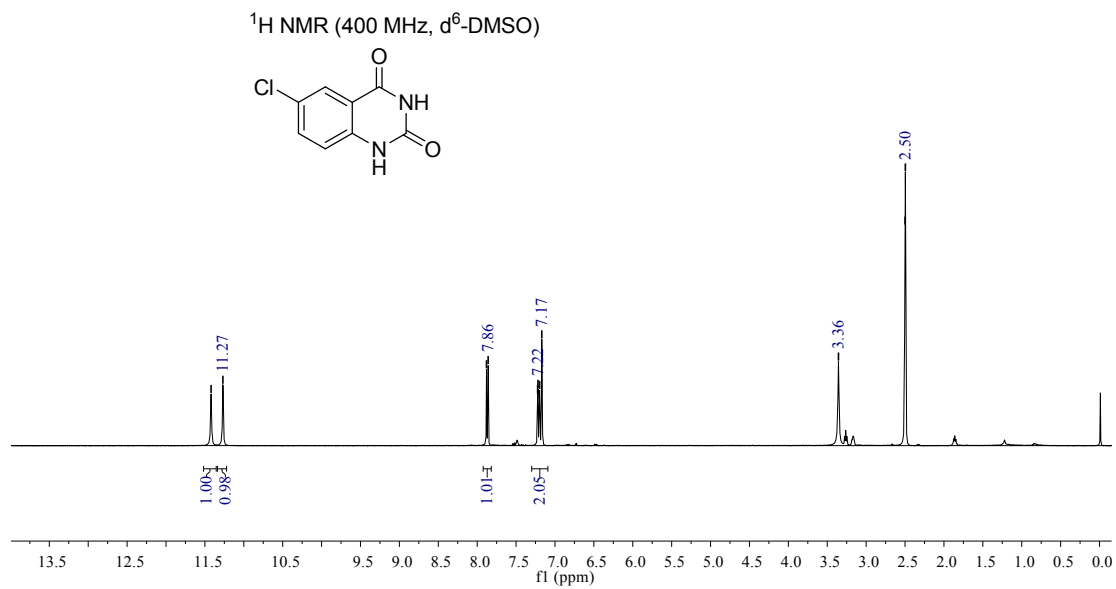


zyn11-30c
C13CPD

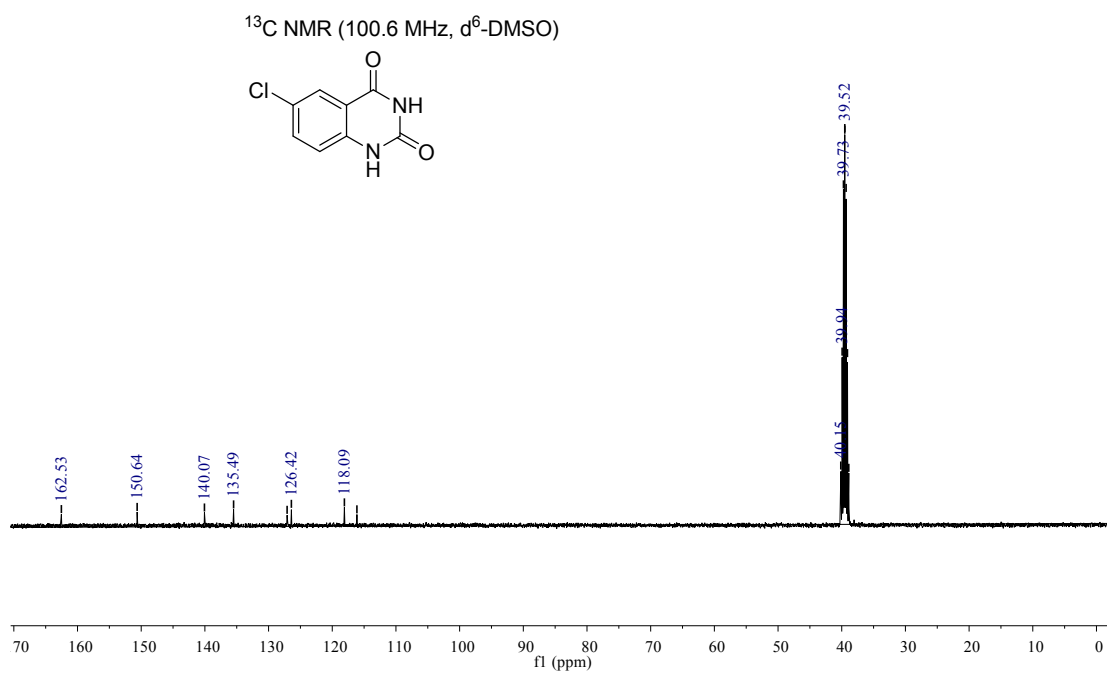


7- Chloroquinoline-2,4(1H, 3H)-diones

¹H
PROTON



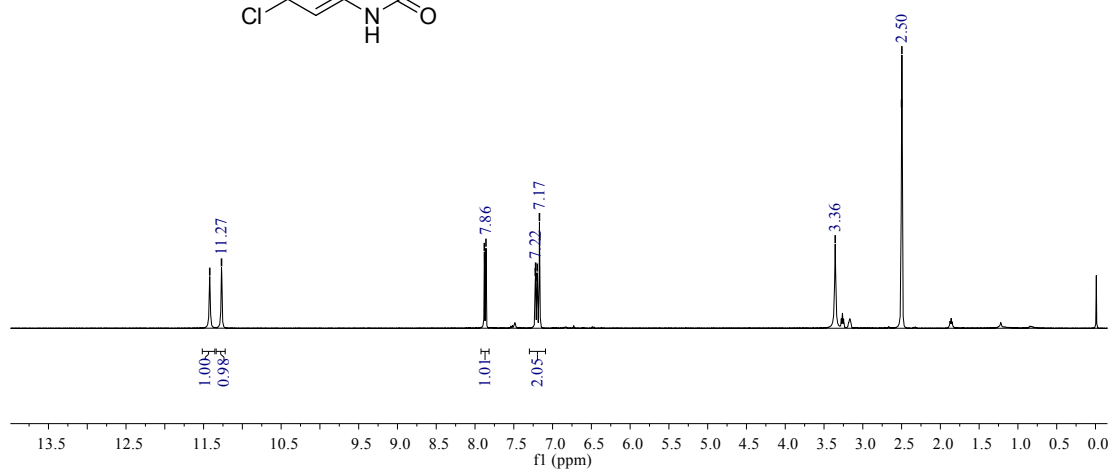
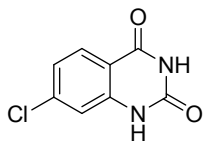
zyn-Cl
Cl3CPD



6-Chloroquinoline-2,4(1H, 3H)-diones

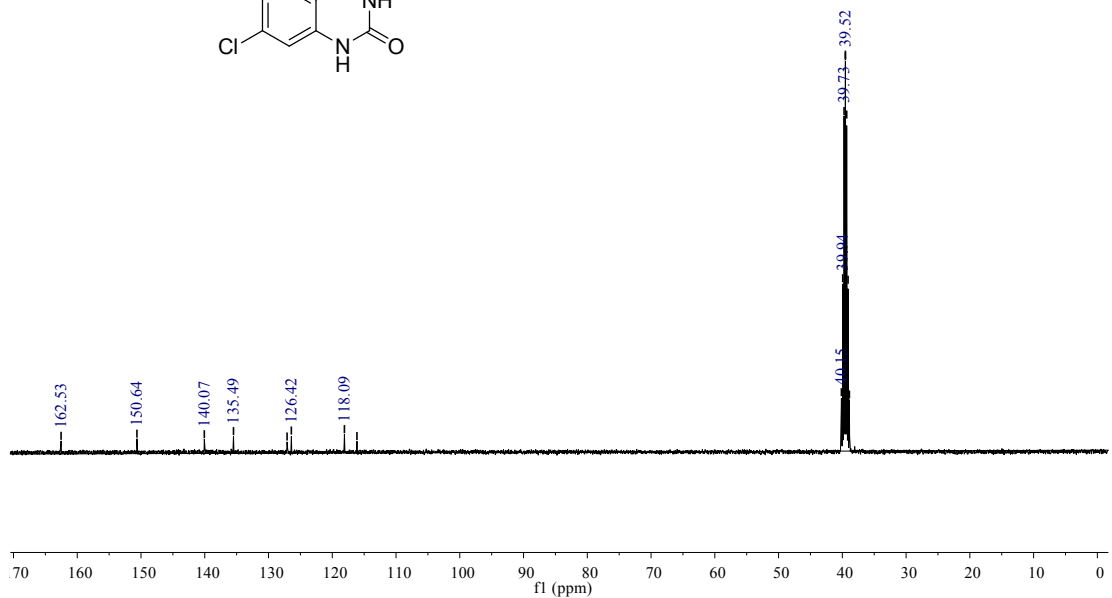
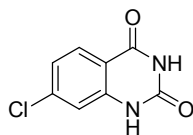
¹H
PROTON

¹H NMR (400 MHz, d⁶-DMSO)



zyn-Cl
C13CPD

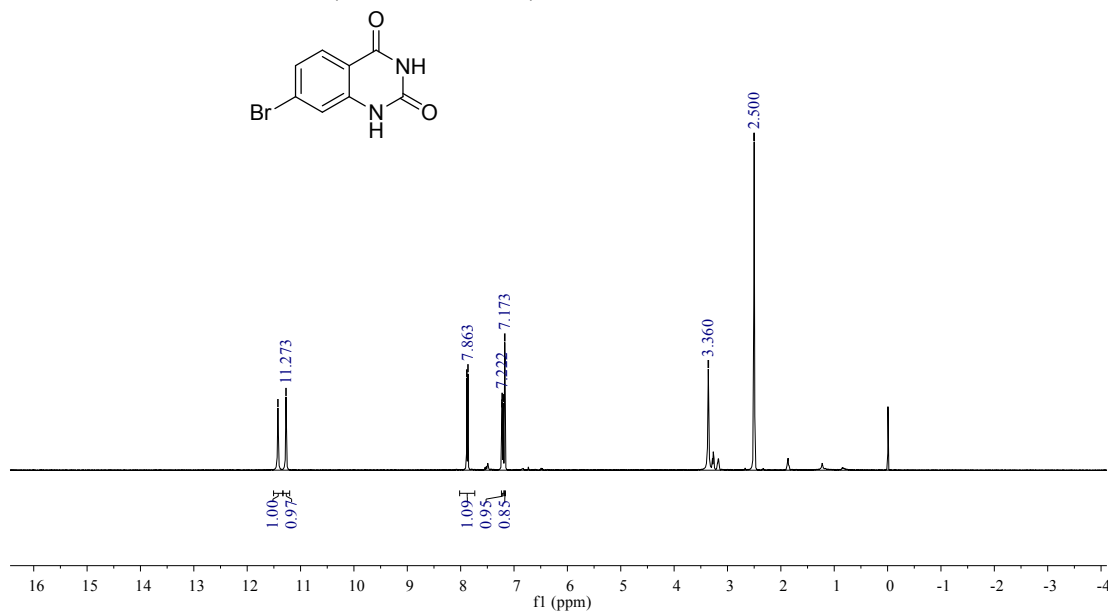
¹³C NMR (100.6 MHz, d⁶-DMSO)



6-Bromoquinoline-2,4(1H, 3H)-diones

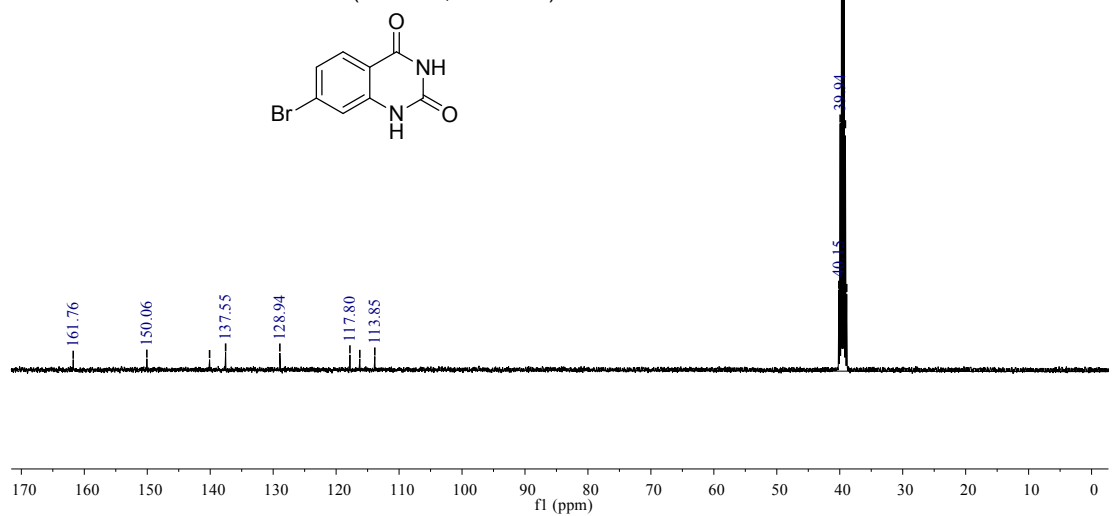
1
PROTON

¹H NMR (400 MHz, d⁶-DMSO)



4-17-Br
C13CPD

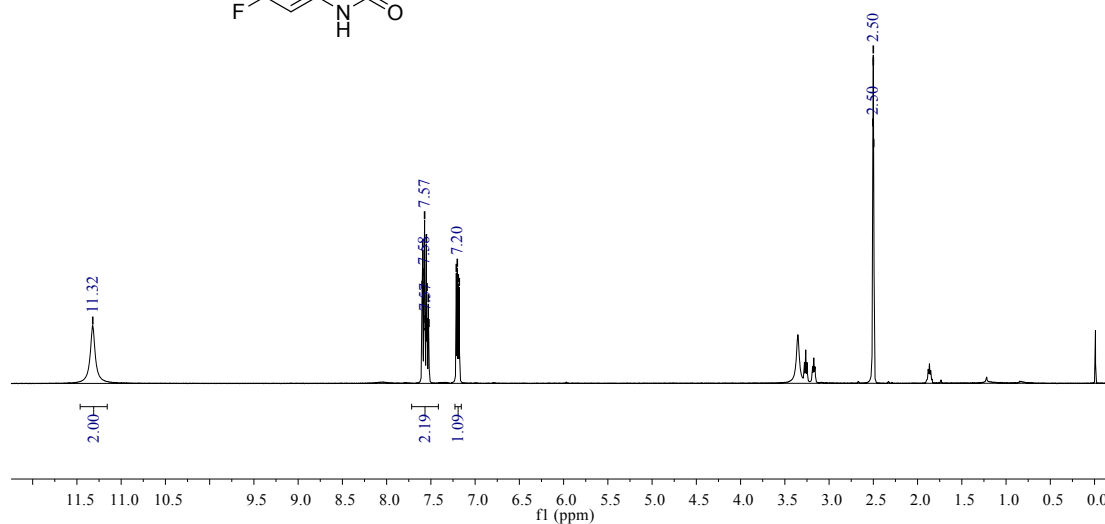
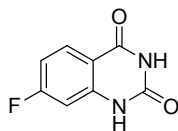
¹H NMR (400 MHz, d⁶-DMSO)



6-Fluoroquinoline-2,4(1H, 3H)-diones

4-17-F
PROTON

¹H NMR (400 MHz, d⁶-DMSO)



4-17-F
C13CPD

¹³C NMR (100.6 MHz, d⁶-DMSO)

