

# Visible-light-initiated Cross-Dehydrogenative Coupling of Quinoxalin-2(1*H*)-ones and Simple Amides with Air as An Oxidant

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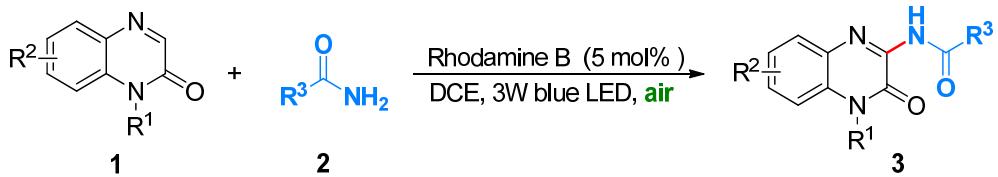
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## General Information

Unless otherwise specified, all reagents and solvents were obtained from commercial suppliers and used without further purification.  $^1\text{H}$  NMR spectra were recorded at 400 MHz and  $^{13}\text{C}$  NMR spectra were recorded at 100 MHz by using a Bruker Avance 400 spectrometer. Chemical shifts were calibrated using residual undeuterated solvent as an internal reference ( $^1\text{H}$  NMR:  $\text{CDCl}_3$  7.26 ppm,  $^{13}\text{C}$  NMR:  $\text{CDCl}_3$  77.0 ppm), the chemical shifts ( $\delta$ ) were expressed in ppm and  $J$  values were given in Hz. The following abbreviations were used to describe peak splitting patterns when appropriate: s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet, dd = doublet of doublets. Mass spectra were performed on a spectrometer operating on ESI-TOF. Column chromatography was performed on silica gel (200-300 mesh). Light irradiation device: Xi'an WATTECS experimental equipment co. LTD; Model: WP-VLH-1020.

## Experimental Section

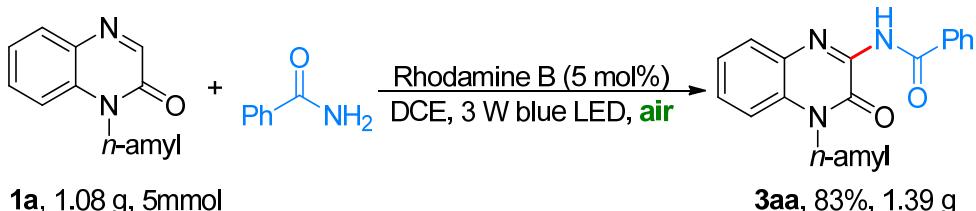
### Typical Procedure for the Synthesis of *N*-acylated 3-aminoquinoxalin-2(1*H*)-ones



Scheme S1

To a solution of quinoxalin-2(1*H*)-ones **1** (0.3 mmol) and amides **2** (0.6 mmol) in 1,2-dichloroethane (1.5 mL) was added Rhodamine B (7.2 mg, 0.015 mmol). The reaction mixture was open to the air and stirred at room temperature under the irradiation of 3 W blue LED lamps. The progress of the reaction was monitored by TLC. The reaction typically took within 24 hours. After completion, the resulting mixture was extracted with EtOAc (3 mL  $\times$  3) and the solvent was then removed under vacuum. The residue was purified by flash column chromatography using a mixture of petroleum ether and ethyl acetate as eluent to give the desired products **3**.

### Gram-scale synthesis of 3aa

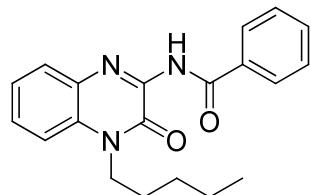


### Scheme S2

To a solution of 1-pentylquinoxalin-2(1*H*)-one **1a** (1.08 g, 5 mmol) and benzamide **2a** (1.21 g, 10 mmol) in 1,2-dichloroethane (40 mL) was added Rhodamine B (192 mg, 0.4 mmol). The reaction mixture was open to the air and stirred at room temperature under the irradiation of 3 W blue LED lamps for about 30 h. After completion, the DCE was recovered through distillation (94% recovery rate) and the resulting residue was extracted with EtOAc (30 mL × 3) and the solvent was then removed under vacuum. The residue was purified by flash column chromatography using a mixture of petroleum ether and ethyl acetate as eluent to give 1.39 gram of **3aa**, yield 83%. Performing the large-scale reaction of **1a** in the recovered DCE provided the **3aa** in 82% yield.

### Characterization data of products

#### *N*-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)benzamide (**3aa**)<sup>1</sup>



<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.96 (s, 1 H), 8.01 – 7.95 (m, 3 H), 7.61 – 7.58 (m, 1 H), 7.53 – 7.46 (m, 3 H),

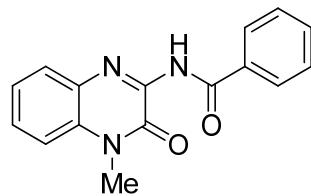
7.39 – 7.31 (m, 2 H), 4.32 (t, *J* = 7.6 Hz, 2 H), 1.85 – 1.77 (m, 2 H), 1.49 – 1.38 (m, 4 H), 0.93 (t, *J* = 6.8 Hz, 3 H);

<sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 164.2, 151.1, 144.3, 133.9, 132.6, 132.4, 129.9, 129.7, 128.9, 128.3, 127.5,

124.5, 113.6, 43.2, 29.0, 27.0, 22.3, 13.9; HRMS (ESI) m/z calcd. for C<sub>20</sub>H<sub>22</sub>N<sub>3</sub>O<sub>2</sub>[M+H]<sup>+</sup> : 336.1707, found

336.1706.

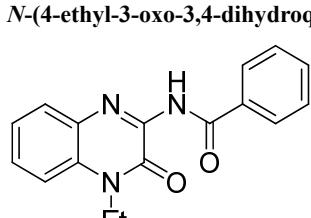
#### *N*-(4-methyl-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (**3ba**)<sup>1</sup>



<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.94 (s, 1 H), 8.00 – 7.98 (m, 2 H), 7.54 – 7.37 (m, 6 H), 7.32 (dd, *J*<sub>1</sub> = 8.4 Hz, *J*<sub>2</sub> = 1.2 Hz, 1 H), 3.79 (s, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 164.2, 151.4, 144.3, 132.7, 131.9, 129.4, 128.9,

128.6, 128.4, 127.5, 127.3, 124.7, 113.6, 29.9.

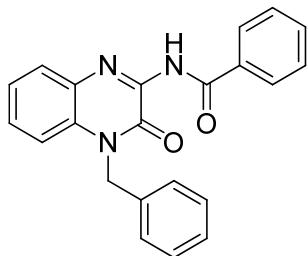
#### *N*-(4-ethyl-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (**3ca**)<sup>1</sup>



<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.95 (s, 1 H), 8.02 – 7.96 (m, 3 H), 7.62 – 7.58 (m, 1 H), 7.54 – 7.48 (m, 3 H),

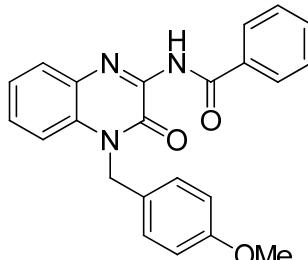
7.41 – 7.34 (m, 2 H), 4.41 (q,  $J = 7.2$  Hz, 2 H), 1.43 (t,  $J = 7.2$  Hz, 3 H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ ):  $\delta = 164.2$ , 150.9, 144.3, 133.9, 132.7, 132.5, 129.8, 129.7, 128.9, 128.4, 127.5, 124.5, 113.5, 38.2, 12.4.

***N*-(4-benzyl-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (3da)<sup>1</sup>**



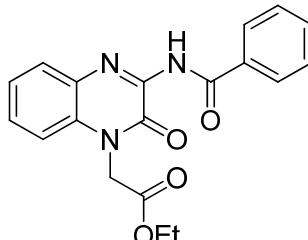
$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ ):  $\delta = 9.97$  (s, 1 H), 8.02 – 7.95 (m, 2 H), 7.97 – 7.95 (m, 1 H), 7.60 – 7.57 (m, 1 H), 7.53 – 7.49 (m, 2 H), 7.37 – 7.23 (m, 8 H), 5.56 (s, 2 H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ ):  $\delta = 164.3$ , 151.6, 144.4, 134.5, 133.8, 132.7, 132.4, 130.2, 129.6, 129.1, 128.9, 128.4, 128.0, 127.6, 126.7, 124.7, 114.4, 46.7.

***N*-(4-(4-methoxybenzyl)-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (3ea)**



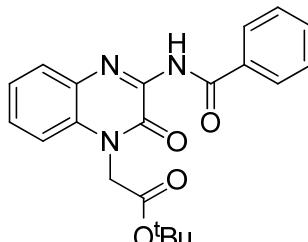
$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ ):  $\delta = 9.99$  (s, 1 H), 8.02 – 8.00 (m, 2 H), 7.97 – 7.95 (m, 1 H), 7.62 – 7.59 (m, 1 H), 7.54 – 7.51 (m, 2 H), 7.40 – 7.32 (m, 3 H), 7.23 – 7.20 (m, 2 H), 6.87 – 6.84 (m, 2 H), 5.50 (s, 2 H), 3.76 (s, 3 H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ ):  $\delta = 164.3$ , 159.2, 151.6, 144.4, 133.8, 132.7, 132.4, 130.2, 129.6, 128.9, 128.4, 128.3, 127.6, 126.6, 124.7, 114.4, 55.3, 46.3; HRMS (ESI) m/z calcd. for  $\text{C}_{23}\text{H}_{20}\text{N}_3\text{O}_3[\text{M}+\text{H}]^+$ : 386.1499, found 386.1504.

**ethyl 2-(3-benzamido-2-oxoquinoxalin-1(2H)-yl)acetate (3fa)**



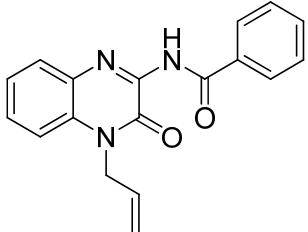
$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ ):  $\delta = 9.85$  (s, 1 H), 7.80 – 7.97 (m, 3 H), 7.62 – 7.59 (m, 1 H), 7.54 – 7.37 (m, 4 H), 7.10 (dd,  $J_1 = 8.4$  Hz,  $J_2 = 0.8$  Hz, 1 H), 5.09 (s, 2 H), 4.26 (q,  $J = 7.2$  Hz, 2 H), 1.27 (t,  $J = 7.2$  Hz, 3 H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ ):  $\delta = 166.5$ , 164.2, 151.3, 144.1, 133.8, 132.7, 132.2, 130.0, 129.8, 128.9, 128.6, 127.5, 125.0, 113.0, 62.3, 44.3, 14.1; HRMS (ESI) m/z calcd. for  $\text{C}_{19}\text{H}_{18}\text{N}_3\text{O}_4[\text{M}+\text{H}]^+$ : 352.1292, found 352.1288.

**tert-butyl 2-(3-benzamido-2-oxoquinoxalin-1(2H)-yl)acetate (3ga)**



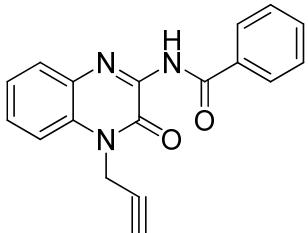
<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.87 (s, 1 H), 8.00 – 7.96 (m, 3 H), 7.62 – 7.58 (m, 1 H), 7.54 – 7.44 (m, 3 H), 7.41 – 7.37 (m, 1 H), 7.10 (dd, J<sub>1</sub> = 8.4 Hz, J<sub>2</sub> = 1.2 Hz, 1 H), 5.00 (s, 2 H), 1.46 (s, 9 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 165.5, 164.2, 151.3, 144.1, 133.8, 132.7, 132.2, 130.1, 129.8, 128.9, 128.5, 127.5, 124.9, 113.0, 83.6, 45.0, 27.9; HRMS (ESI) m/z calcd. for C<sub>21</sub>H<sub>22</sub>N<sub>3</sub>O<sub>4</sub>[M+H]<sup>+</sup> : 380.1605, found 380.1062.

**N-(4-allyl-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (3ha)**



<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.93 (s, 1 H), 8.02 – 7.95 (m, 3 H), 7.62 – 7.58 (m, 1 H), 7.54 – 7.44 (m, 3 H), 7.40 – 7.36 (m, 1 H), 7.31 – 7.29 (m, 1 H), 6.01 – 5.92 (m, 1 H), 5.32 – 5.17 (m, 1 H), 5.21 – 5.17 (m, 1 H), 4.99 – 4.97 (m, 2 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 164.2, 151.1, 144.3, 133.8, 132.7, 132.3, 130.0, 129.9, 129.6, 128.9, 128.3, 127.5, 124.7, 118.4, 114.2, 45.3; HRMS (ESI) m/z calcd. for C<sub>18</sub>H<sub>16</sub>N<sub>3</sub>O<sub>2</sub>[M+H]<sup>+</sup> : 306.1237, found 306.1229.

**N-(3-oxo-4-(prop-2-yn-1-yl)-3,4-dihydroquinoxalin-2-yl)benzamide (3ia)**



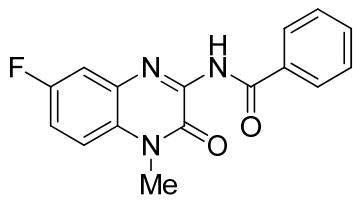
<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.87 (s, 1 H), 8.00 – 7.96 (m, 3 H), 7.62 – 7.59 (m, 1 H), 7.54 – 7.39 (m, 5 H), 5.12 (d, J = 2.4 Hz, 2 H), 2.35 (t, J = 2.4 Hz, 1 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 164.2, 150.7, 144.0, 133.8, 132.7, 132.3, 129.6, 129.3, 128.9, 128.5, 127.5, 125.0, 114.1, 76.0, 73.8, 32.4; HRMS (ESI) m/z calcd. for C<sub>18</sub>H<sub>14</sub>N<sub>3</sub>O<sub>2</sub>[M+H]<sup>+</sup> : 304.1081, found 304.1077.

**N-(3-oxo-4-phenyl-3,4-dihydroquinoxalin-2-yl)benzamide (3ja)**



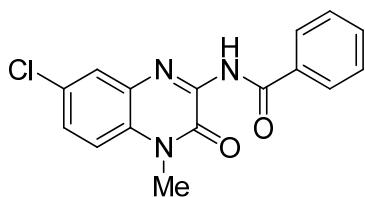
<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.95 (s, 1 H), 8.01 – 7.98 (m, 3 H), 7.68 – 7.57 (m, 4 H), 7.53 – 7.49 (m, 2 H), 7.39 – 7.34 (m, 3 H), 7.31 – 7.27 (m, 1 H), 6.70 (dd, J<sub>1</sub> = 8.4 Hz, J<sub>2</sub> = 1.2 Hz, 1 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 164.2, 151.4, 144.7, 135.3, 133.8, 132.7, 132.1, 131.8, 130.4, 129.9, 129.1, 128.9, 128.1, 127.9, 127.5, 124.9, 115.5; HRMS (ESI) m/z calcd. for C<sub>21</sub>H<sub>16</sub>N<sub>3</sub>O<sub>2</sub>[M+H]<sup>+</sup> : 342.1237, found 342.1232.

**N-(7-fluoro-4-methyl-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (3ka)**



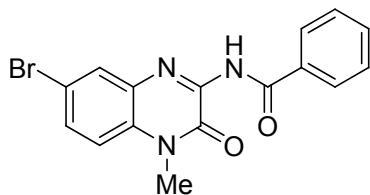
<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.95 (s, 1 H), 7.99 – 7.97 (m, 2 H), 7.65 – 7.58 (m, 2 H), 7.54 – 7.50 (m, 2 H), 7.29 – 7.19 (m, 2 H), 3.78 (s, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 164.1, 159.4 (*J*<sub>C-F</sub> = 242.8 Hz), 151.0, 145.2, 133.6, 133.1 (*J*<sub>C-F</sub> = 11.7 Hz), 128.9, 127.6, 127.4 (*J*<sub>C-F</sub> = 2.2 Hz), 115.9 (*J*<sub>C-F</sub> = 23.4 Hz), 115.0 (*J*<sub>C-F</sub> = 22.6 Hz), 114.7, 114.6; <sup>19</sup>F NMR (376 MHz, CDCl<sub>3</sub>): δ = -117.4; HRMS (ESI) m/z calcd. for C<sub>16</sub>H<sub>13</sub>FN<sub>3</sub>O<sub>2</sub>[M+H]<sup>+</sup> : 298.0986, found 298.0983.

**N-(7-chloro-4-methyl-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (3la)<sup>1</sup>**



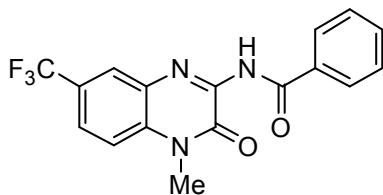
<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.91 (s, 1 H), 7.98 – 7.96 (m, 2 H), 7.91 (d, *J* = 2.4 Hz, 1 H), 7.62 – 7.58 (m, 1 H), 7.53 – 7.50 (m, 2 H), 7.40 (dd, *J*<sub>1</sub> = 8.8 Hz, *J*<sub>2</sub> = 2.8 Hz, 1 H), 7.22 (d, *J* = 8.8 Hz, 1 H), 3.76 (s, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 164.1, 151.1, 145.1, 133.6, 132.8, 132.8, 130.0, 129.5, 128.9, 128.6, 128.2, 127.5, 114.7, 30.1.

**N-(7-bromo-4-methyl-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (3ma)<sup>1</sup>**



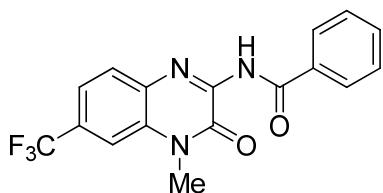
<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.92 (s, 1 H), 8.10 (d, *J* = 2.4 Hz, 1 H), 7.99 – 7.97 (m, 2 H), 7.63 – 7.51 (m, 4 H), 7.18 (d, *J* = 8.8 Hz, 1 H), 3.77 (s, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 164.1, 151.1, 145.0, 133.6, 133.1, 132.8, 131.7, 131.0, 129.9, 129.0, 127.6, 117.4, 115.0, 30.1.

**N-(4-methyl-3-oxo-7-(trifluoromethyl)-3,4-dihydroquinoxalin-2-yl)benzamide (3na)**



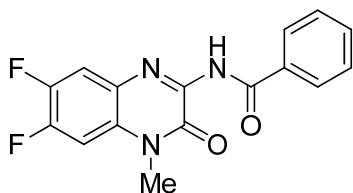
<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.84 (s, 1 H), 8.15 (d, *J* = 1.2 Hz, 1 H), 7.92 – 7.89 (m, 2 H), 7.61 (dd, *J*<sub>1</sub> = 8.8 Hz, *J*<sub>2</sub> = 2.0 Hz, 1 H), 7.56 – 7.52 (m, 1 H), 7.47 – 7.43 (m, 2 H), 7.33 (d, *J* = 8.8 Hz, 1 H), 3.74 (s, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 164.0, 151.3, 145.2, 133.5, 133.0, 132.9, 131.7, 129.0, 127.5, 127.6 (q, *J*<sub>C-F</sub> = 26.2 Hz, 1 C), 123.6 (q, *J*<sub>C-F</sub> = 269.8 Hz, 1 C), 126.7 (q, *J*<sub>C-F</sub> = 3.6 Hz, 1 C), 124.5 (q, *J*<sub>C-F</sub> = 3.7 Hz, 1C), 114.3, 30.1; <sup>19</sup>F NMR (376 MHz, CDCl<sub>3</sub>): δ = -62.1; HRMS (ESI) m/z calcd. for C<sub>17</sub>H<sub>13</sub>F<sub>3</sub>N<sub>3</sub>O<sub>2</sub>[M+H]<sup>+</sup> : 348.0954, found 348.0956.

**N-(4-methyl-3-oxo-6-(trifluoromethyl)-3,4-dihydroquinoxalin-2-yl)benzamide (3oa)**



<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 10.00 (s, 1 H), 8.05 (d, *J* = 8.4 Hz, 1 H), 8.01 – 7.99 (m, 2 H), 7.65 – 7.61 (m, 2 H), 7.57 – 7.53 (m, 3 H), 3.85 (s, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 164.2, 151.3, 145.9, 134.3 (q, *J<sub>C-F</sub>* = 1.5 Hz), 133.5, 133.0, 130.8, 130.0, 129.8 (q, *J<sub>C-F</sub>* = 32.8 Hz), 129.0, 127.6, 123.7 (q, *J<sub>C-F</sub>* = 271.3 Hz), 121.3 (q, *J<sub>C-F</sub>* = 3.6 Hz), 111.1 (q, *J<sub>C-F</sub>* = 3.7 Hz), 30.1; <sup>19</sup>F NMR (376 MHz, CDCl<sub>3</sub>): δ = -62.1; HRMS (ESI) m/z calcd. for C<sub>17</sub>H<sub>13</sub>F<sub>3</sub>N<sub>3</sub>O<sub>2</sub> [M+H]<sup>+</sup>: 348.0954, found 348.0947.

**N-(6,7-difluoro-4-methyl-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (3pa)**



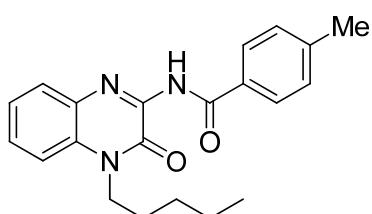
<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.88 (s, 1 H), 7.97 – 7.95 (m, 2 H), 7.77 – 7.72 (m, 1 H), 7.62 – 7.58 (m, 1 H), 7.54 – 7.50 (m, 2 H), 7.14 – 7.10 (m, 1 H), 3.74 (s, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 164.1, 151.0, 150.0 (dd, *J<sub>1</sub>* = 250.1 Hz, *J<sub>2</sub>* = 13.9 Hz, 1 C), 147.2 (dd, *J<sub>1</sub>* = 246.5 Hz, *J<sub>2</sub>* = 13.9 Hz, 1 C), 144.5 (d, *J* = 2.9 Hz, 1 C), 133.5, 132.9, 129.0, 128.5, (dd, *J<sub>1</sub>* = 9.5 Hz, *J<sub>2</sub>* = 2.9 Hz, 1 C), 127.7 (dd, *J<sub>1</sub>* = 8.7 Hz, *J<sub>2</sub>* = 2.1 Hz, 1 C), 127.5, 117.0 (dd, *J<sub>1</sub>* = 19.0 Hz, *J<sub>2</sub>* = 1.5 Hz, 1 C), 102.5 (d, *J* = 23.3 Hz, 1 C), 30.4; <sup>19</sup>F NMR (376 MHz, CDCl<sub>3</sub>): δ = -133.3 (d, *J<sub>F-F</sub>* = 23.3 Hz, 1 F), -140.5 (d, *J<sub>F-F</sub>* = 21.8 Hz, 1 F); HRMS (ESI) m/z calcd. for C<sub>16</sub>H<sub>12</sub>F<sub>2</sub>N<sub>3</sub>O<sub>2</sub> [M+H]<sup>+</sup>: 316.0892, found 316.0884.

**N-(4-methyl-3-oxo-3,4-dihydrobenzo[g]quinoxalin-2-yl)benzamide (3qa)**



<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.98 (s, 1 H), 8.45 (s, 1 H), 8.02 – 7.96 (m, 3 H), 7.90 (d, *J* = 8.4 Hz, 1 H), 7.64 – 7.60 (m, 2 H), 7.56 – 7.47 (m, 4 H), 3.86 (s, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 164.2, 151.7, 144.0, 133.9, 132.7, 131.2, 130.5, 129.9, 129.0, 128.3, 128.0, 127.6, 127.3, 127.1, 125.6, 110.4, 29.9; HRMS (ESI) m/z calcd. for C<sub>20</sub>H<sub>16</sub>N<sub>3</sub>O<sub>2</sub> [M+H]<sup>+</sup>: 330.1237, found 330.1232.

**4-methyl-N-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)benzamide (3ab)**



<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.94 (s, 1 H), 7.96 (dd, *J<sub>1</sub>* = 8.0 Hz, *J<sub>2</sub>* = 1.6 Hz, 1 H), 7.91 – 7.88 (m, 2 H), 7.50 – 7.45 (m, 1 H), 7.39 – 7.30 (m, 4 H), 4.33 – 4.29 (m, 2 H), 2.43 (s, 3 H), 1.84 – 1.77 (m, 2 H), 1.49 – 1.38 (m, 4 H), 0.93 (t, *J* = 7.2 Hz, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 164.1, 151.2, 144.4, 143.4, 132.5, 131.0, 129.9, 129.7, 129.5, 128.2, 127.6, 124.4, 113.6, 43.2, 29.0, 27.0, 22.3, 21.6, 13.9; HRMS (ESI) m/z calcd. for

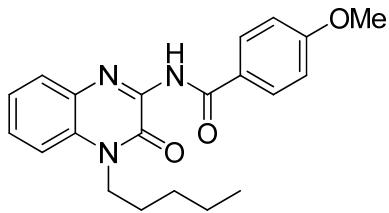
$C_{21}H_{24}N_3O_2[M+H]^+$  : 350.1863, found 350.1863.

**4-(tert-butyl)-N-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)benzamide (3ac)**



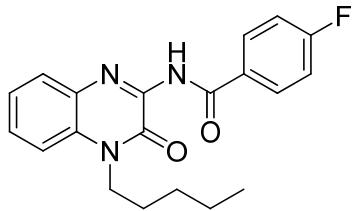
$^1H$  NMR (400 MHz,  $CDCl_3$ ):  $\delta$  = 9.96 (s, 1 H), 7.98 – 7.94 (m, 3 H), 7.53 (d,  $J$  = 8.4 Hz, 2 H), 7.48 (t,  $J$  = 8.0 Hz, 1 H), 7.39 – 7.31 (m, 2 H), 4.32 (t,  $J$  = 7.6 Hz, 2 H), 1.83 – 1.79 (m, 2 H), 1.47 – 1.41 (m, 4 H), 1.36 (s, 9 H), 0.94 (t,  $J$  = 7.2 Hz, 3 H);  $^{13}C$  NMR (100 MHz,  $CDCl_3$ ):  $\delta$  = 164.1, 156.4, 151.2, 144.4, 132.5, 131.0, 129.9, 129.7, 128.2, 127.5, 125.9, 124.5, 113.6, 43.2, 35.1, 31.1, 29.0, 27.0, 22.4, 13.9; HRMS (ESI) m/z calcd. for  $C_{24}H_{30}N_3O_2[M+H]^+$  : 392.2333, found 392.2329.

**4-methoxy-N-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)benzamide (3ad)**



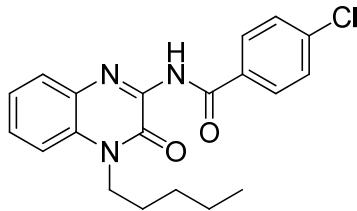
$^1H$  NMR (400 MHz,  $CDCl_3$ ):  $\delta$  = 9.89 (s, 1 H), 7.99 – 7.93 (m, 3 H), 7.49 – 7.45 (m, 1 H), 7.38 – 7.30 (m, 2 H), 6.99 (d,  $J$  = 8.8 Hz, 2 H), 4.31 (t,  $J$  = 7.6 Hz, 2 H), 3.88 (s, 3 H), 1.84 – 1.77 (m, 2 H), 1.47 – 1.38 (m, 4 H), 0.93 (t,  $J$  = 7.2 Hz, 3 H);  $^{13}C$  NMR (100 MHz,  $CDCl_3$ ):  $\delta$  = 163.6, 163.1, 151.2, 144.4, 132.5, 130.1, 129.8, 129.6, 128.1, 126.1, 124.4, 114.1, 113.6, 55.5, 43.2, 29.0, 27.0, 22.3, 13.9; HRMS (ESI) m/z calcd. for  $C_{21}H_{24}N_3O_3$  [M+H] $^+$  : 366.1812, found 366.1815.

**4-fluoro-N-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)benzamide (3ae)**



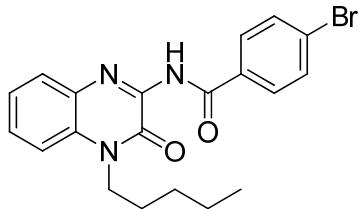
$^1H$  NMR (400 MHz,  $CDCl_3$ ):  $\delta$  = 9.89 (s, 1 H), 8.03 – 8.00 (m, 2 H), 7.95 (dd,  $J_1$  = 8.0 Hz,  $J_2$  = 1.2 Hz, 1 H), 7.51 – 7.47 (m, 1 H), 7.40 – 7.32 (m, 2 H), 7.21 – 7.17 (m, 2 H), 4.32 (t,  $J$  = 7.6 Hz, 2 H), 1.84 – 1.77 (m, 2 H), 1.49 – 1.38 (m, 4 H), 0.93 (t,  $J$  = 6.8 Hz, 3 H);  $^{13}C$  NMR (100 MHz,  $CDCl_3$ ):  $\delta$  = 165.4 ( $J_{C-F}$  = 252.3), 163.1, 151.1, 144.2, 132.4, 130.1, 130.0, 129.9, 129.7, 128.4, 124.5, 116.0 ( $J_{C-F}$  = 21.9), 113.6, 43.2, 29.0, 27.0, 22.3, 13.9; HRMS (ESI) m/z calcd. for  $C_{20}H_{21}FN_3O_2$  [M+H] $^+$  : 354.1612, found 354.1609.

**4-chloro-N-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)benzamide (3af)**



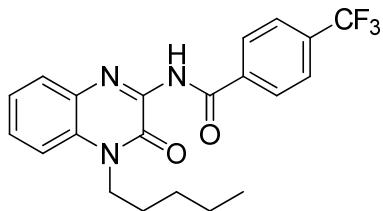
<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.90 (s, 1 H), 7.96 – 7.92 (m, 3 H), 7.51 – 7.47 (m, 3 H), 7.40 – 7.32 (m, 2 H), 4.31 (t, *J* = 7.6 Hz, 2 H), 1.84 – 1.77 (m, 2 H), 1.49 – 1.38 (m, 4 H), 0.93 (t, *J* = 6.8 Hz, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 163.2, 151.1, 144.1, 139.1, 132.3, 132.2, 130.0, 129.7, 129.2, 129.0, 128.5, 124.6, 113.7, 43.2, 29.0, 27.0, 22.3, 13.9; HRMS (ESI) m/z calcd. for C<sub>20</sub>H<sub>21</sub>ClN<sub>3</sub>O<sub>2</sub>[M+H]<sup>+</sup> : 370.1317, found 370.1315.

**4-bromo-N-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)benzamide (3ag)**



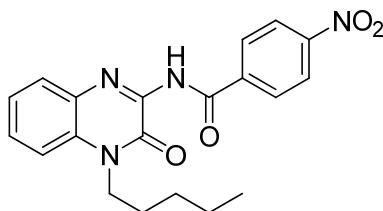
<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.90 (s, 1 H), 7.95 (d, *J* = 8.0 Hz, 1 H), 7.87 (d, *J* = 8.8 Hz, 2 H), 7.67 – 7.64 (m, 2 H), 7.52 – 7.48 (m, 1 H), 7.40 – 7.32 (m, 2 H), 4.32 (t, *J* = 7.6 Hz, 2 H), 1.85 – 1.77 (m, 2 H), 1.47 – 1.39 (m, 4 H), 0.93 (t, *J* = 6.8 Hz, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 163.3, 151.1, 144.1, 132.7, 132.4, 132.2, 130.0, 129.8, 129.1, 128.5, 127.7, 124.6, 113.7, 43.3, 29.0, 27.0, 22.3, 13.9; HRMS (ESI) m/z calcd. for C<sub>20</sub>H<sub>21</sub>BrN<sub>3</sub>O<sub>2</sub>[M+H]<sup>+</sup> : 414.0812, found 414.0806.

**N-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)-4-(trifluoromethyl)benzamide (3ah)**



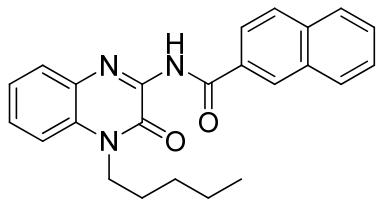
<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.96 (s, 1 H), 8.11 (d, *J* = 8.0 Hz, 2 H), 7.96 (dd, *J*<sub>1</sub> = 8.0 Hz, *J*<sub>2</sub> = 0.8 Hz, 1 H), 7.79 (d, *J* = 8.4 Hz, 2 H), 7.54 – 7.49 (m, 1 H), 7.42 – 7.34 (m, 2 H), 4.33 (t, *J* = 7.6 Hz, 2 H), 1.85 – 1.78 (m, 2 H), 1.48 – 1.39 (m, 4 H), 0.94 (t, *J* = 7.2 Hz, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 163.0, 151.1, 144.0, 135.7 (q, *J*<sub>C-F</sub> = 271.3 Hz, 1 C), 134.0, 132.3, 129.9 (q, *J*<sub>C-F</sub> = 24.1 Hz, 1 C), 128.7, 128.0, 126.0 (q, *J*<sub>C-F</sub> = 3.6 Hz, 1 C), 124.8, 124.6, 113.7, 43.3, 29.0, 27.0, 22.3, 13.9; <sup>19</sup>F NMR (376 MHz, CDCl<sub>3</sub>): δ = -63.0; HRMS (ESI) m/z calcd. for C<sub>21</sub>H<sub>21</sub>F<sub>3</sub>N<sub>3</sub>O<sub>2</sub> [M+H]<sup>+</sup> : 404.1580, found 404.1576.

**4-nitro-N-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)benzamide (3ai)**



<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.96 (s, 1 H), 8.40 – 8.36 (m, 2 H), 8.18 – 8.14 (m, 2 H), 7.96 (dd, *J*<sub>1</sub> = 8.0 Hz, *J*<sub>2</sub> = 1.6 Hz, 1 H), 7.56 – 7.51 (m, 1 H), 7.43 – 7.35 (m, 2 H), 4.34 (t, *J* = 7.6 Hz, 2 H), 1.86 – 1.80 (m, 2 H), 1.49 – 1.41 (m, 4 H), 0.94 (t, *J* = 7.2 Hz, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 162.4, 151.0, 150.2, 143.9, 139.3, 132.2, 130.1, 129.8, 128.9, 128.8, 124.7, 124.1, 113.8, 43.3, 29.0, 27.0, 22.3, 13.9; HRMS (ESI) m/z calcd. for C<sub>20</sub>H<sub>21</sub>N<sub>3</sub>O<sub>4</sub> [M+H]<sup>+</sup> : 381.1557, found 381.1555.

**N-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)-2-naphthamide (3aj)**



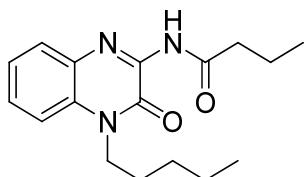
<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 10.13 (s, 1 H), 8.52 (s, 1 H), 8.07 (dd, *J*<sub>1</sub> = 8.4 Hz, *J*<sub>2</sub> = 1.6 Hz, 1 H), 8.01 – 7.96 (m, 3 H), 7.91 (d, *J* = 7.6 Hz, 1 H), 7.64 – 7.57 (m, 2 H), 7.53 – 7.48 (m, 1 H), 7.42 – 7.34 (m, 2 H), 4.35 (t, *J* = 7.6 Hz, 2 H), 1.87 – 1.80 (m, 2 H), 1.50 – 1.40 (m, 4 H), 0.95 (t, *J* = 7.2 Hz, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 164.3, 145.9, 135.3, 132.5, 131.1, 129.8, 129.3, 128.9, 128.4, 128.3, 128.3, 127.8, 127.0, 124.5, 123.8, 113.7, 43.3, 29.1, 27.0, 22.4, 13.9; HRMS (ESI) m/z calcd. for C<sub>24</sub>H<sub>24</sub>N<sub>3</sub>O<sub>2</sub>[M+H]<sup>+</sup> : 386.1863, found 386.1869.

**N-(3-oxo-4-pentyl-3,4-dihydroquinalin-2-yl)thiophene-2-carboxamide (3ak)**



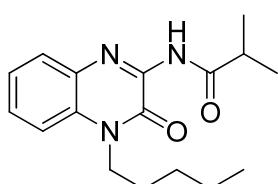
<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.78 (s, 1 H), 7.94 (dd, *J*<sub>1</sub> = 8.0 Hz, *J*<sub>2</sub> = 1.2 Hz, 1 H), 7.77 (d, *J* = 8.0 Hz, 1 H), 7.63 (dd, *J*<sub>1</sub> = 5.2 Hz, *J*<sub>2</sub> = 1.2 Hz, 1 H), 7.50 – 7.46 (m, 1 H), 7.39 – 7.31 (m, 2 H), 7.17 – 7.15 (m, 1 H), 4.32 (t, *J* = 7.6 Hz, 2 H), 1.85 – 1.77 (m, 2 H), 1.48 – 1.39 (m, 4 H), 0.93 (t, *J* = 7.2 Hz, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 158.5, 151.0, 144.0, 138.8, 132.5, 132.4, 129.9, 129.7, 129.5, 128.3, 128.0, 124.5, 113.6, 43.2, 29.0, 27.0, 22.4, 13.9; HRMS (ESI) m/z calcd. for C<sub>18</sub>H<sub>20</sub>N<sub>3</sub>O<sub>2</sub>S [M+H]<sup>+</sup> : 342.1271, found 342.1267.

**N-(3-oxo-4-pentyl-3,4-dihydroquinalin-2-yl)butyramide (3al)**



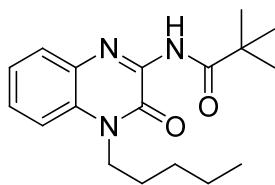
<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.12 (s, 1 H), 7.84 (dd, *J*<sub>1</sub> = 8.0 Hz, *J*<sub>2</sub> = 1.2 Hz, 1 H), 7.47 – 7.43 (m, 1 H), 7.36 – 7.28 (m, 2 H), 4.28 (t, *J* = 7.2 Hz, 2 H), 1.81 – 1.74 (m, 3 H), 1.45 – 1.37 (m, 4 H), 1.30 – 1.28 (m, 6 H), 0.92 (t, *J* = 7.2 Hz, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 175.7, 150.8, 144.0, 132.3, 129.8, 129.3, 128.0, 124.3, 113.6, 43.1, 36.4, 29.0, 26.9, 22.3, 19.1, 13.9; HRMS (ESI) m/z calcd. for C<sub>17</sub>H<sub>24</sub>N<sub>3</sub>O<sub>2</sub>[M+H]<sup>+</sup> : 302.1863, found 302.1861.

**N-(3-oxo-4-pentyl-3,4-dihydroquinalin-2-yl)isobutyramide (3am)**



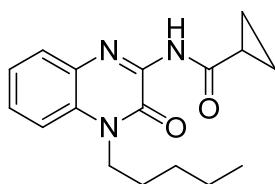
<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.04 (s, 1 H), 7.80 (dd, *J*<sub>1</sub> = 8.0 Hz, *J*<sub>2</sub> = 1.2 Hz, 1 H), 7.47 – 7.43 (m, 1 H), 7.35 – 7.33 (m, 1 H), 7.30 – 7.27 (m, 1 H), 4.27 (t, *J* = 7.6 Hz, 2 H), 2.79 (t, *J* = 7.2 Hz, 2 H), 1.84 – 1.73 (m, 4 H), 1.45 – 1.38 (m, 4 H), 1.04 (t, *J* = 7.2 Hz, 3 H), 0.92 (t, *J* = 7.2 Hz, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 172.6, 150.7, 143.9, 132.1, 129.9, 129.0, 127.9, 124.3, 113.6, 43.1, 39.8, 28.9, 26.9, 22.3, 18.2, 13.9, 13.8; HRMS (ESI) m/z calcd. for C<sub>17</sub>H<sub>24</sub>N<sub>3</sub>O<sub>2</sub>[M+H]<sup>+</sup> : 302.1863, found 302.1860.

**N-(3-oxo-4-pentyl-3,4-dihydroquinalin-2-yl)pivalamide (3an)**



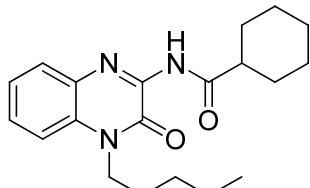
<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.50 (s, 1 H), 7.90 (dd, *J*<sub>1</sub> = 8.0 Hz, *J*<sub>2</sub> = 1.6 Hz, 1 H), 7.47 – 7.43 (m, 1 H), 7.36 – 7.27 (m, 2 H), 4.27 (t, *J* = 7.6 Hz, 2 H), 1.82 – 1.74 (m, 2 H), 1.45 – 1.39 (m, 4 H), 1.36 (s, 9 H), 0.92 (t, *J* = 7.2 Hz, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 176.0, 151.1, 144.2, 132.4, 129.8, 129.6, 128.1, 124.4, 113.5, 43.2, 40.7, 29.0, 27.3, 26.9, 22.3, 13.9; HRMS (ESI) m/z calcd. for C<sub>18</sub>H<sub>26</sub>N<sub>3</sub>O<sub>2</sub>[M+H]<sup>+</sup> : 316.2020, found 316.2019.

***N*-(3-oxo-4-pentyl-3,4-dihydroquinalin-2-yl)cyclopropanecarboxamide (3ao)**



<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.24 (s, 1 H), 7.80 (dd, *J*<sub>1</sub> = 8.0 Hz, *J*<sub>2</sub> = 1.2 Hz, 1 H), 7.46 – 7.42 (m, 1 H), 7.34 – 7.27 (m, 2 H), 4.30 – 4.26 (m, 2 H), 2.38 (brs, 1 H), 1.81 – 1.74 (m, 2 H), 1.44 – 1.37 (m, 4 H), 1.23 – 1.19 (m, 2 H), 1.00 – 0.99 (m, 5 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 172.9, 150.8, 144.0, 132.1, 129.9, 129.1, 127.9, 124.3, 113.6, 43.1, 28.9, 26.9, 22.3, 15.5, 13.9, 9.74; HRMS (ESI) m/z calcd. for C<sub>17</sub>H<sub>22</sub>N<sub>3</sub>O<sub>2</sub>[M+H]<sup>+</sup> : 300.1707, found 300.1702.

***N*-(3-oxo-4-pentyl-3,4-dihydroquinalin-2-yl)cyclohexanecarboxamide (3ap)**



<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>): δ = 9.11 (s, 1 H), 7.84 (dd, *J*<sub>1</sub> = 8.0 Hz, *J*<sub>2</sub> = 0.8 Hz, 1 H), 7.48 – 7.43 (m, 1 H), 7.36 – 7.28 (m, 2 H), 4.30 – 4.26 (m, 2 H), 2.82 (brs, 1 H), 2.05 – 2.02 (m, 2 H), 1.87 – 1.74 (m, 5 H), 1.63 – 1.55 (m, 2 H), 1.45 – 1.31 (m, 7 H), 0.93 (t, *J* = 7.2 Hz, 3 H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>): δ = 150.9, 144.0, 132.3, 131.0, 129.9, 129.3, 128.0, 124.3, 113.6, 43.1, 29.2, 29.0, 25.7, 25.6, 22.4, 13.9; HRMS (ESI) m/z calcd. for C<sub>20</sub>H<sub>28</sub>N<sub>3</sub>O<sub>2</sub>[M+H]<sup>+</sup> : 342.2176, found 342.2173.

## References

- Yuan, J.; Zhu, J.; Fu, J.; Yang, L.; Xiao, Y.; Mao, P.; Du, X.; Qu, L., Highly efficient copper-catalyzed direct C–H amidation of quinoxalin-2(1H)-ones with amides under microwave irradiation. *Org. Chem. Front.* **2019**, *6* (7), 925–935.

## <sup>1</sup>H and <sup>13</sup>C NMR spectra of products

*N*-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)benzamide (3aa)

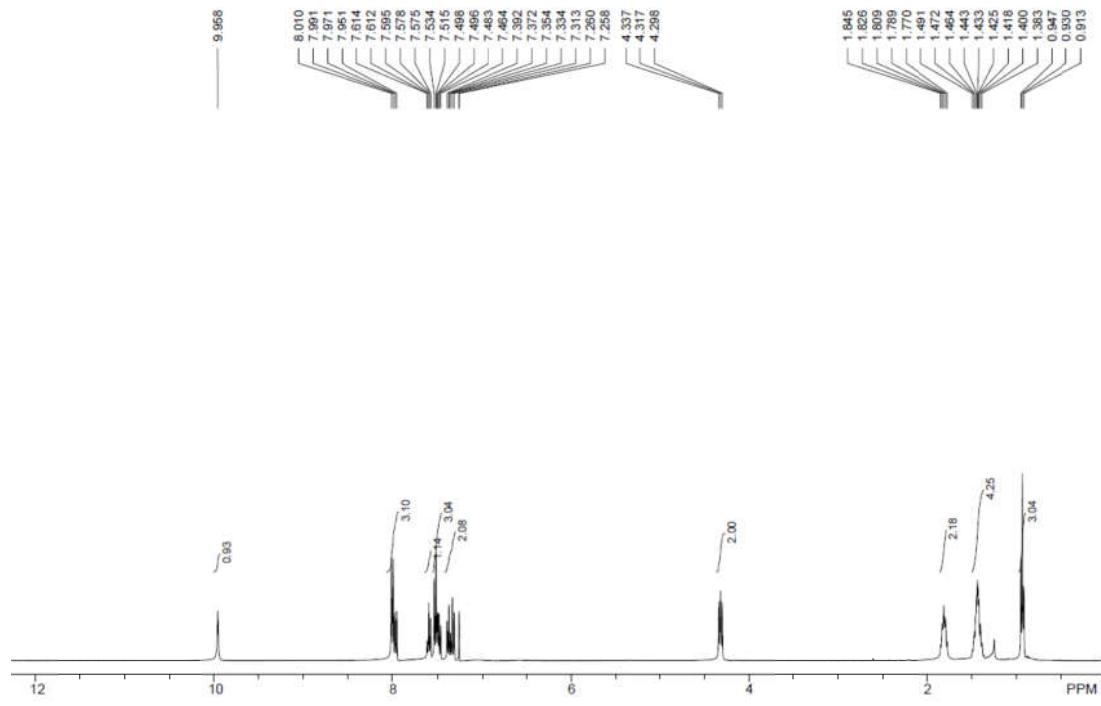


Figure S1 <sup>1</sup>H spectra of 3aa

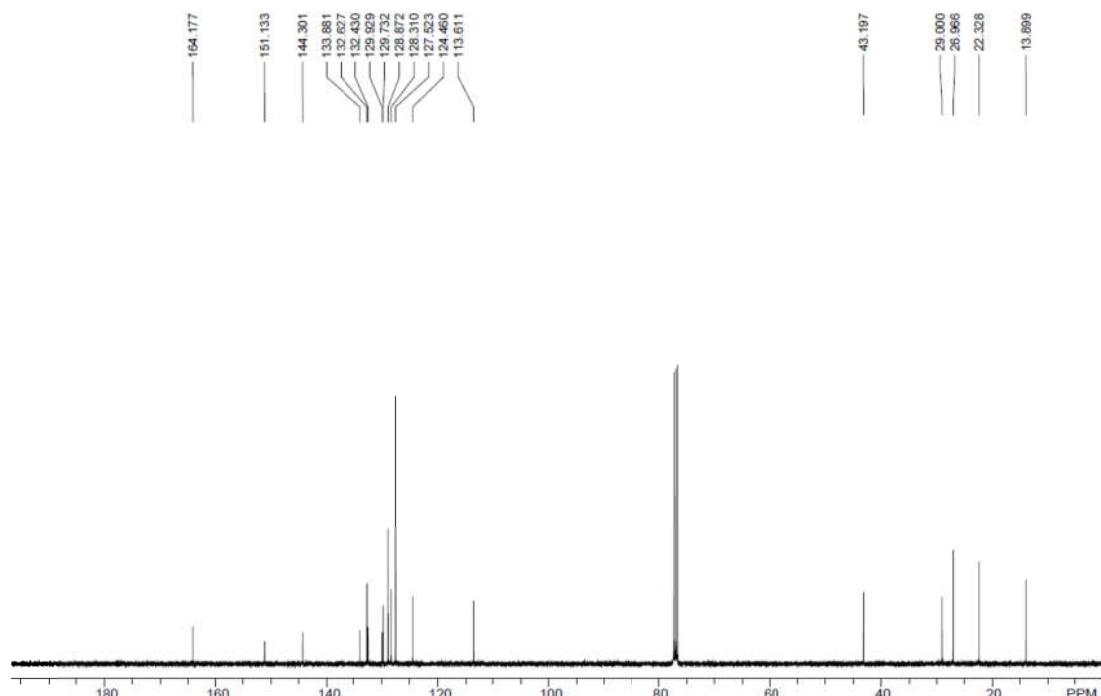


Figure S2 <sup>13</sup>C spectra of 3aa

*N*-(4-methyl-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (**3ba**)

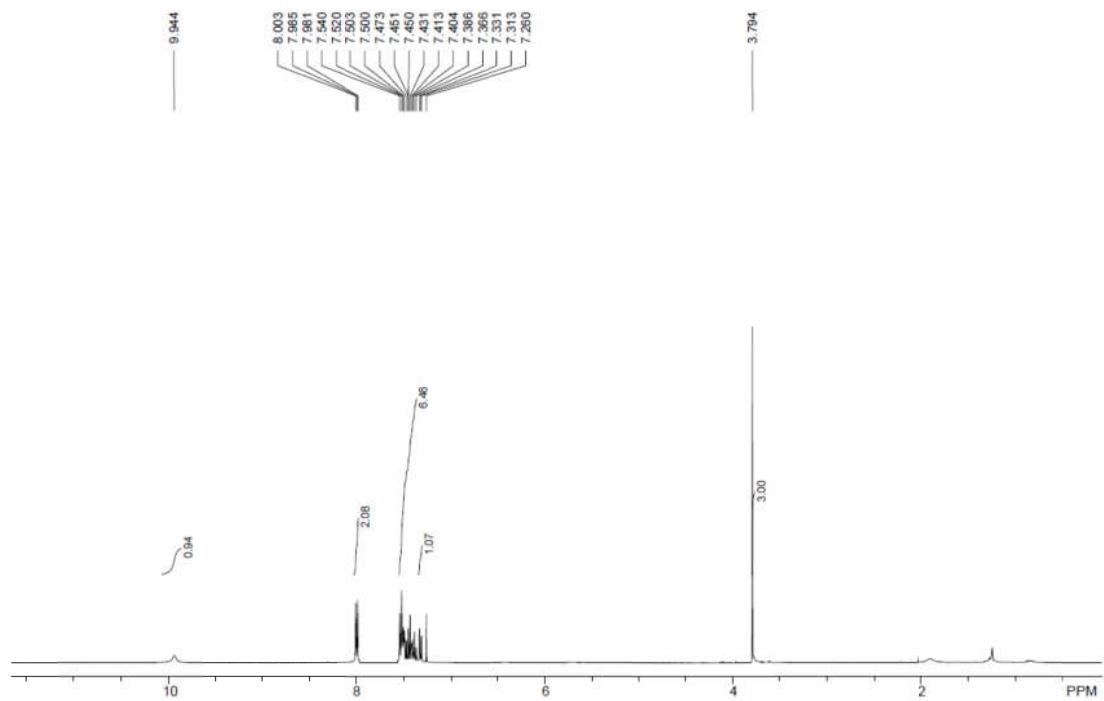


Figure S3    <sup>1</sup>H spectra of **3ba**

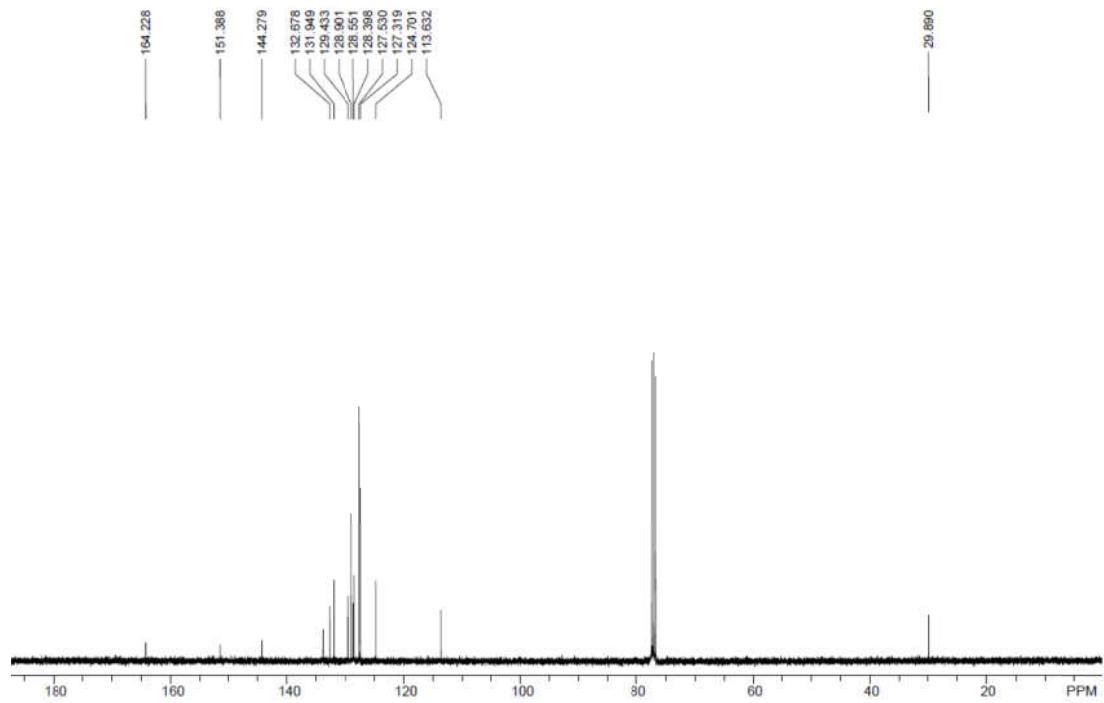
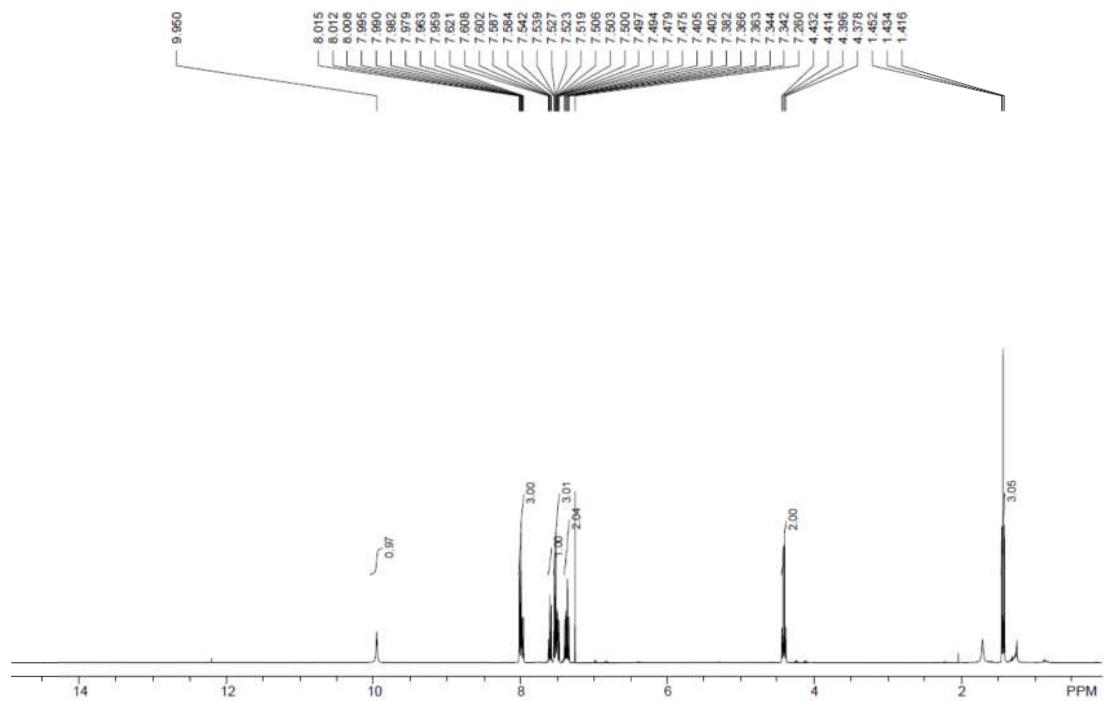
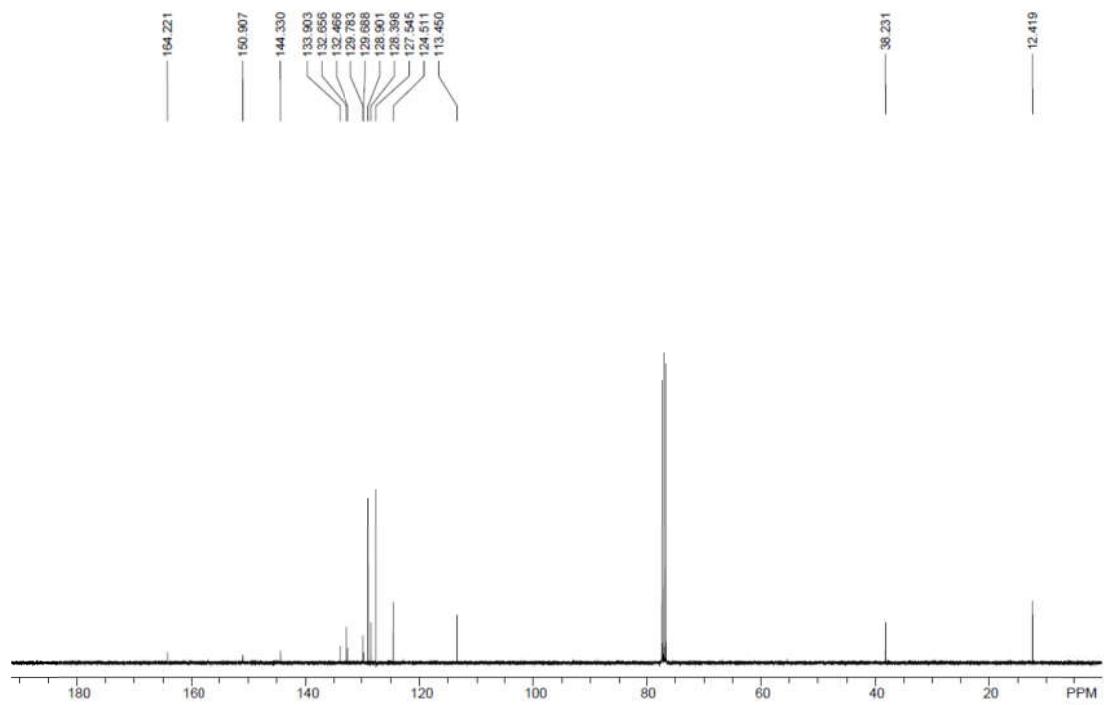


Figure S4    <sup>13</sup>C spectra of **3ba**

***N*-(4-ethyl-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (3ca)**

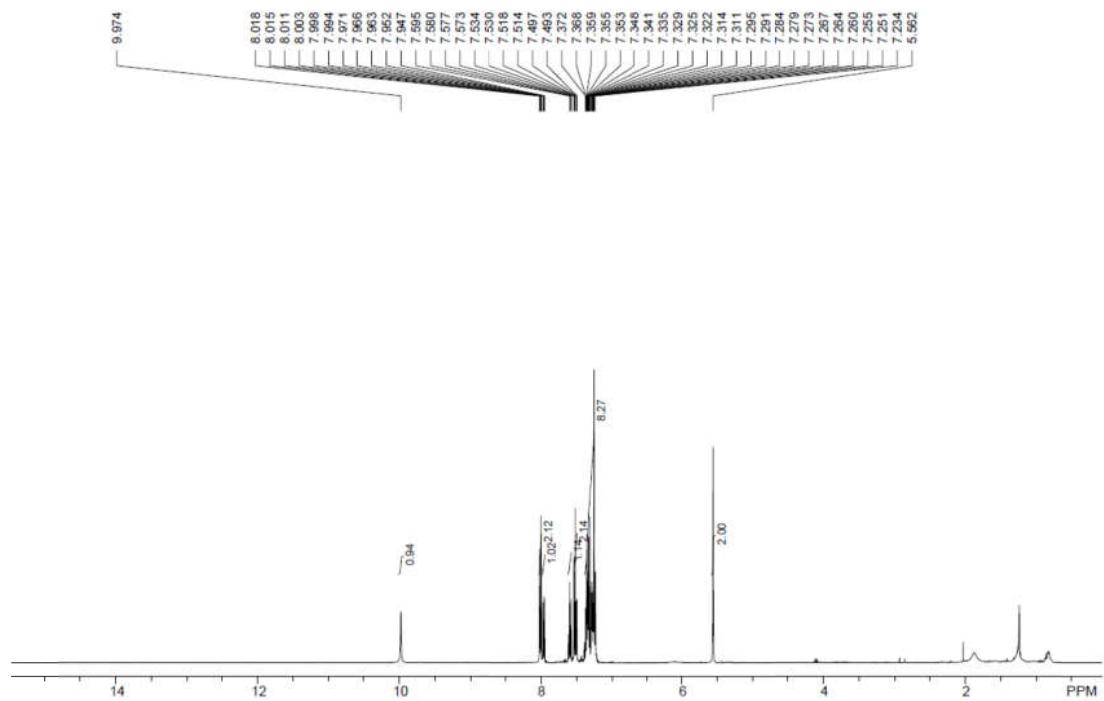


**Figure S5** <sup>1</sup>H spectra of 3ca

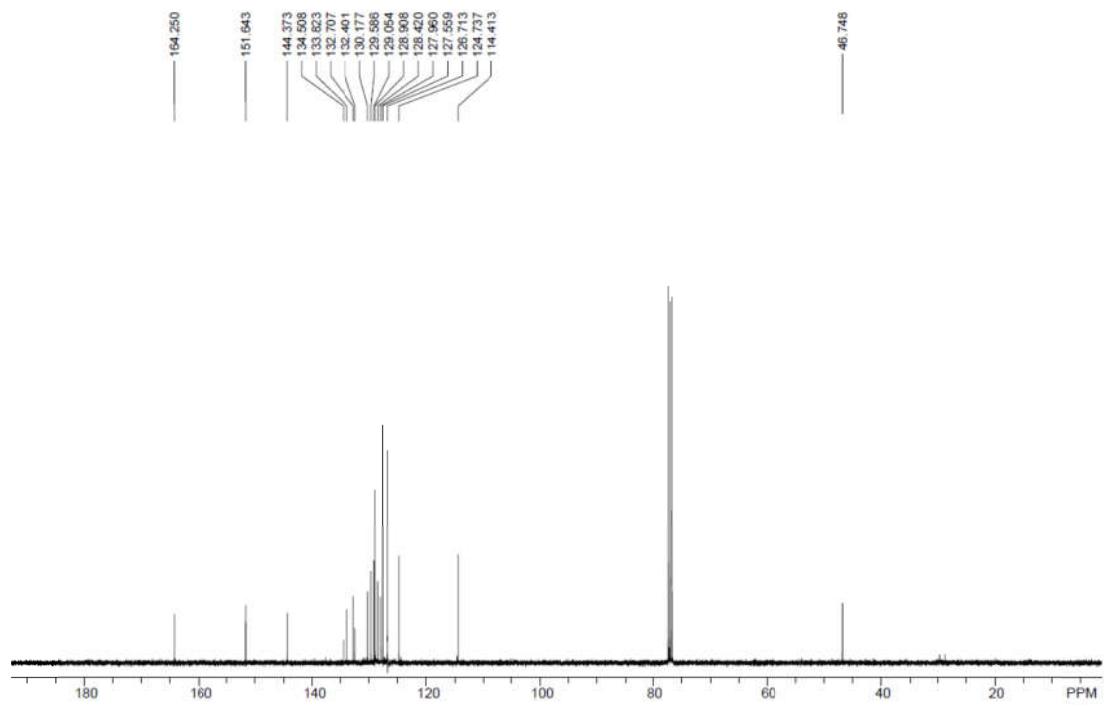


**Figure S6** <sup>13</sup>C spectra of 3ca

***N*-(4-benzyl-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (3da)**



**Figure S7** <sup>1</sup>H spectra of 3da



**Figure S8** <sup>13</sup>C spectra of 3da

*N*-(4-(4-methoxybenzyl)-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (3ea)

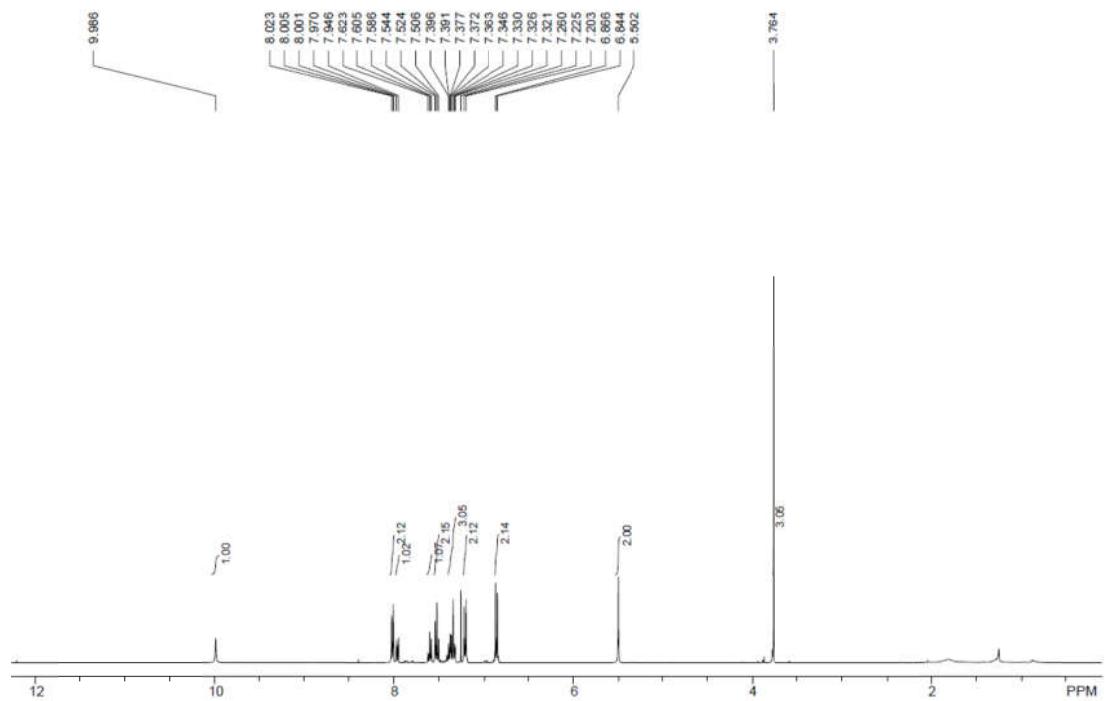


Figure S9 <sup>1</sup>H spectra of 3ea

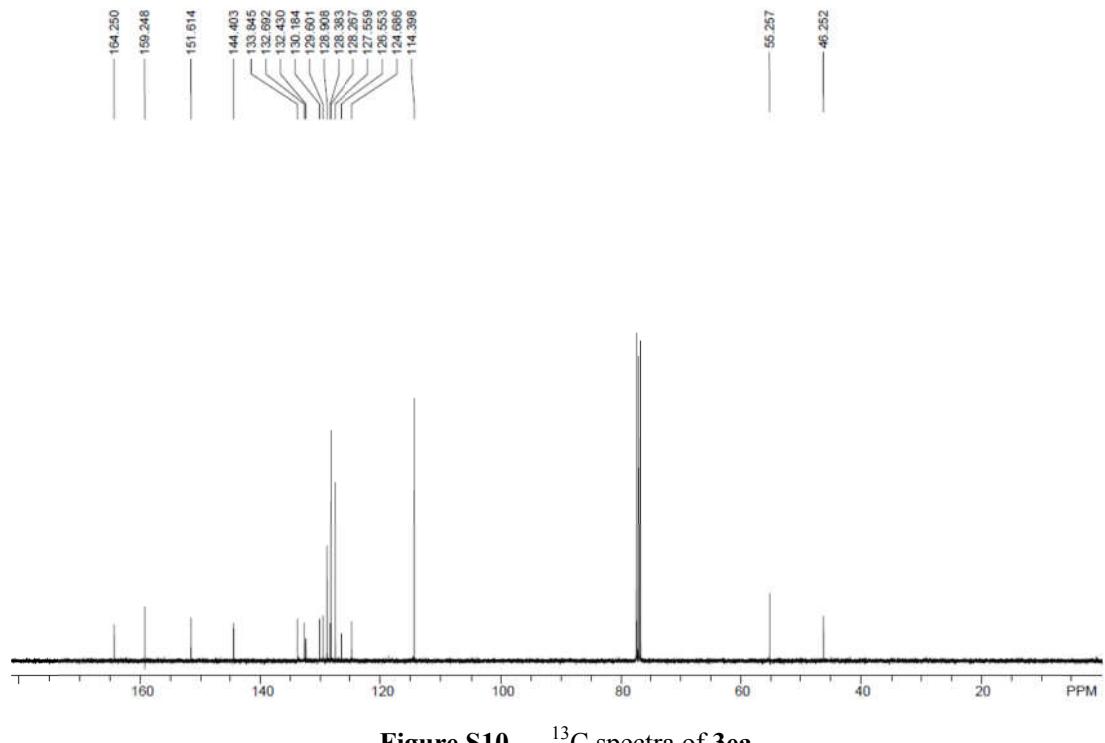
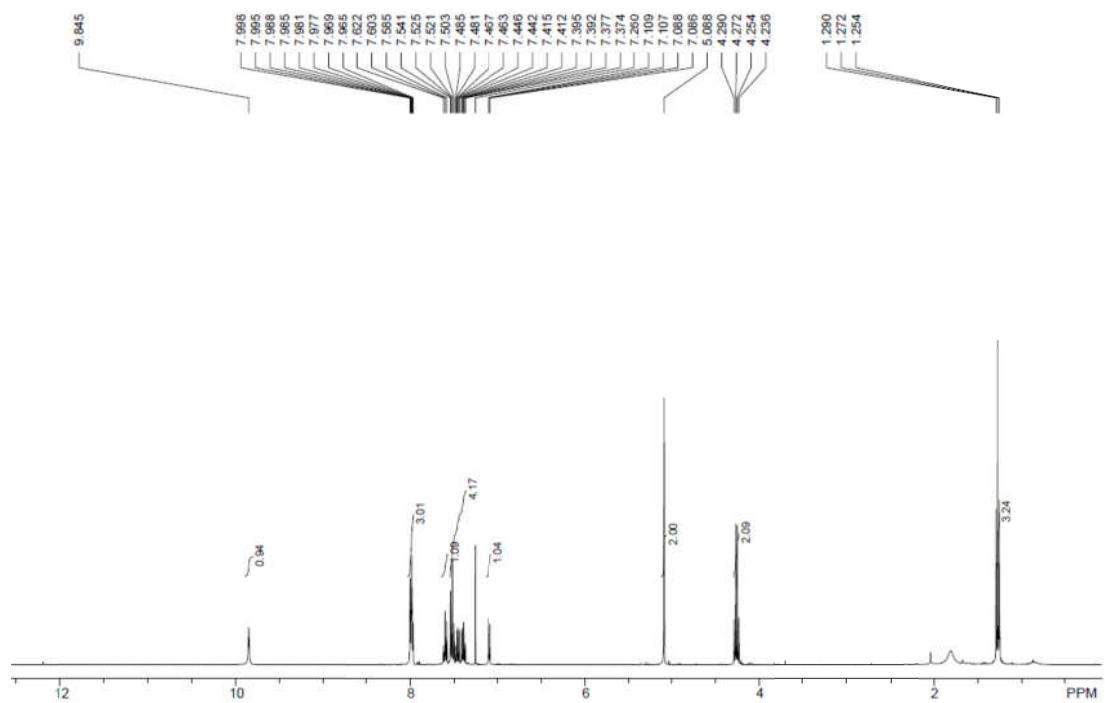
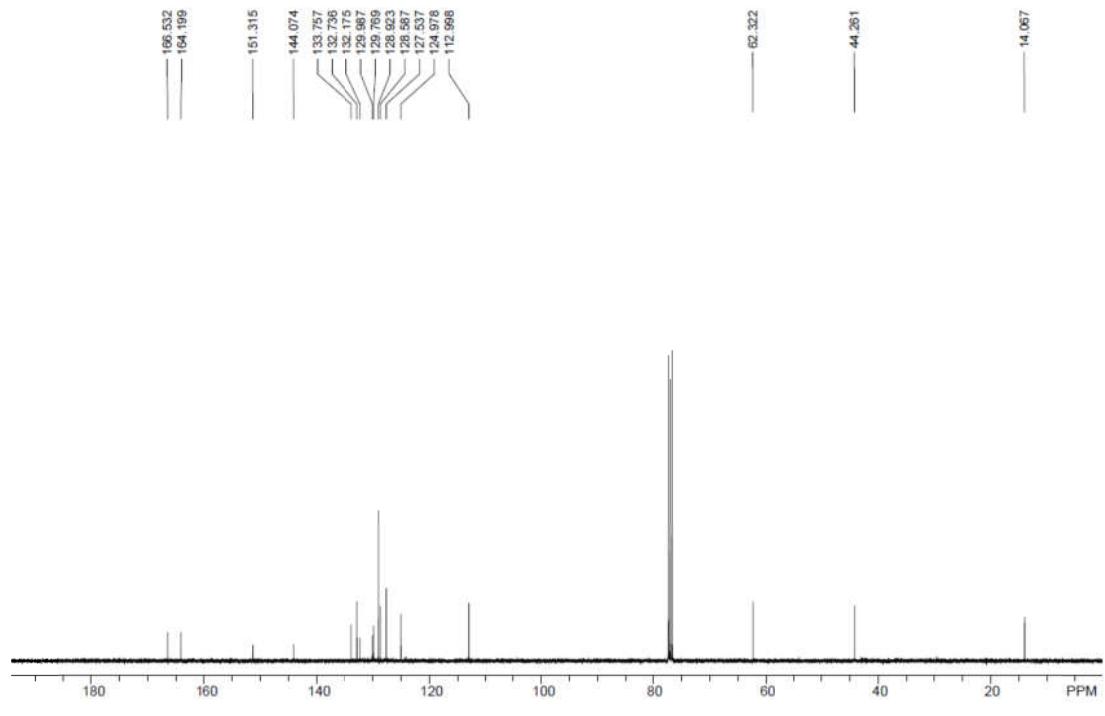


Figure S10 <sup>13</sup>C spectra of 3ea

**ethyl 2-(3-benzamido-2-oxoquinolin-1(2H)-yl)acetate (3fa)**

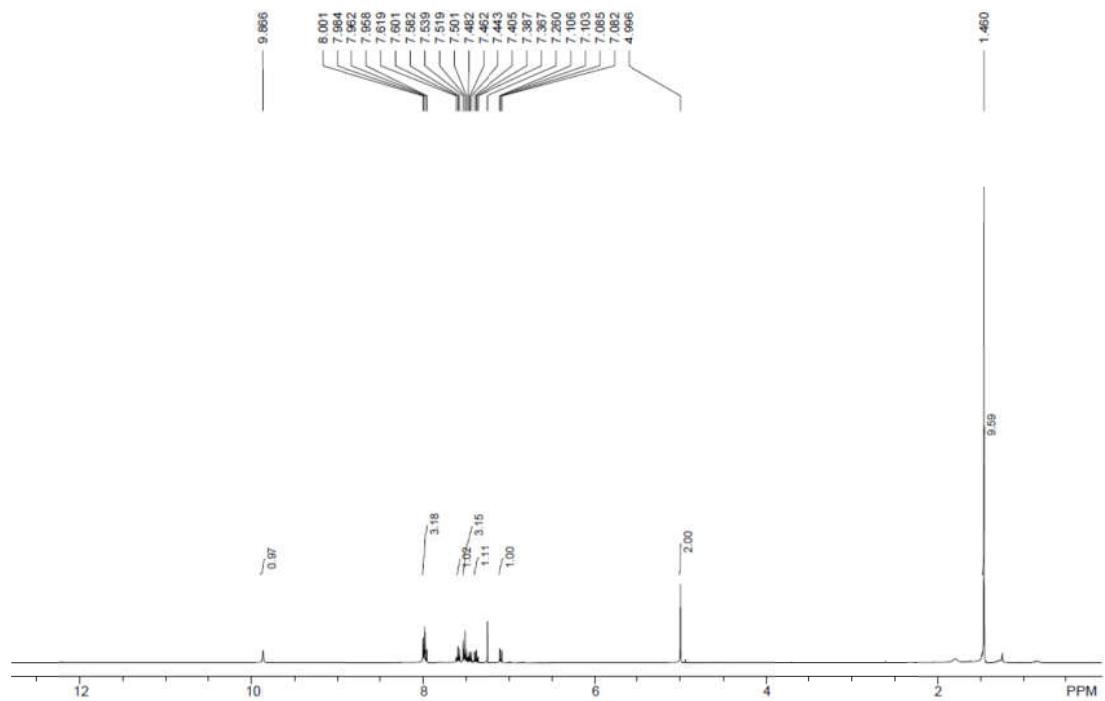


**Figure S11** <sup>1</sup>H spectra of 3fa

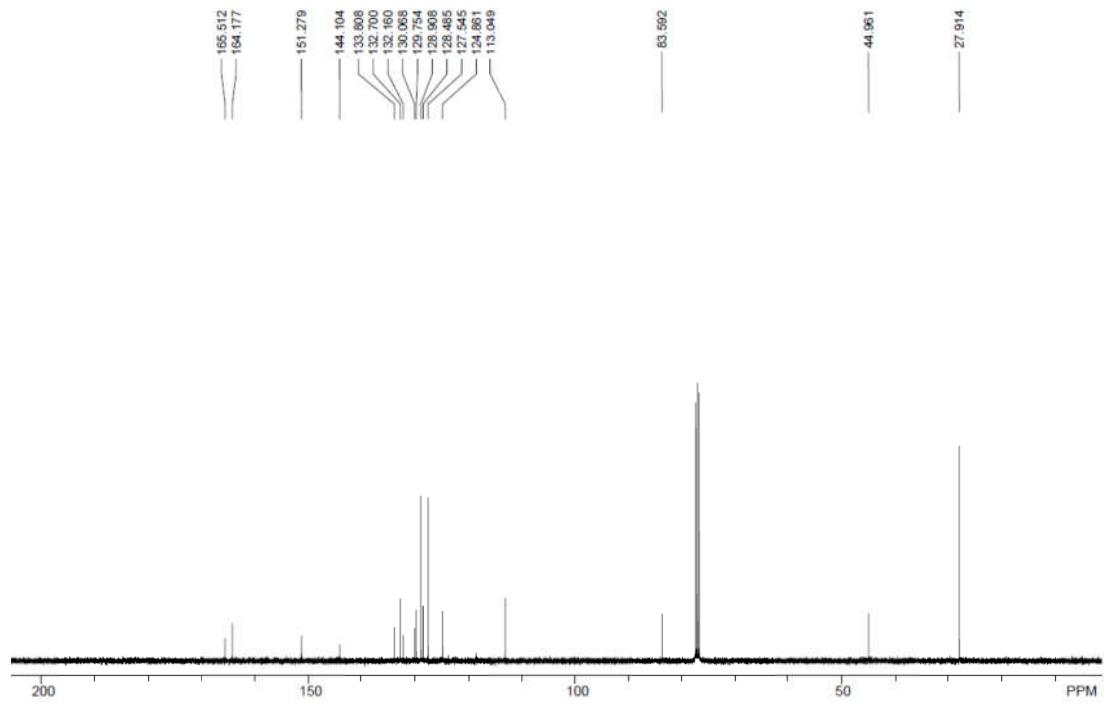


**Figure S12** <sup>13</sup>C spectra of 3fa

**tert-butyl 2-(3-benzamido-2-oxoquinoxalin-1(2H)-yl)acetate (3ga)**

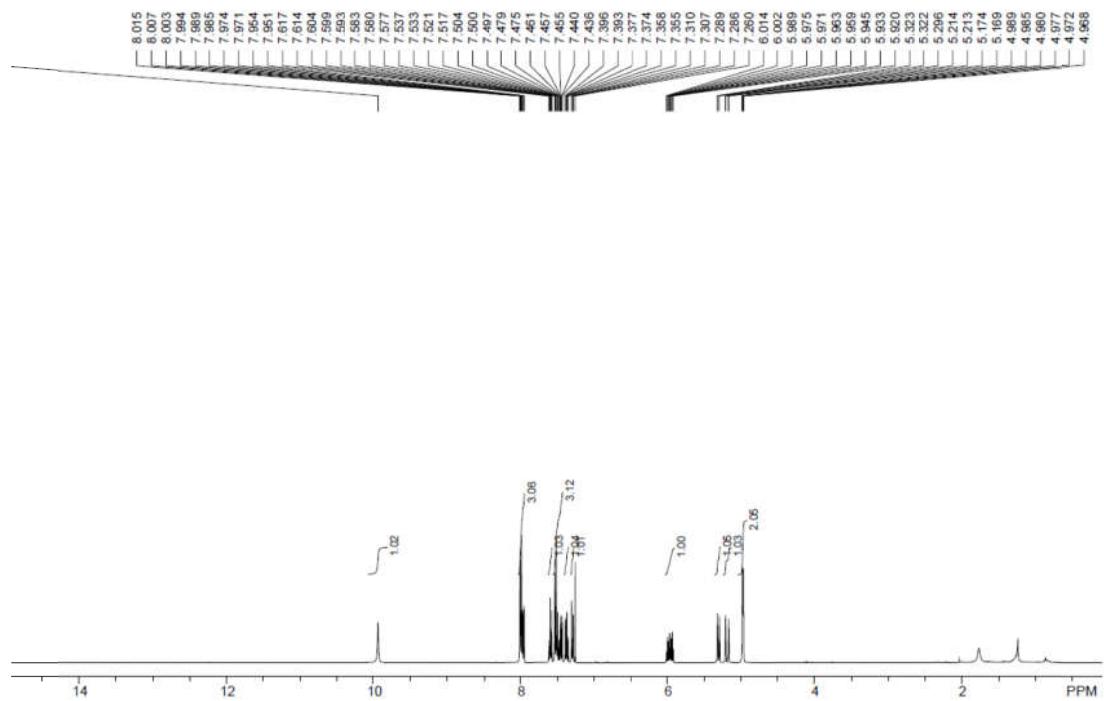


**Figure S13**  $^1\text{H}$  spectra of **3ga**

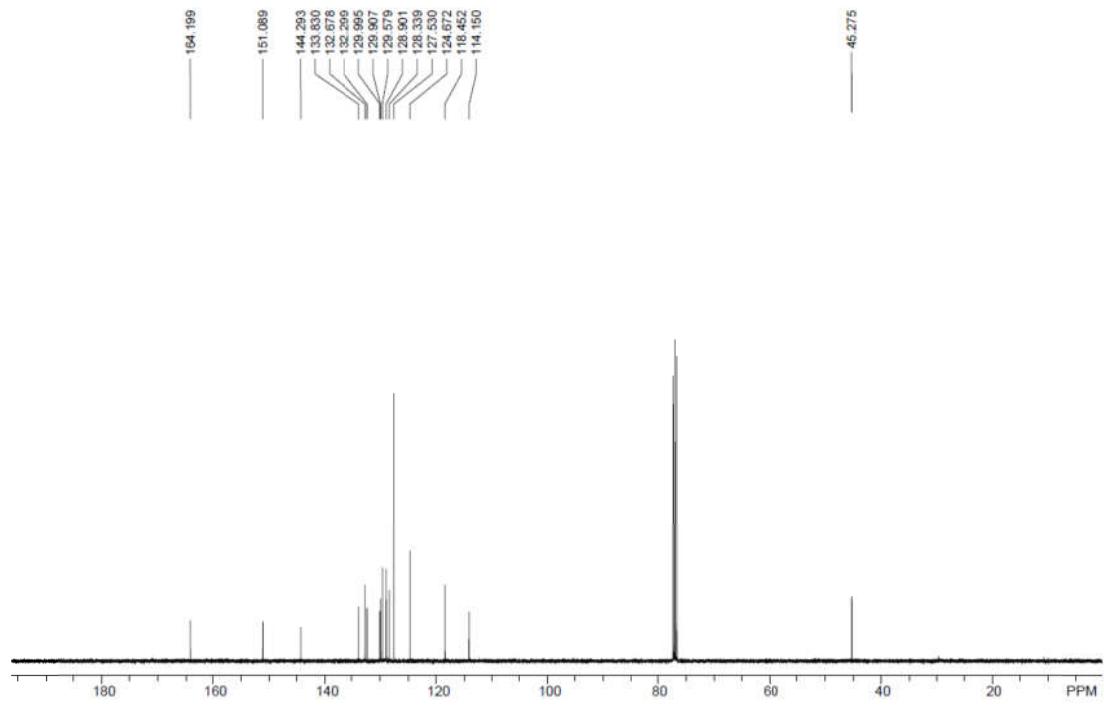


**Figure S14**  $^{13}\text{C}$  spectra of **3ga**

***N*-(4-allyl-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (3ha)**



**Figure S15** <sup>1</sup>H spectra of 3ha



**Figure S16** <sup>13</sup>C spectra of 3ha

*N*-(3-oxo-4-(prop-2-yn-1-yl)-3,4-dihydroquinoxalin-2-yl)benzamide (3ia)

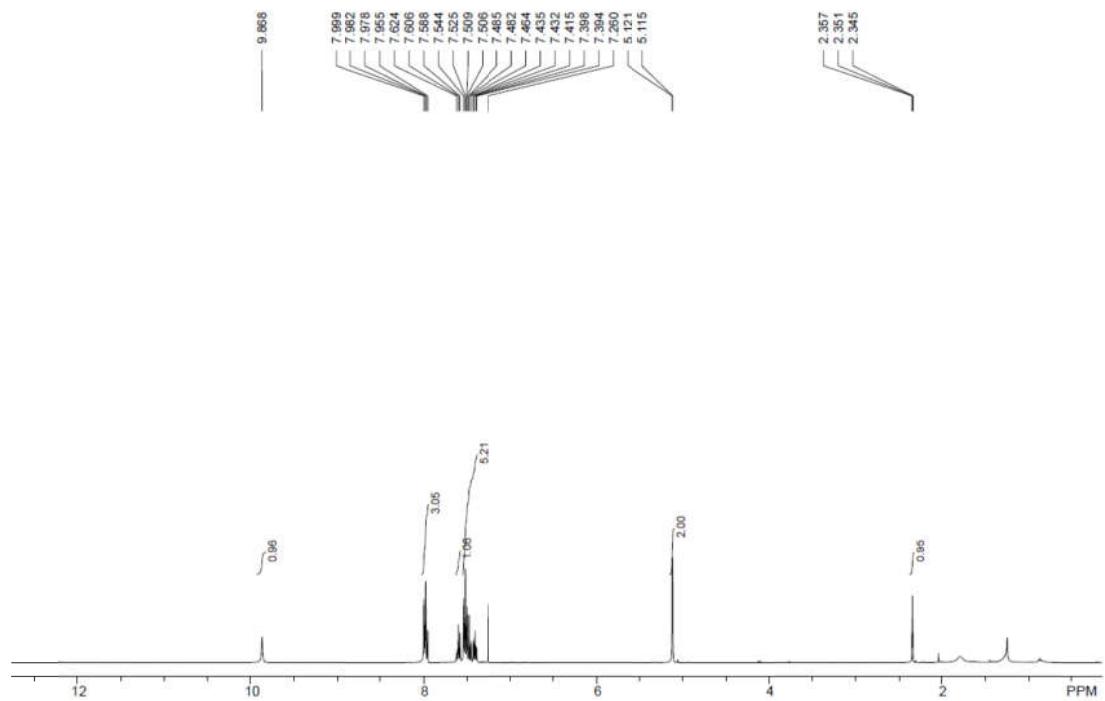


Figure S17 <sup>1</sup>H spectra of 3ia

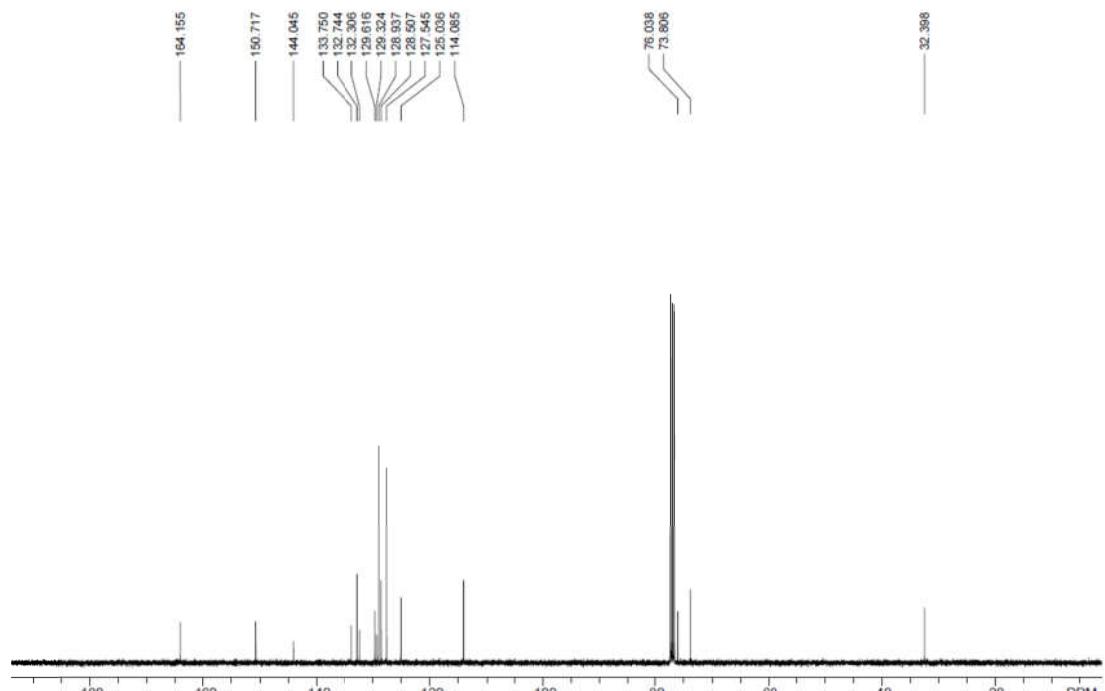
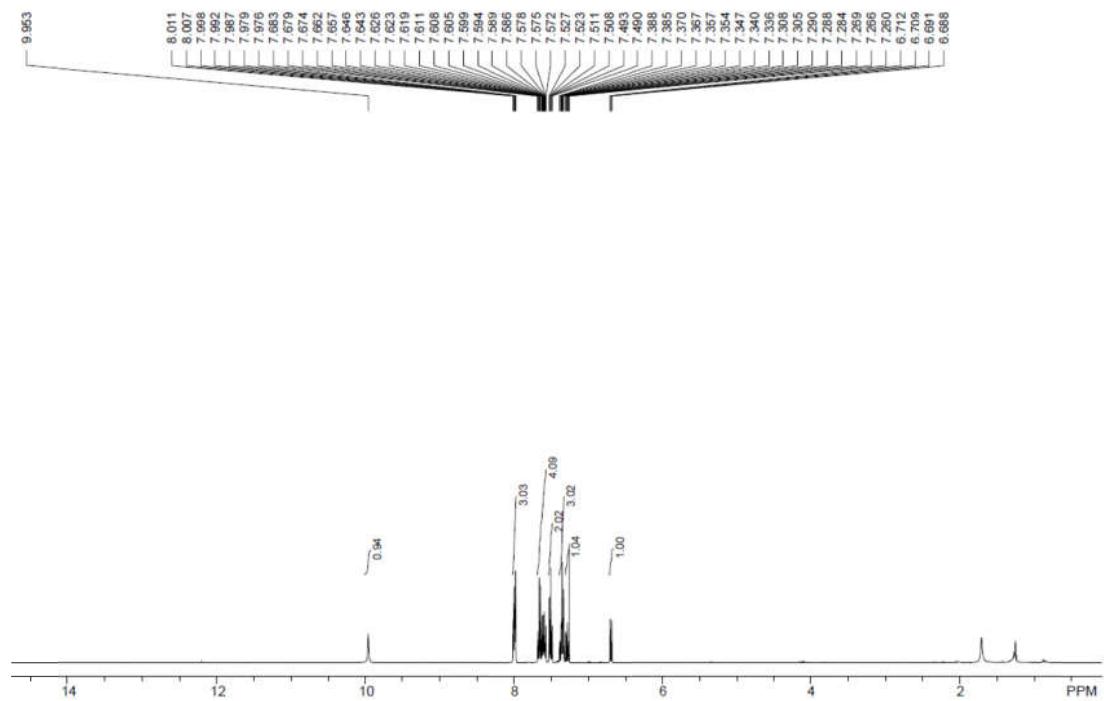
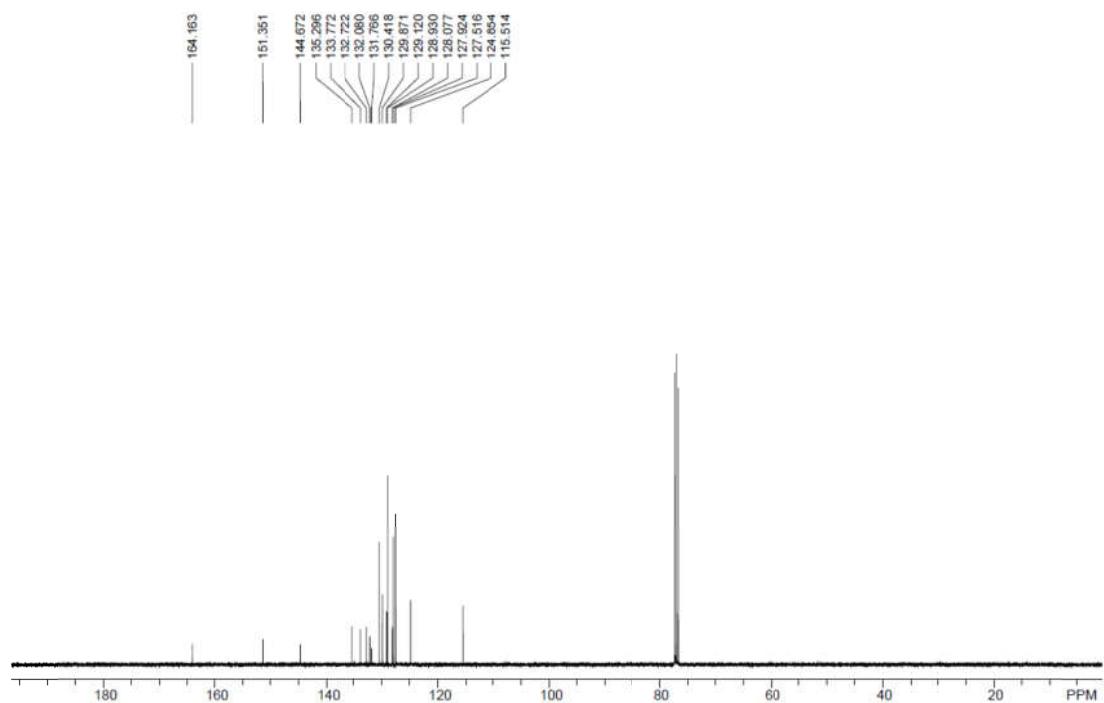


Figure S18 <sup>13</sup>C spectra of 3ia

***N*-(3-oxo-4-phenyl-3,4-dihydroquinoxalin-2-yl)benzamide (3ja)**



**Figure S19** <sup>1</sup>H spectra of 3ja



**Figure S20** <sup>13</sup>C spectra of 3ja

*N*-(7-fluoro-4-methyl-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (**3ka**)

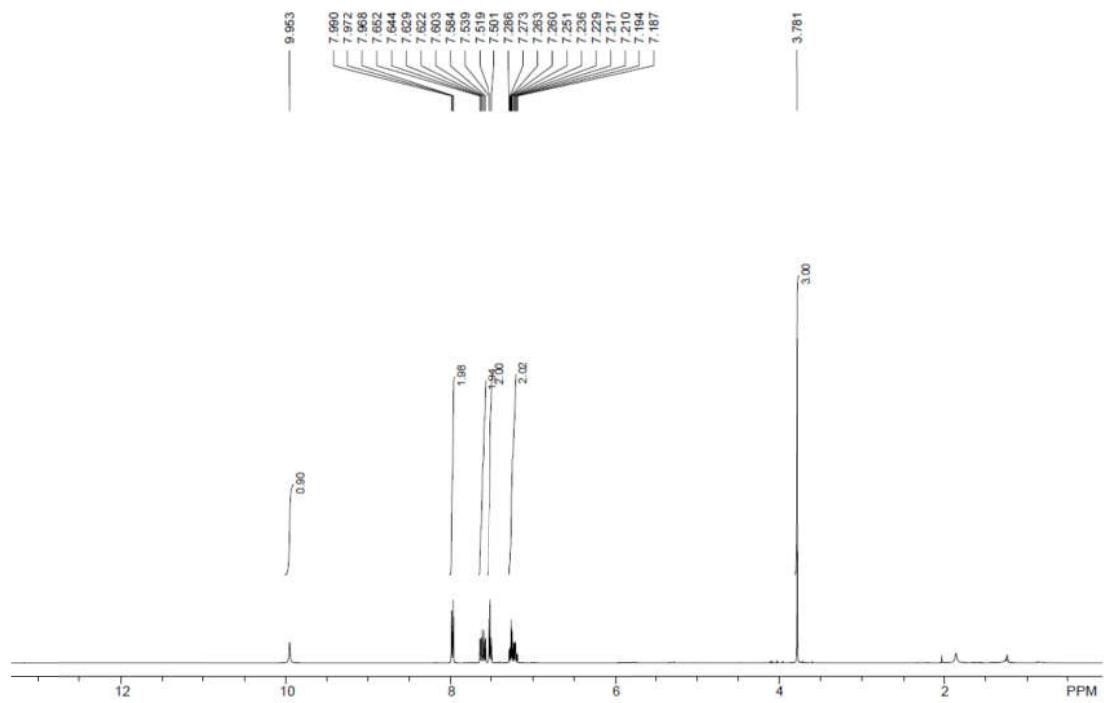


Figure S21    <sup>1</sup>H spectra of **3ka**

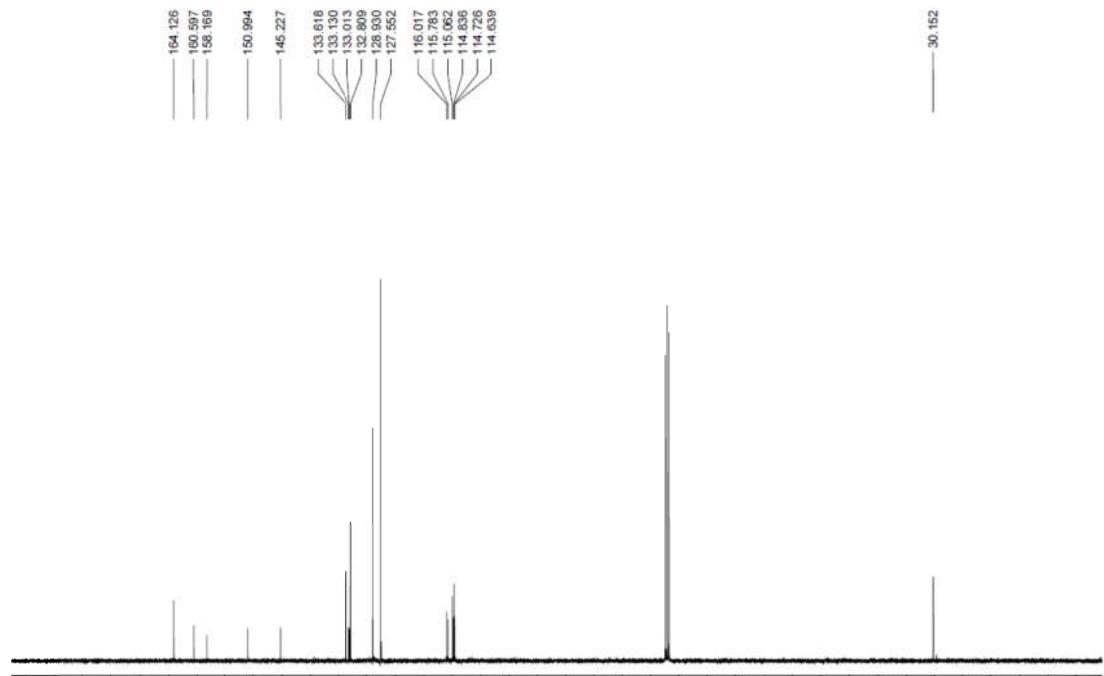


Figure S22    <sup>13</sup>C spectra of **3ka**

*N*-(7-chloro-4-methyl-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (**3la**)

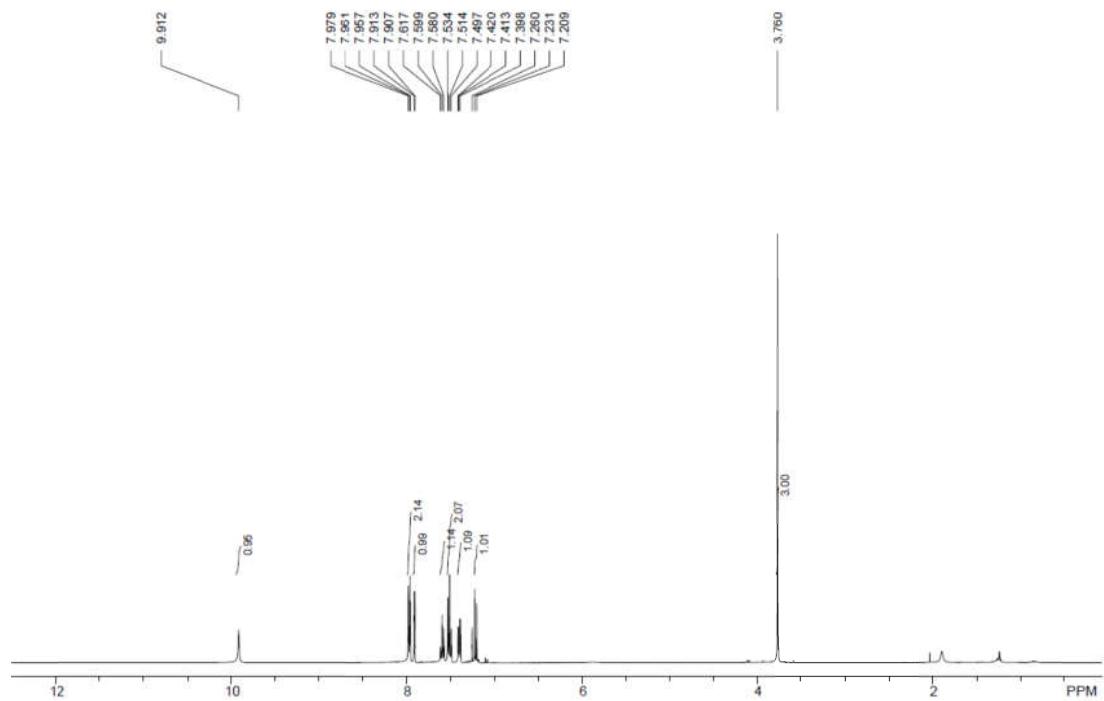


Figure S23    <sup>1</sup>H spectra of **3la**

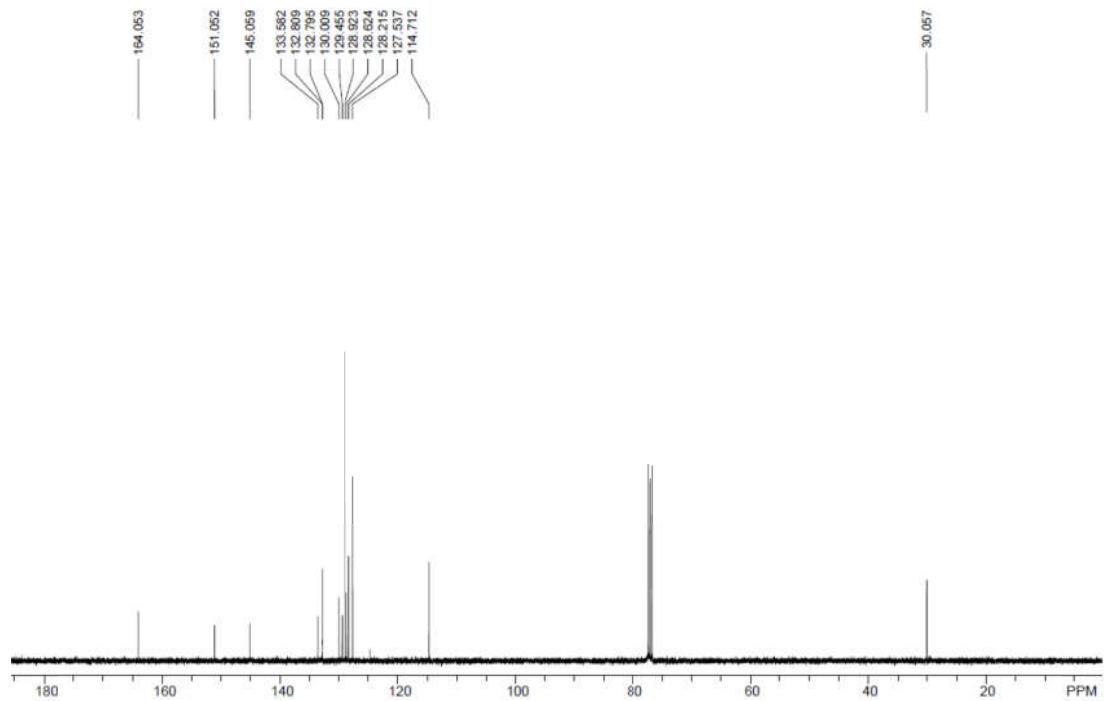


Figure S24    <sup>13</sup>C spectra of **3la**

*N*-(7-bromo-4-methyl-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (**3ma**)

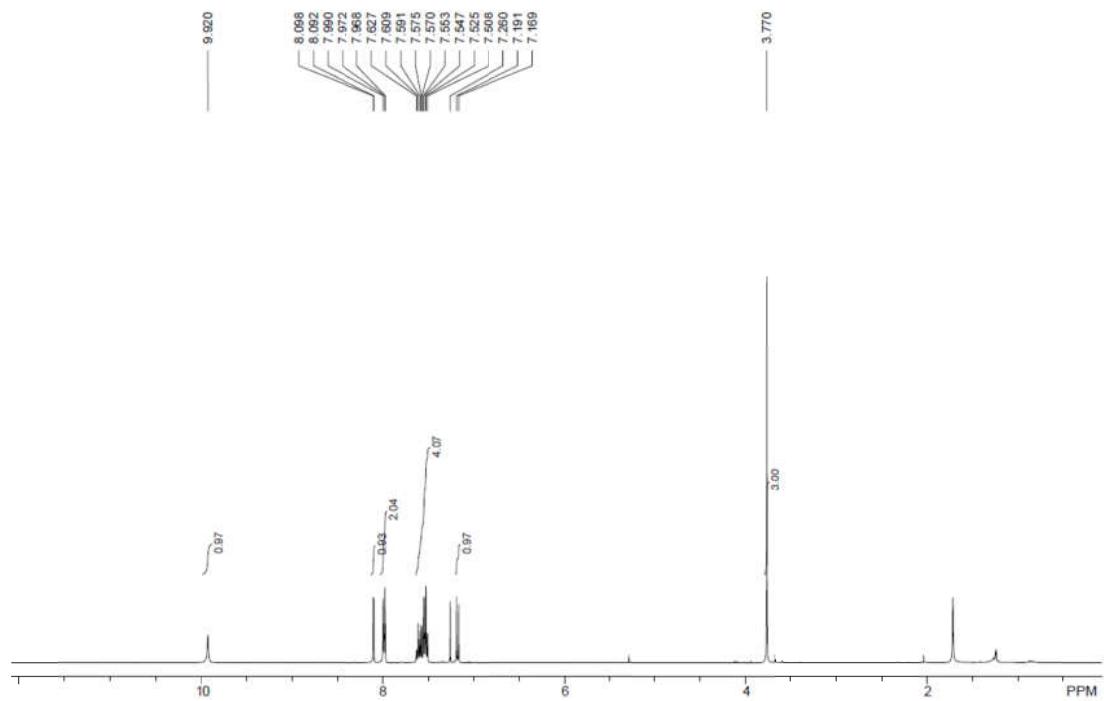


Figure S25 <sup>1</sup>H spectra of **3ma**

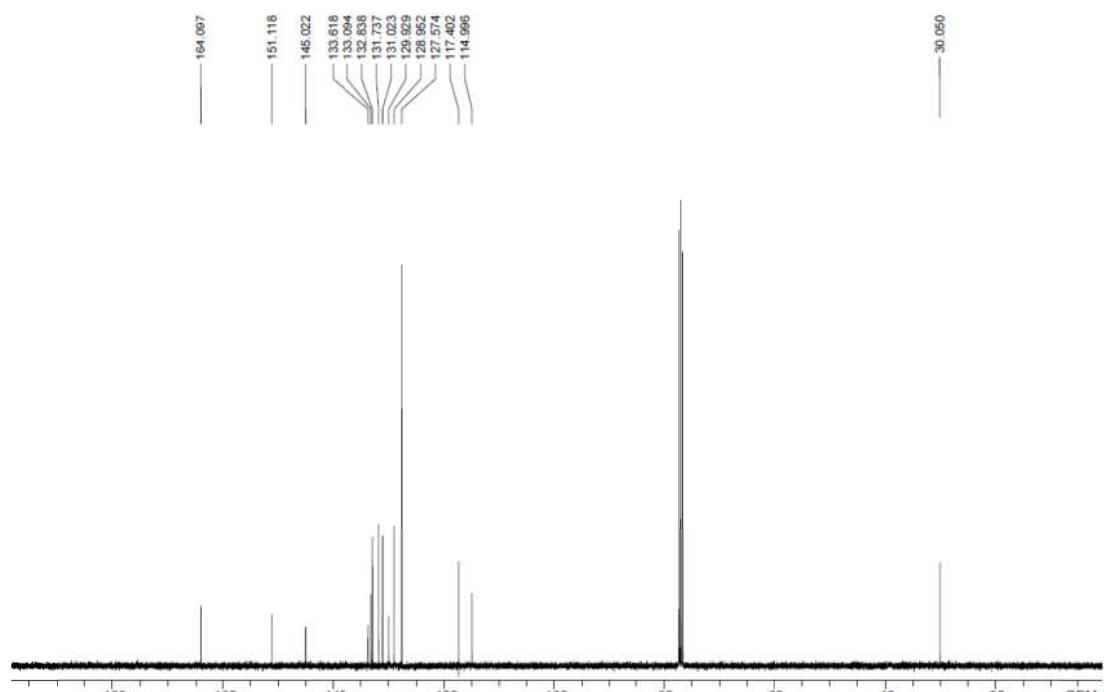


Figure S26 <sup>13</sup>C spectra of **3ma**

*N*-(4-methyl-3-oxo-7-(trifluoromethyl)-3,4-dihydroquinoxalin-2-yl)benzamide (**3na**)

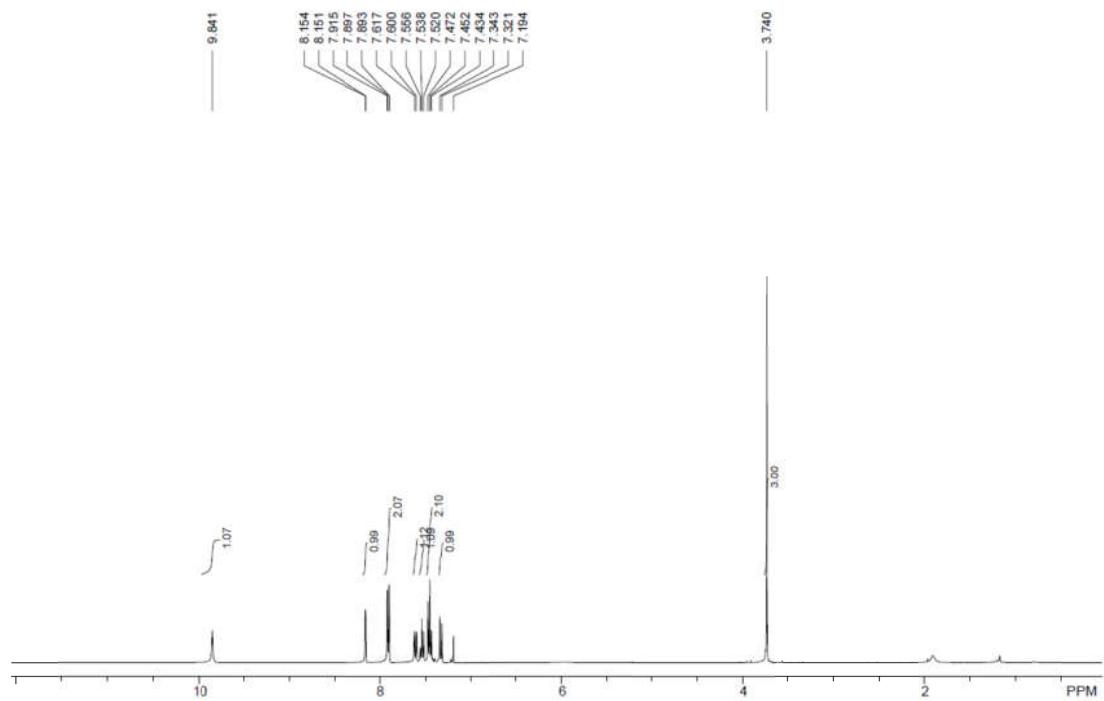


Figure S27 <sup>1</sup>H spectra of **3na**

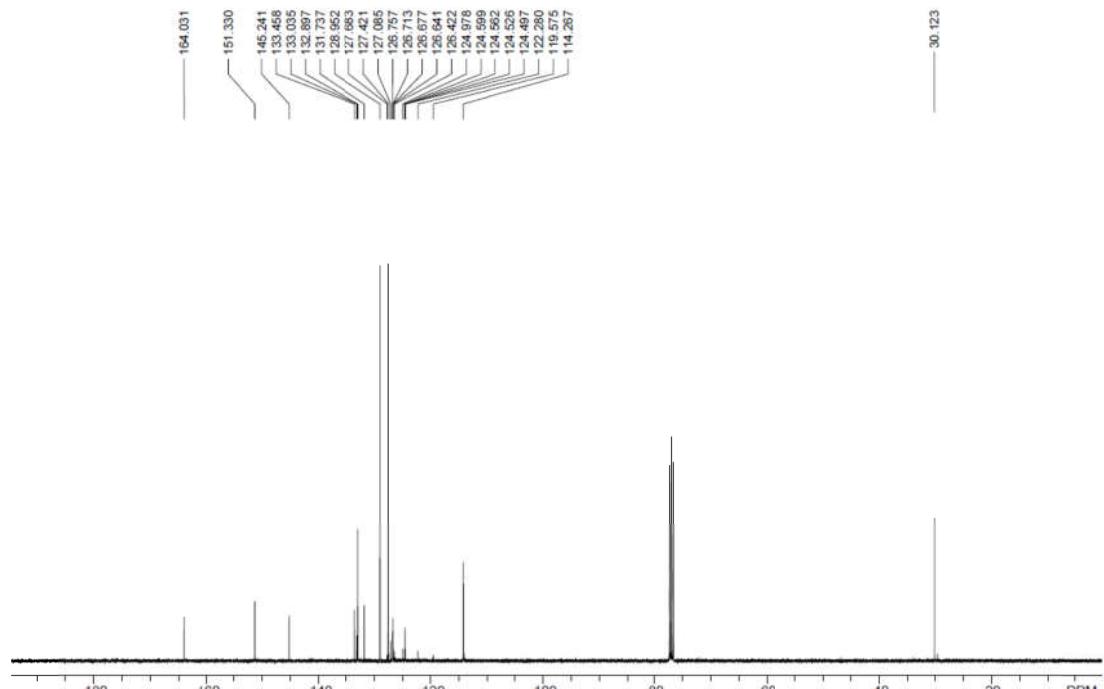


Figure S28 <sup>13</sup>C spectra of **3na**

*N*-(4-methyl-3-oxo-6-(trifluoromethyl)-3,4-dihydroquinoxalin-2-yl)benzamide (**3oa**)

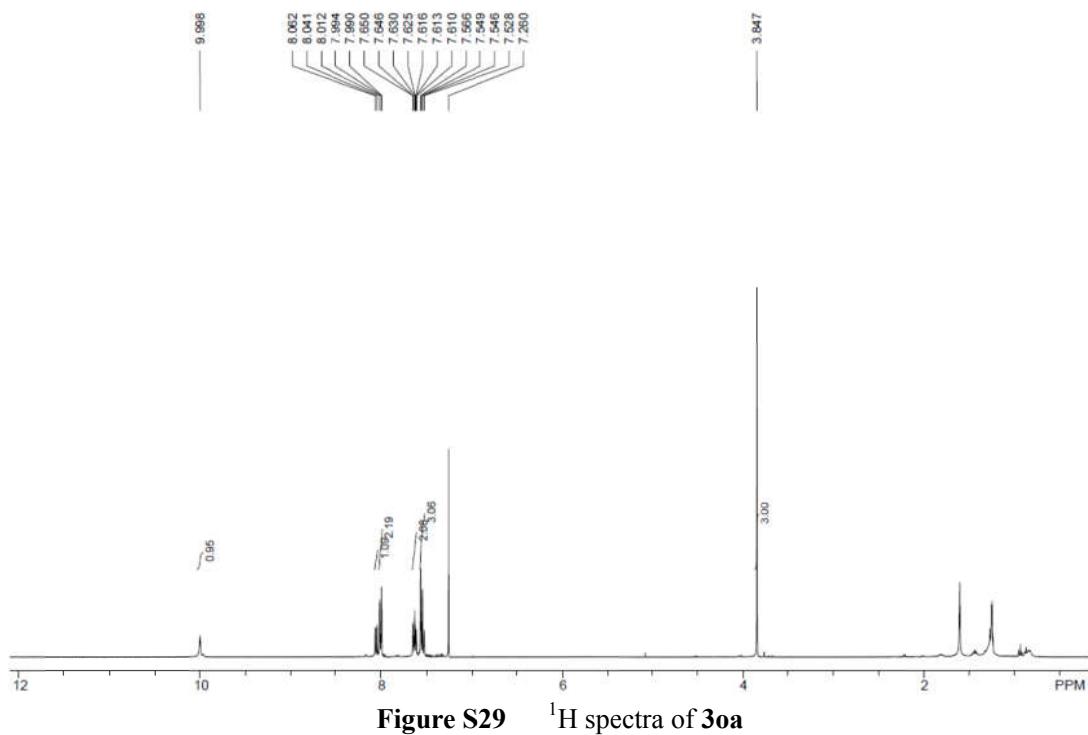


Figure S29 <sup>1</sup>H spectra of **3oa**

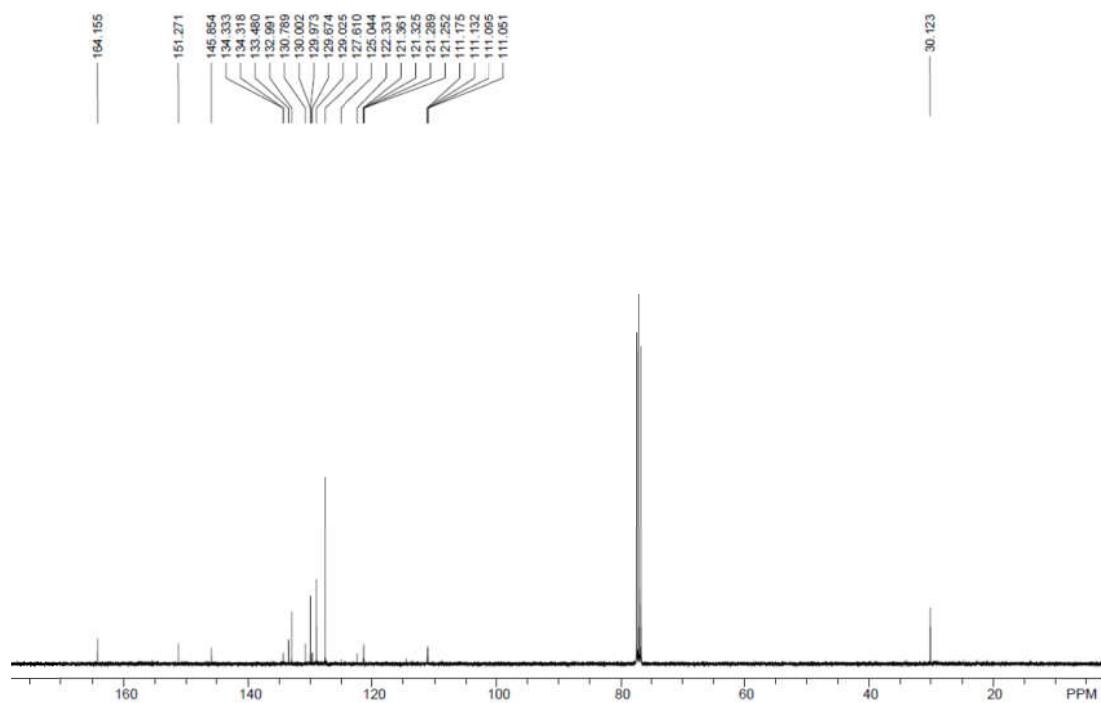


Figure S30 <sup>13</sup>C spectra of **3oa**

*N*-(6,7-difluoro-4-methyl-3-oxo-3,4-dihydroquinoxalin-2-yl)benzamide (3pa)

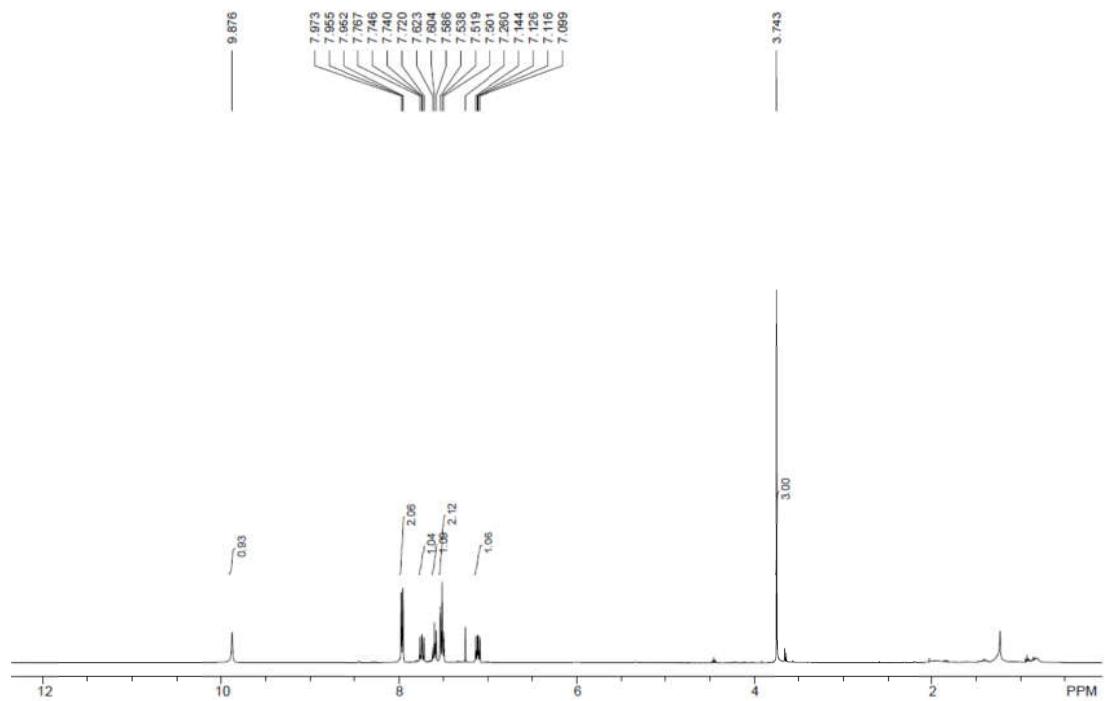


Figure S31 <sup>1</sup>H spectra of 3pa

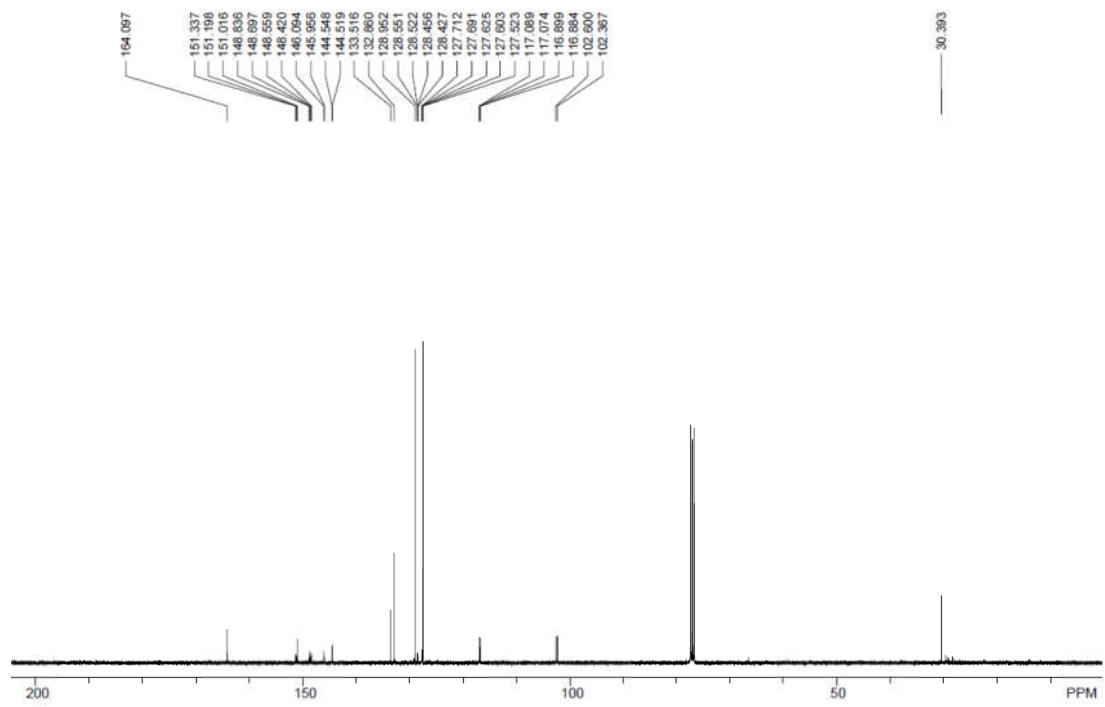


Figure S32 <sup>13</sup>C spectra of 3pa

*N*-(4-methyl-3-oxo-3,4-dihydrobenzo[g]quinoxalin-2-yl)benzamide (3qa)

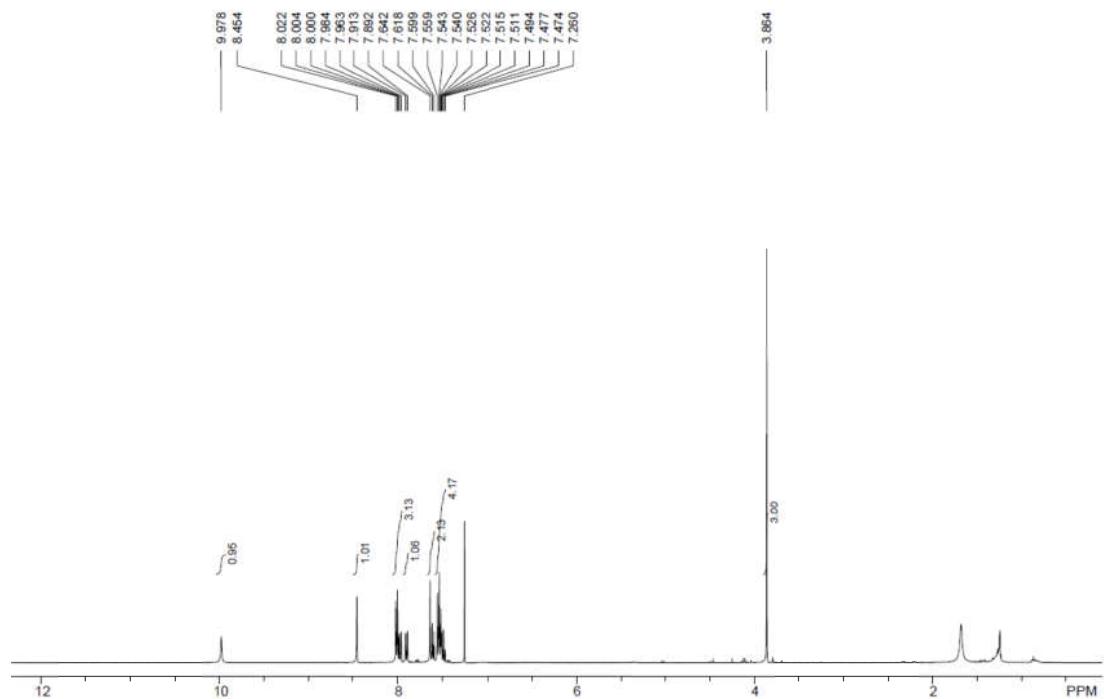


Figure S33  $^1\text{H}$  spectra of 3qa

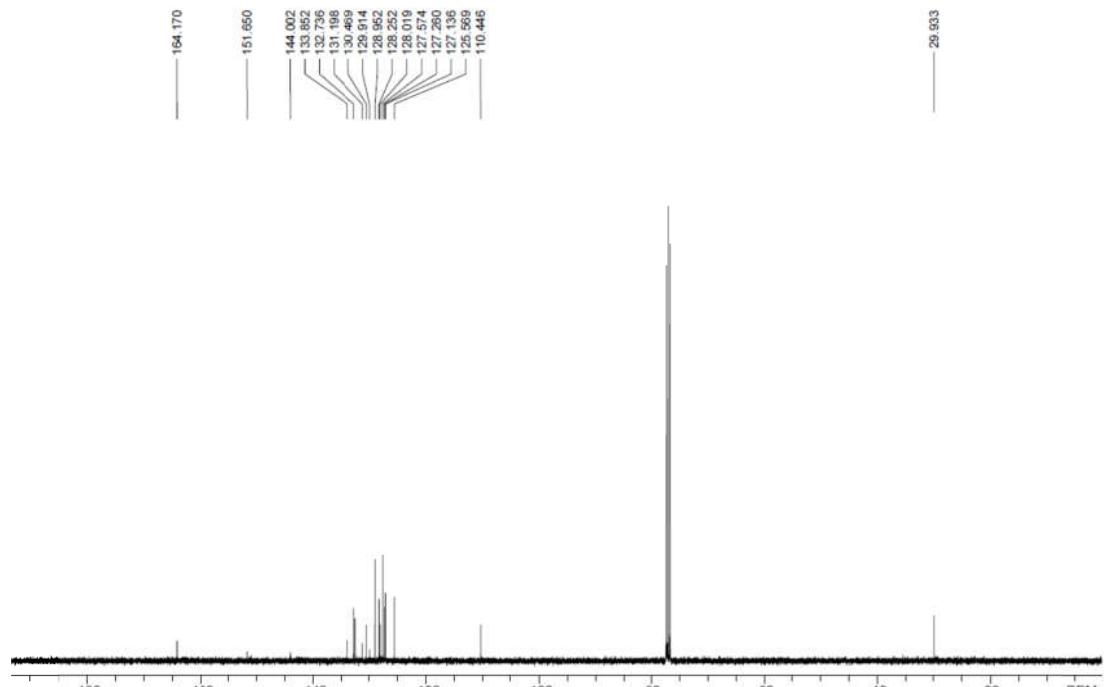
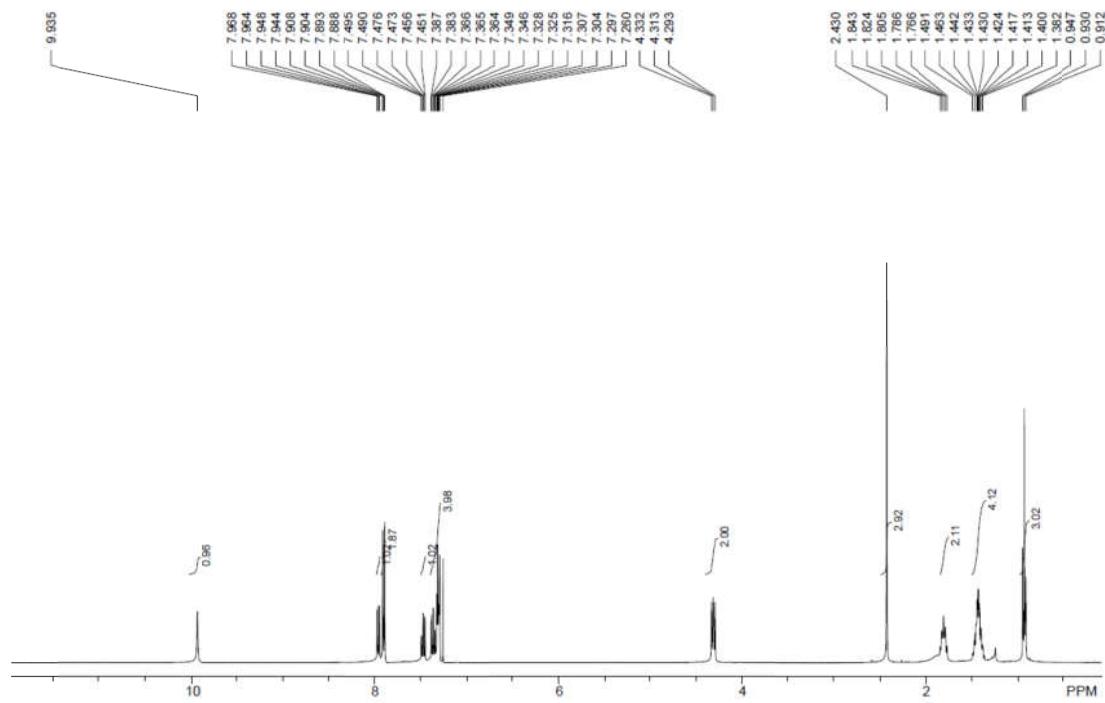
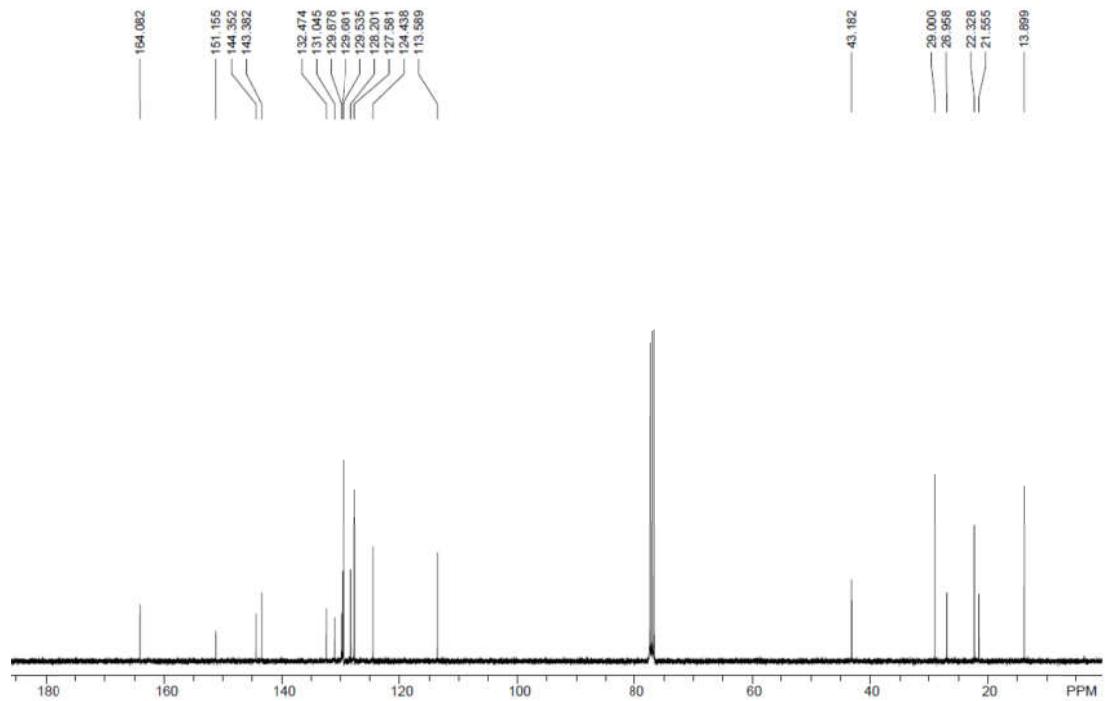


Figure S34  $^{13}\text{C}$  spectra of 3qa

**4-methyl-N-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)benzamide (3ab)**



**Figure S35** <sup>1</sup>H spectra of **3ab**



**Figure S36** <sup>13</sup>C spectra of **3ab**

**4-(tert-butyl)-N-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)benzamide (3ac)**

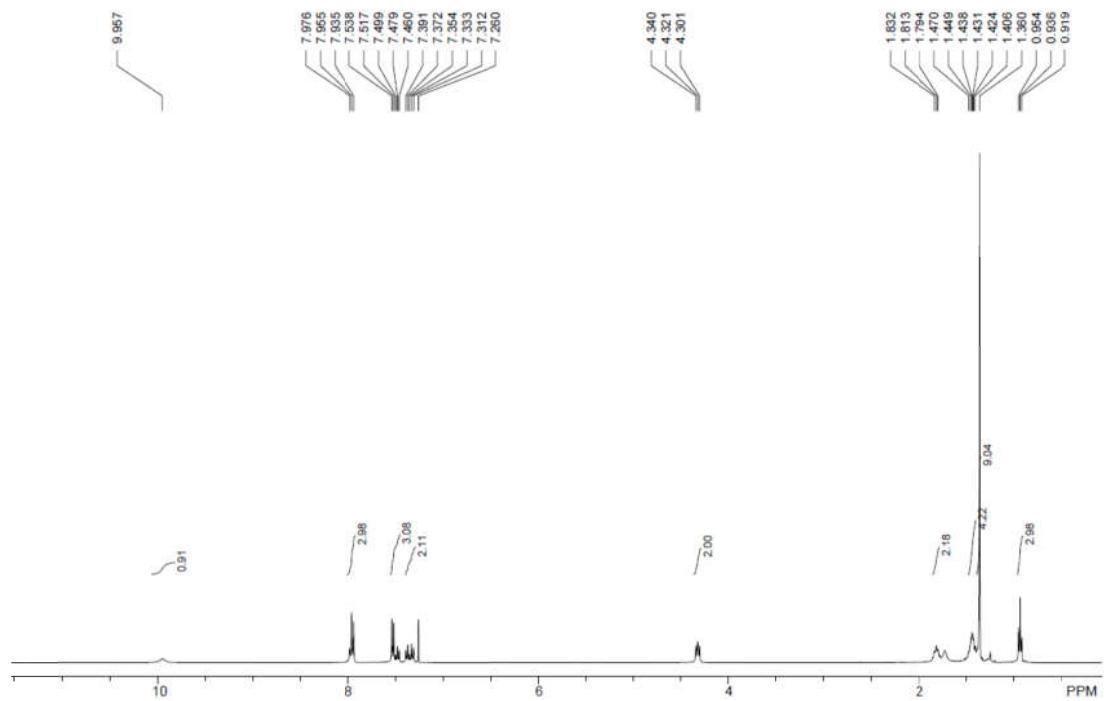


Figure S37  $^1\text{H}$  spectra of 3ac

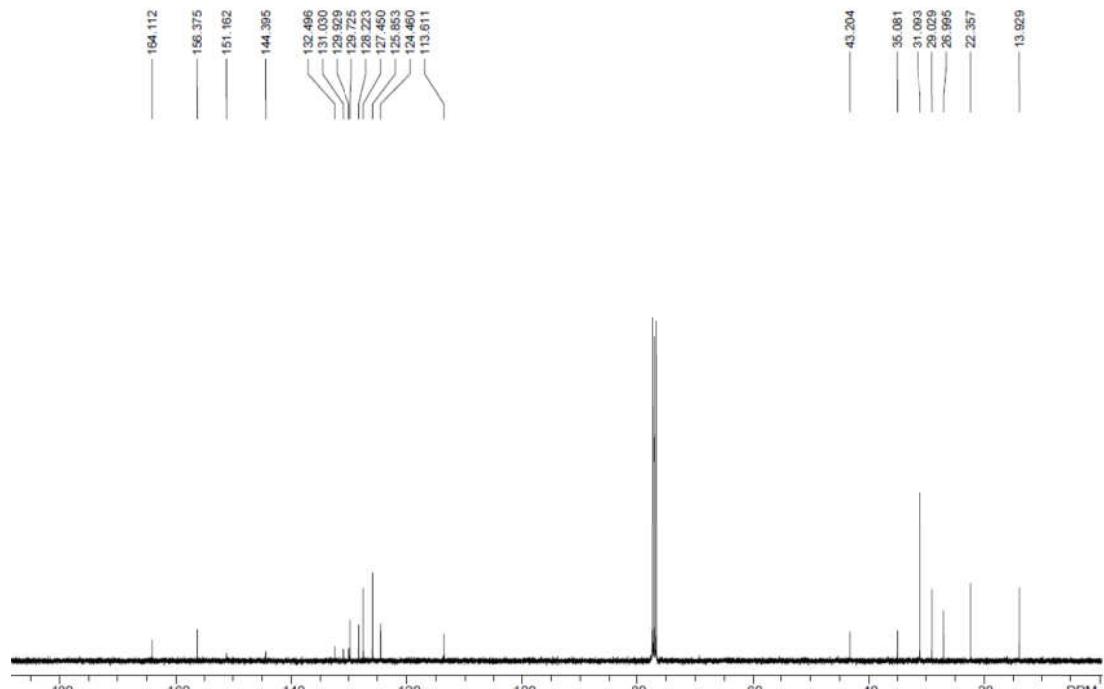
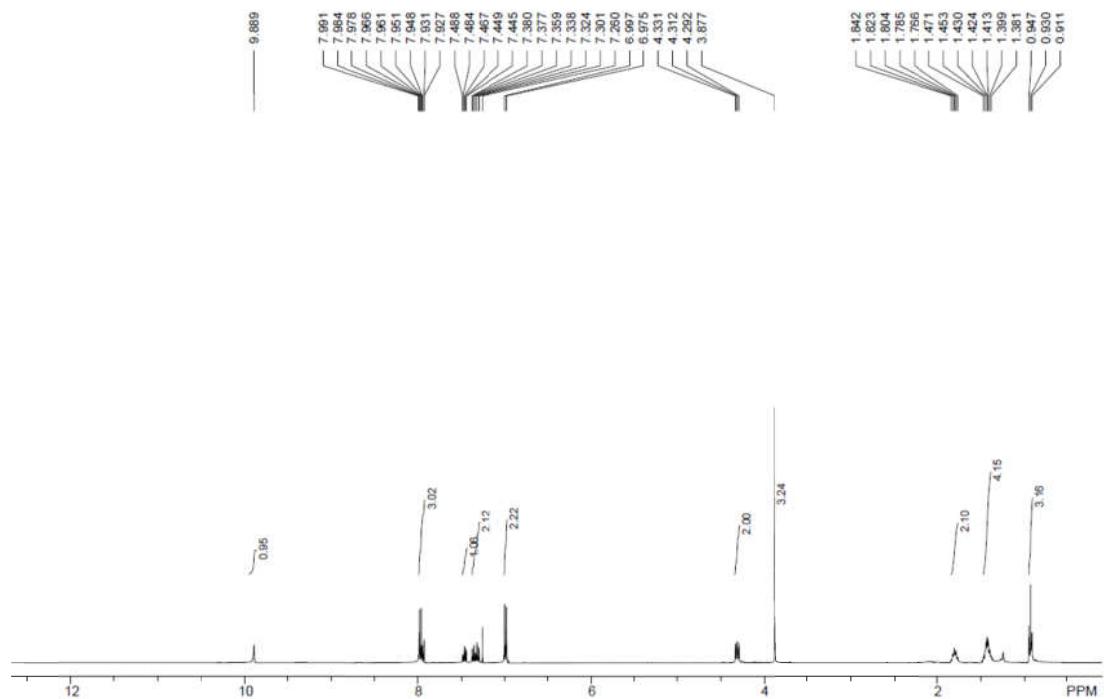
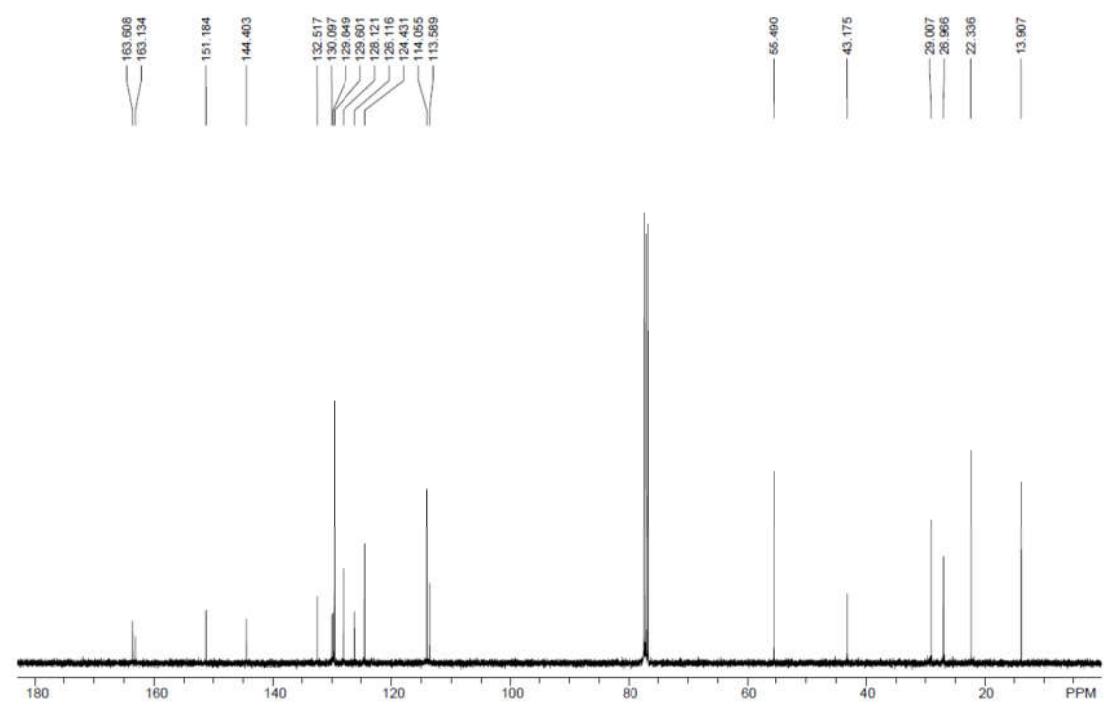


Figure S38  $^{13}\text{C}$  spectra of 3ac

**4-methoxy-N-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)benzamide (3ad)**

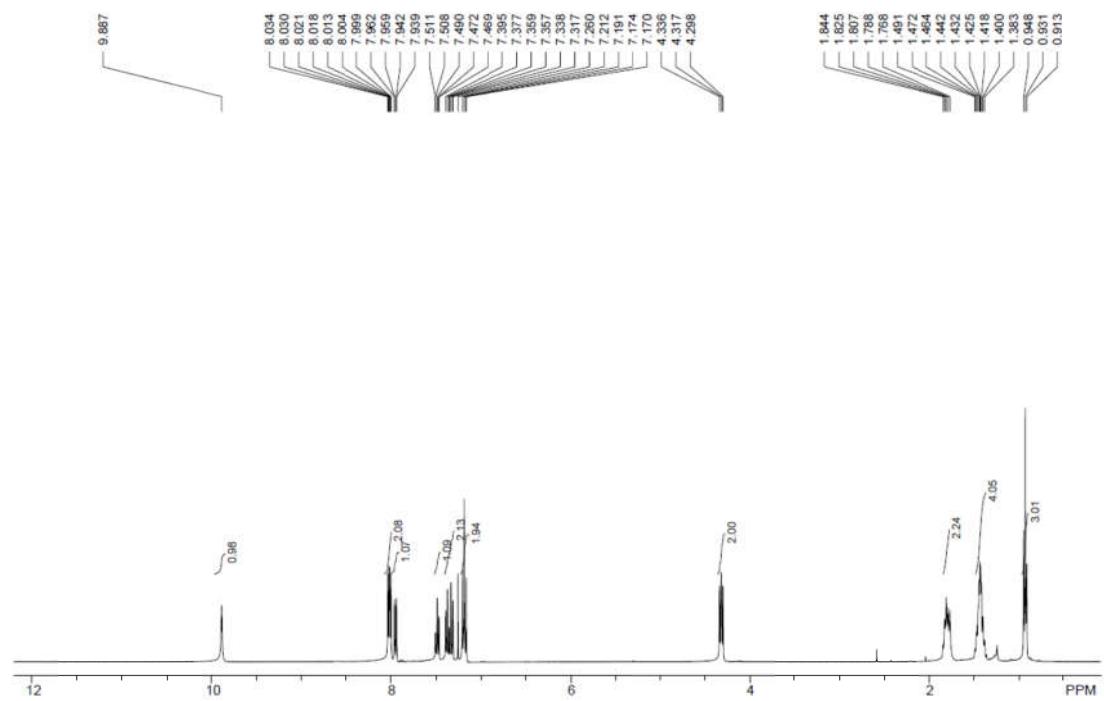


**Figure S39** <sup>1</sup>H spectra of 3ad

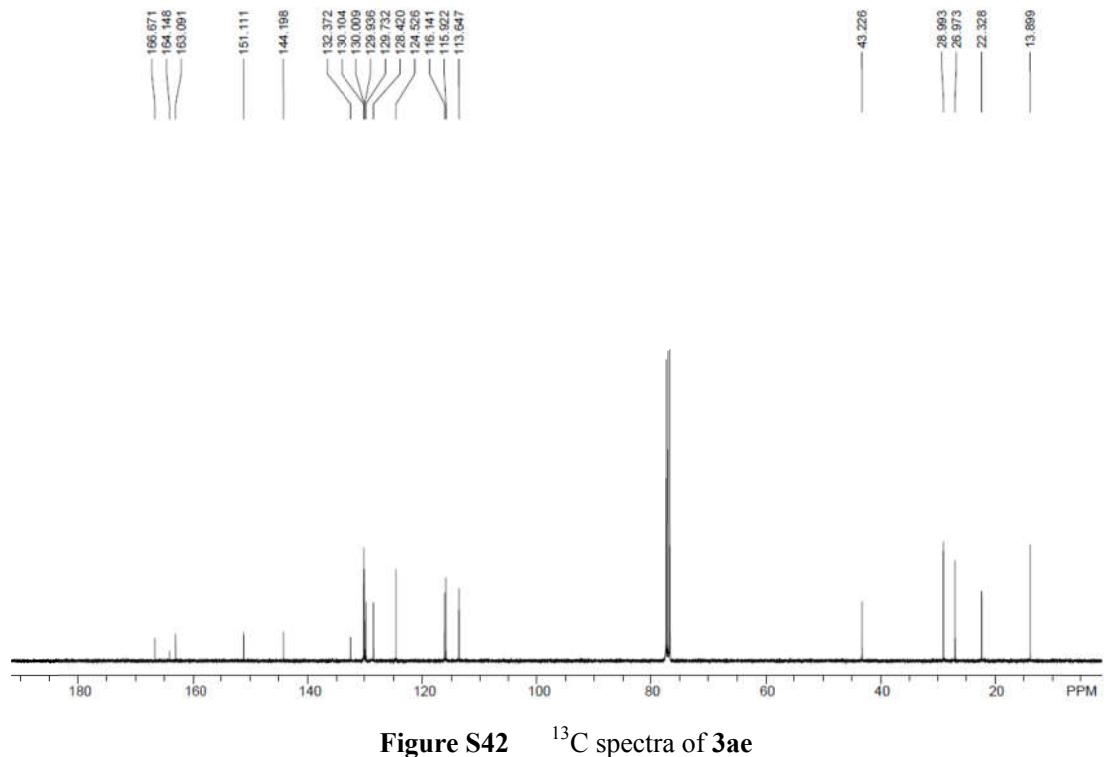


**Figure S40** <sup>13</sup>C spectra of 3ad

**4-fluoro-N-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)benzamide (3ae)**

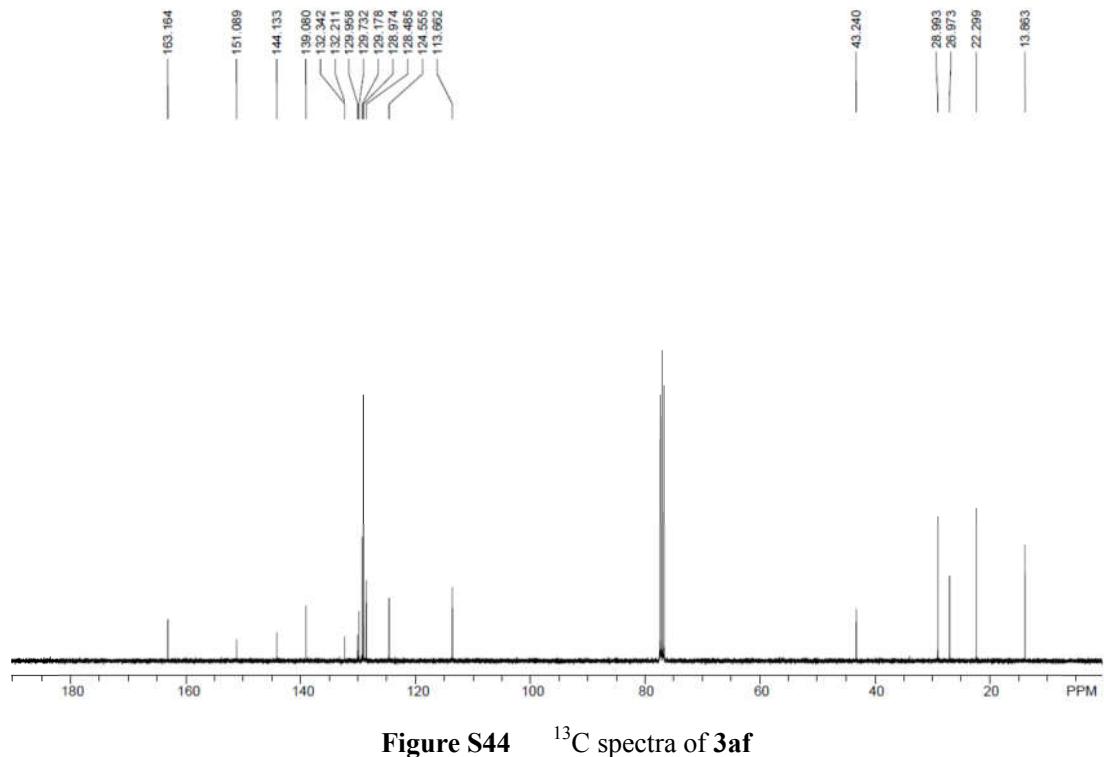
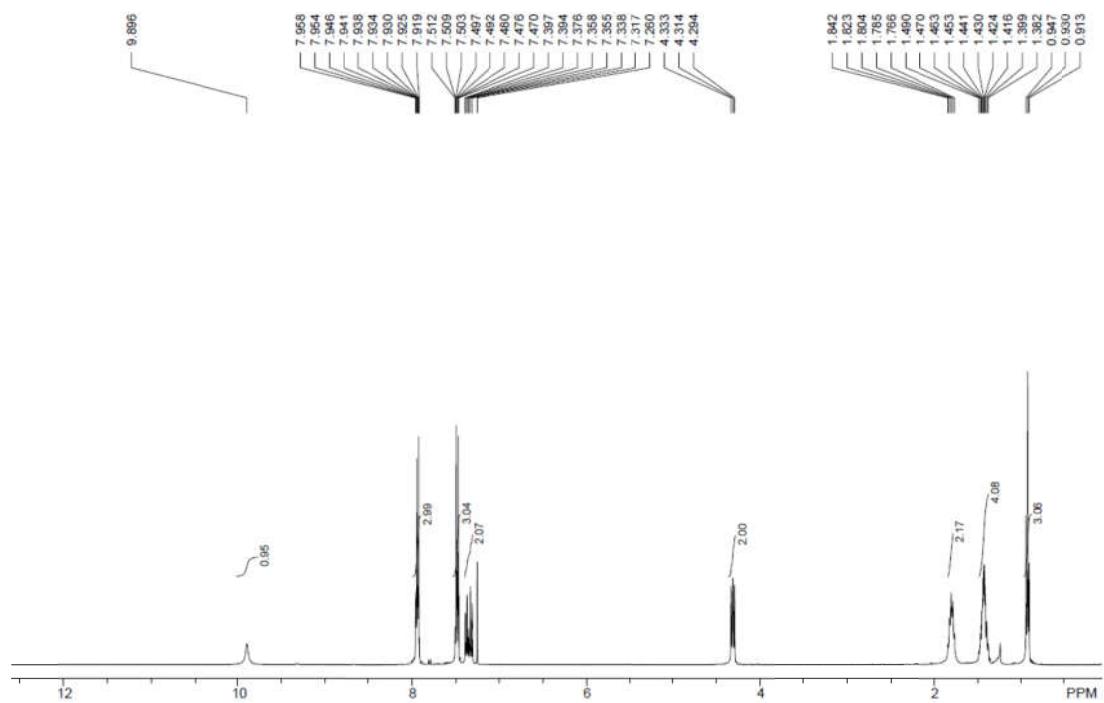


**Figure S41**  $^1\text{H}$  spectra of 3ae



**Figure S42**  $^{13}\text{C}$  spectra of 3ae

**4-chloro-N-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)benzamide (3af)**



**4-bromo-N-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)benzamide (3ag)**

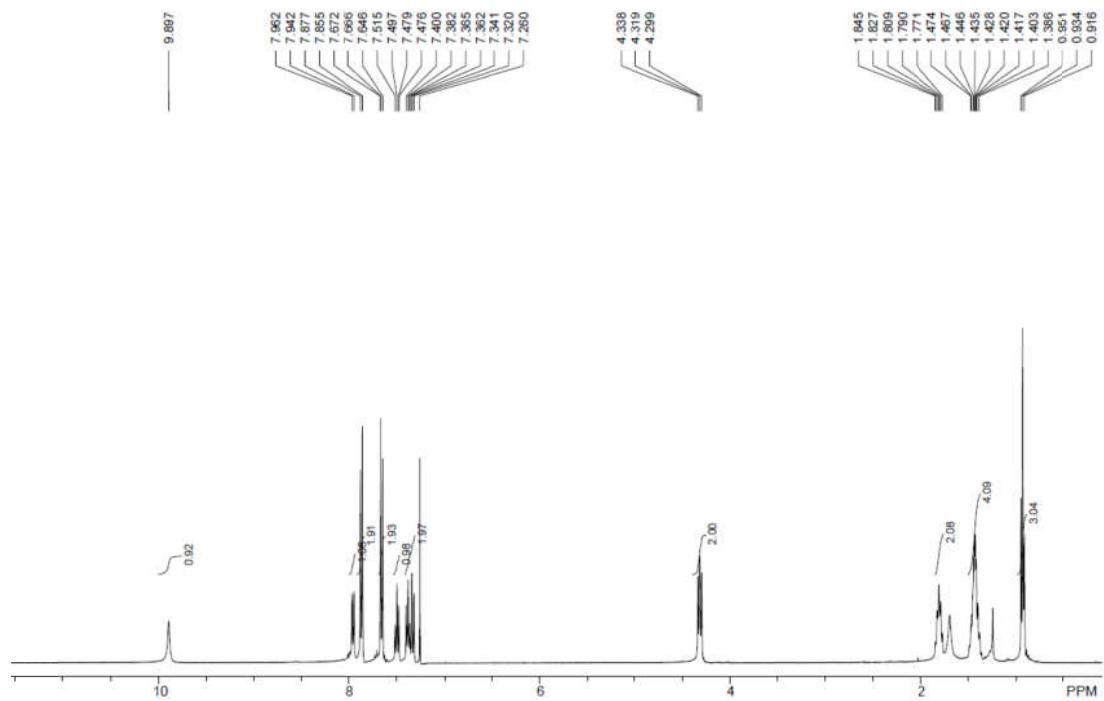


Figure S45    <sup>1</sup>H spectra of 3ag

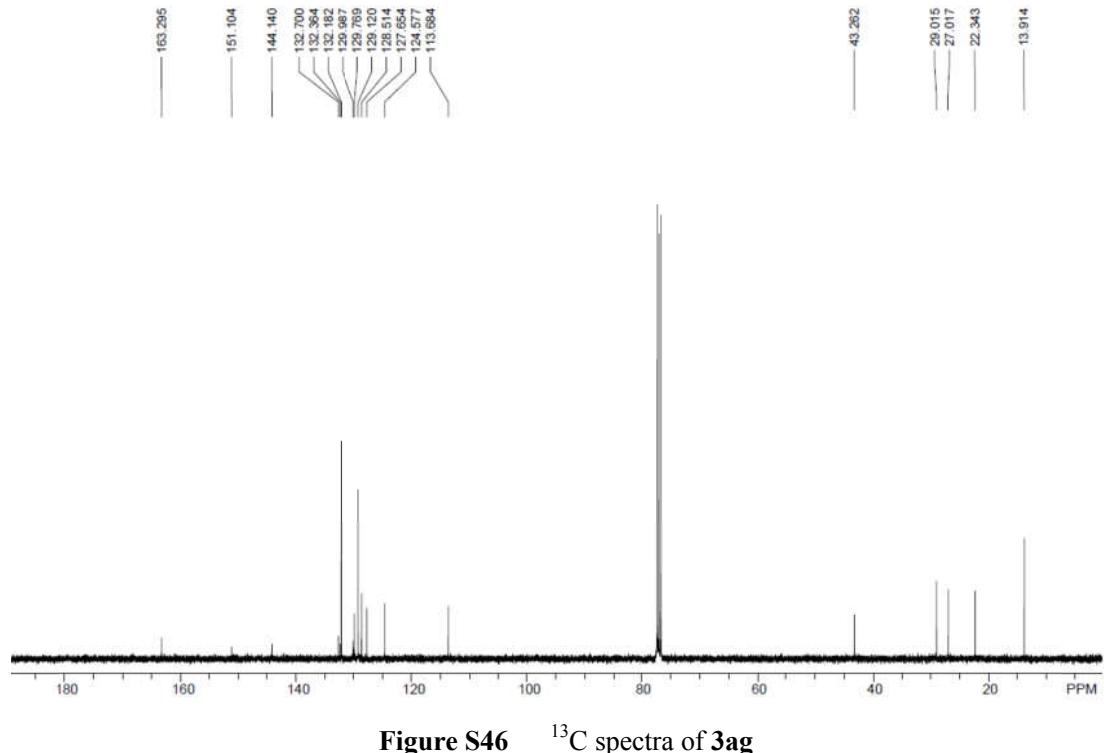


Figure S46    <sup>13</sup>C spectra of 3ag

*N*-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)-4-(trifluoromethyl)benzamide (**3ah**)

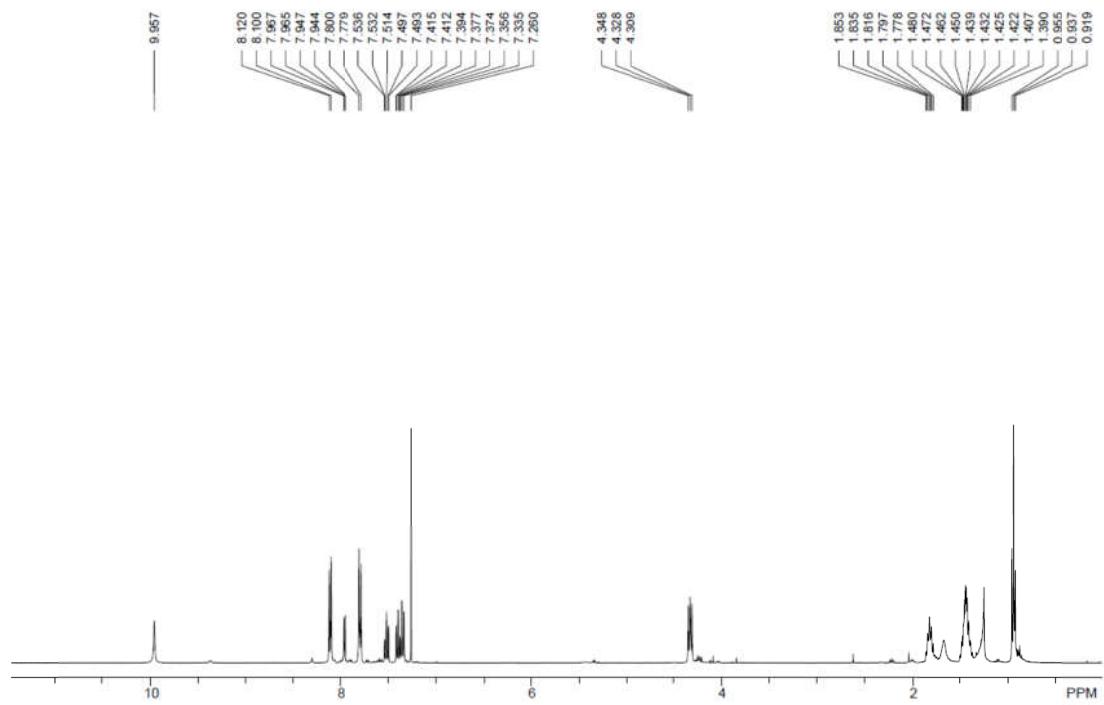


Figure S47 <sup>1</sup>H spectra of **3ah**

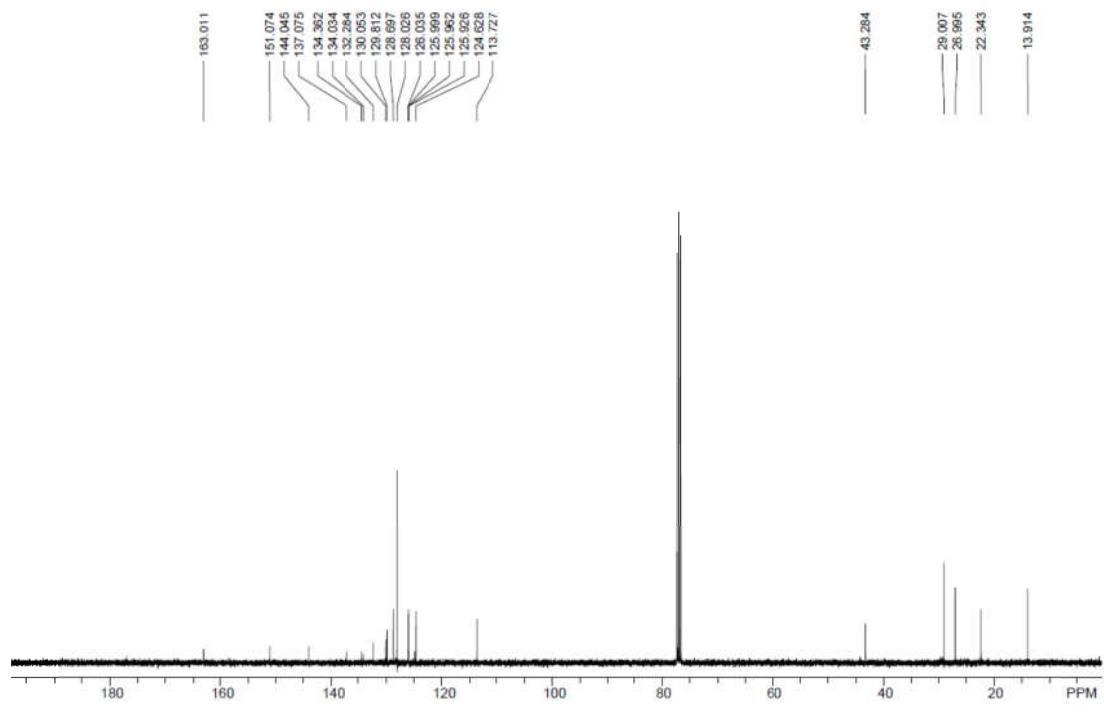
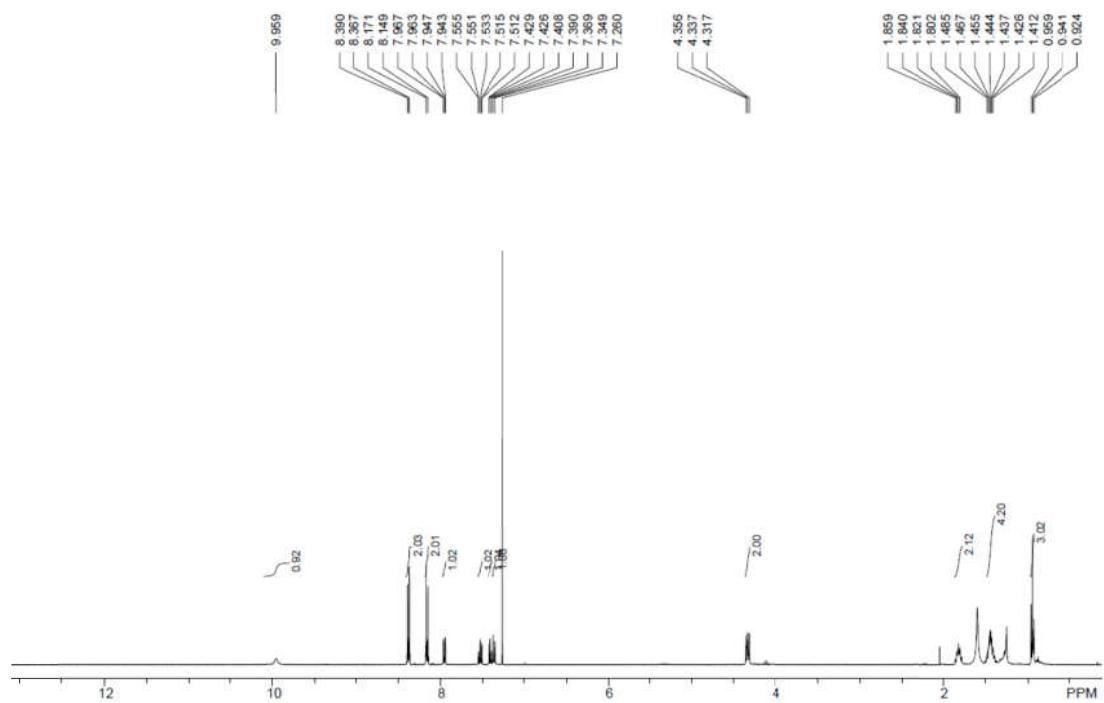
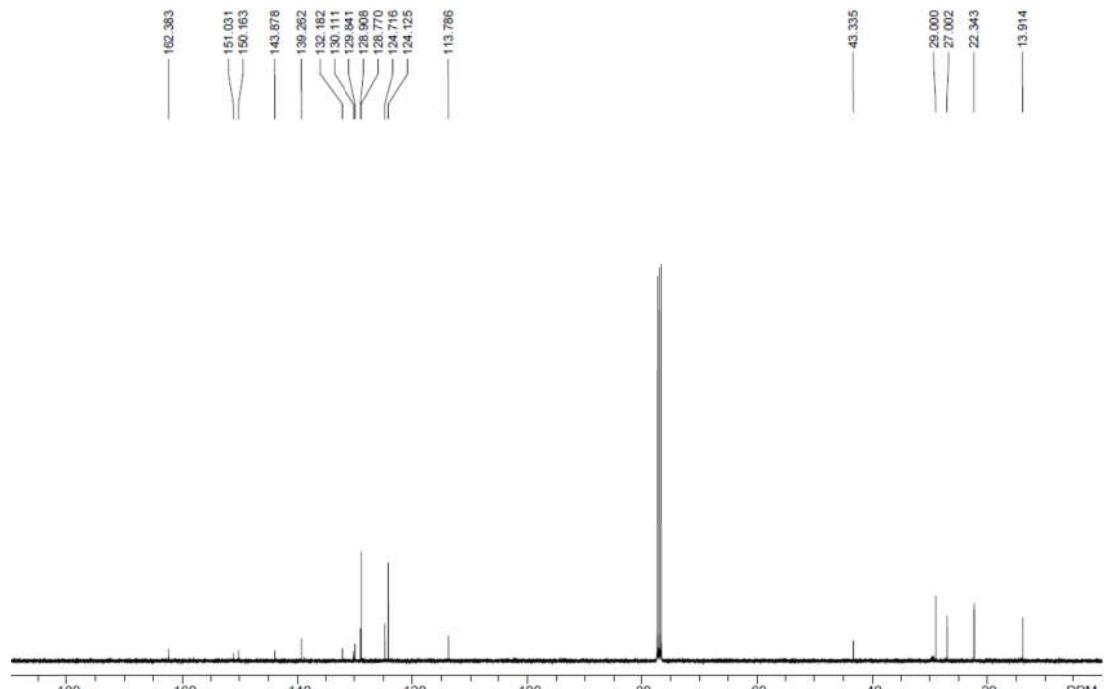


Figure S48 <sup>13</sup>C spectra of **3ah**

**4-nitro-N-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)benzamide (3ai)**

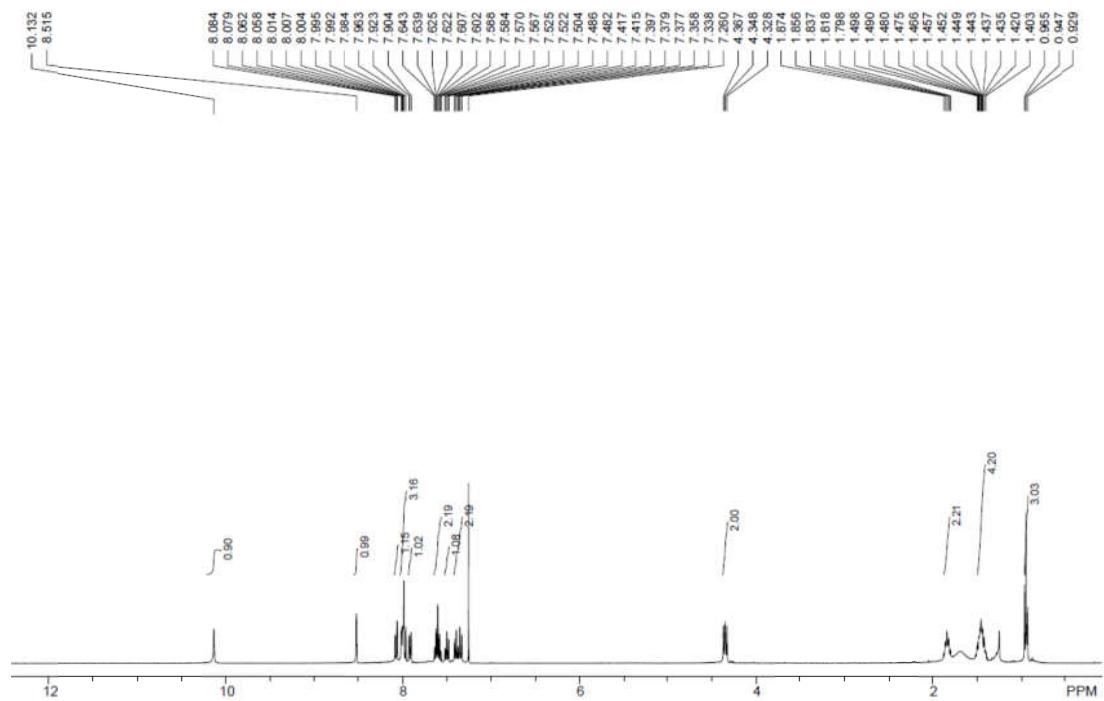


**Figure S49** <sup>1</sup>H spectra of 3ai

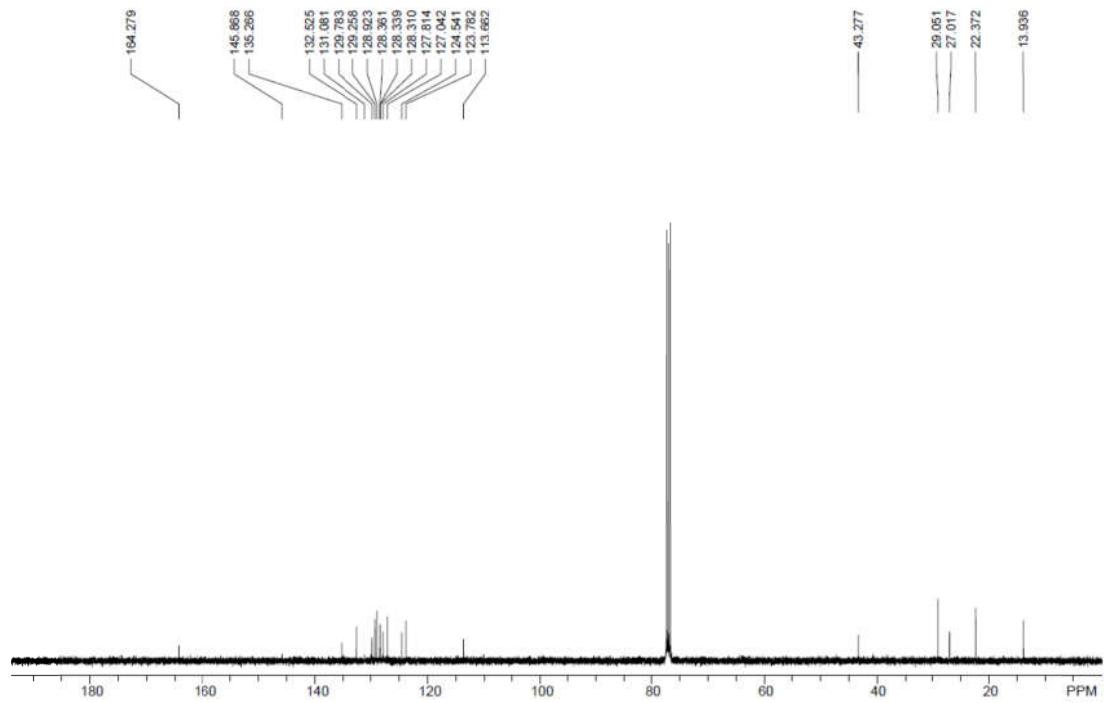


**Figure S50** <sup>13</sup>C spectra of 3ai

***N*-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)-2-naphthamide (3aj)**



**Figure S51**  $^1\text{H}$  spectra of 3aj



**Figure S52**  $^{13}\text{C}$  spectra of 3aj

*N*-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)thiophene-2-carboxamide (**3ak**)

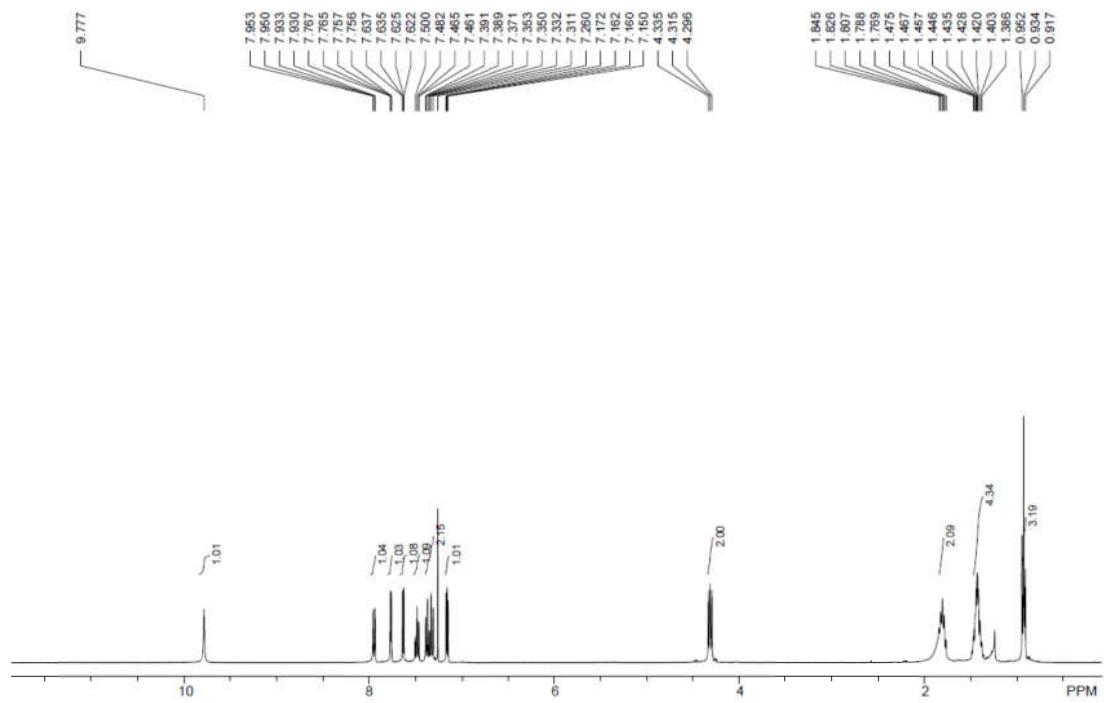


Figure S53  $^1\text{H}$  spectra of **3ak**

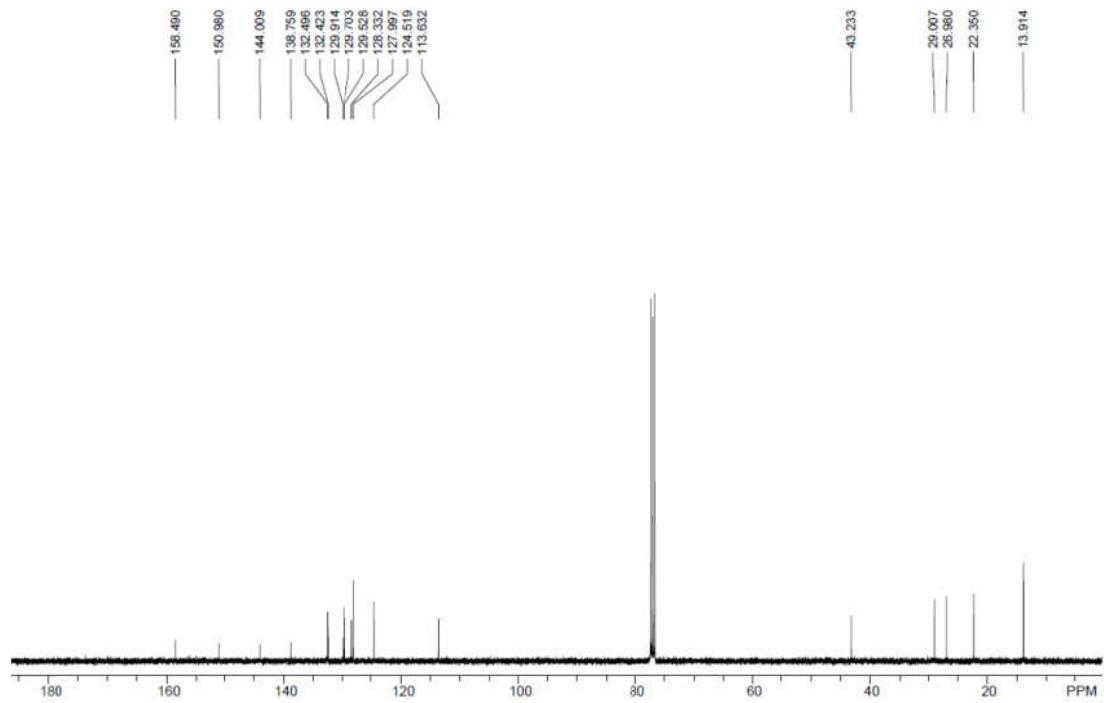


Figure S54  $^{13}\text{C}$  spectra of **3ak**

***N*-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)butyramide (3al)**

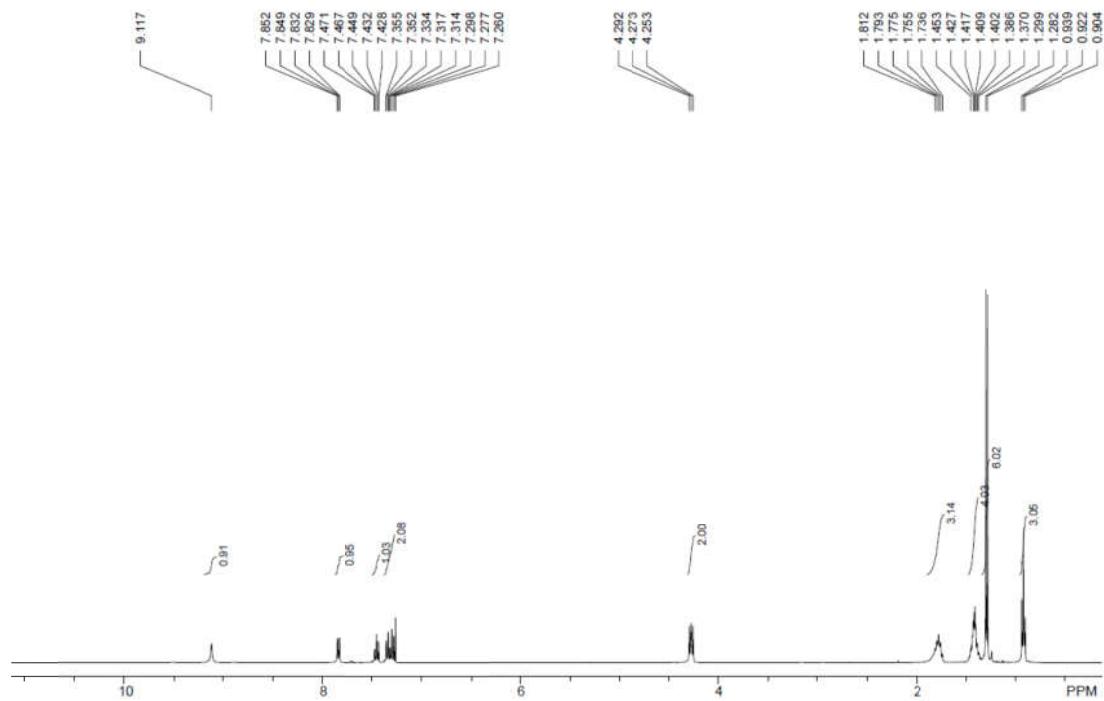


Figure S55  $^1\text{H}$  spectra of 3al

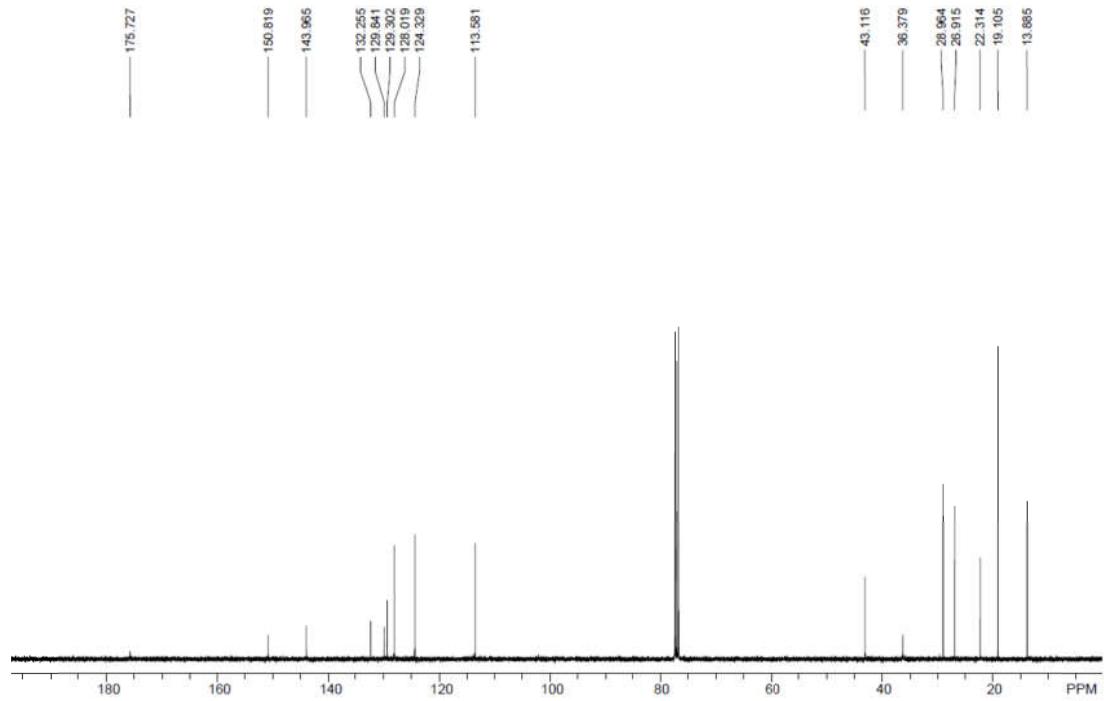


Figure S56  $^{13}\text{C}$  spectra of 3al

*N*-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)isobutyramide (**3am**)

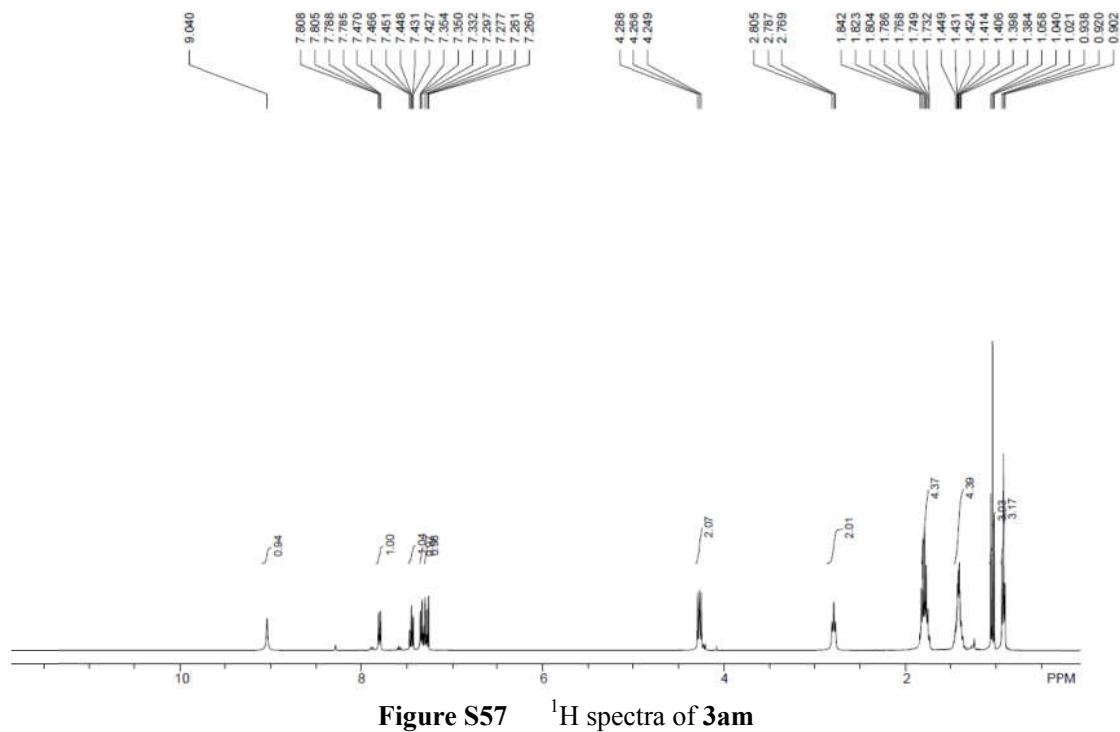


Figure S57 <sup>1</sup>H spectra of **3am**

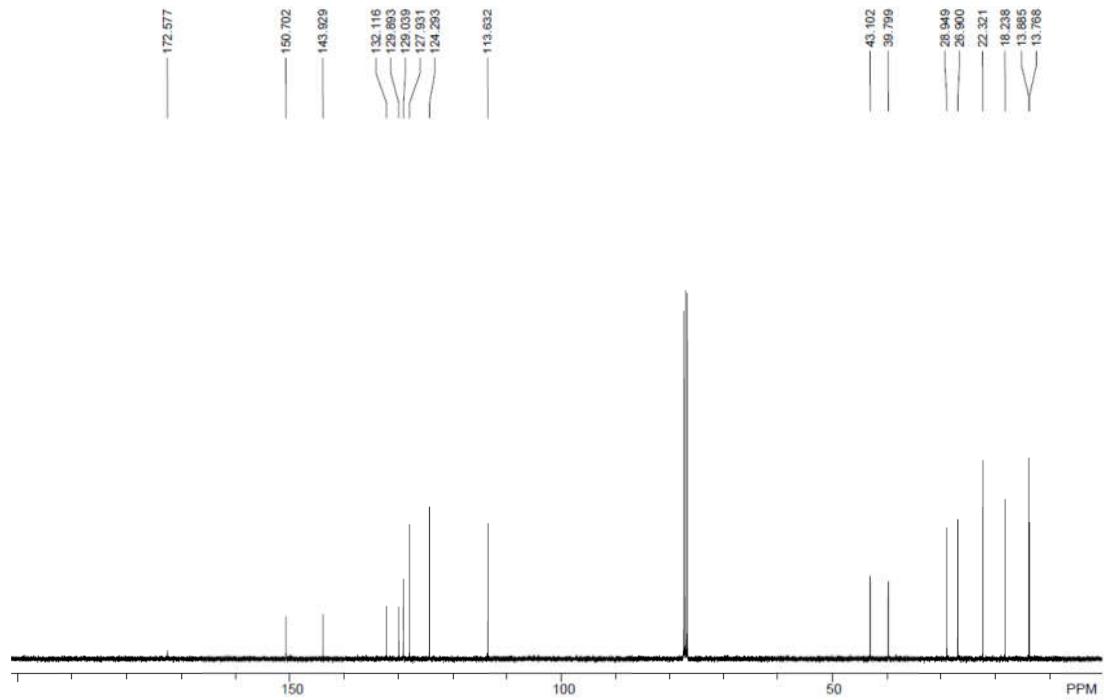


Figure S58 <sup>1</sup>H spectra of **3am**

***N*-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)pivalamide (3an)**

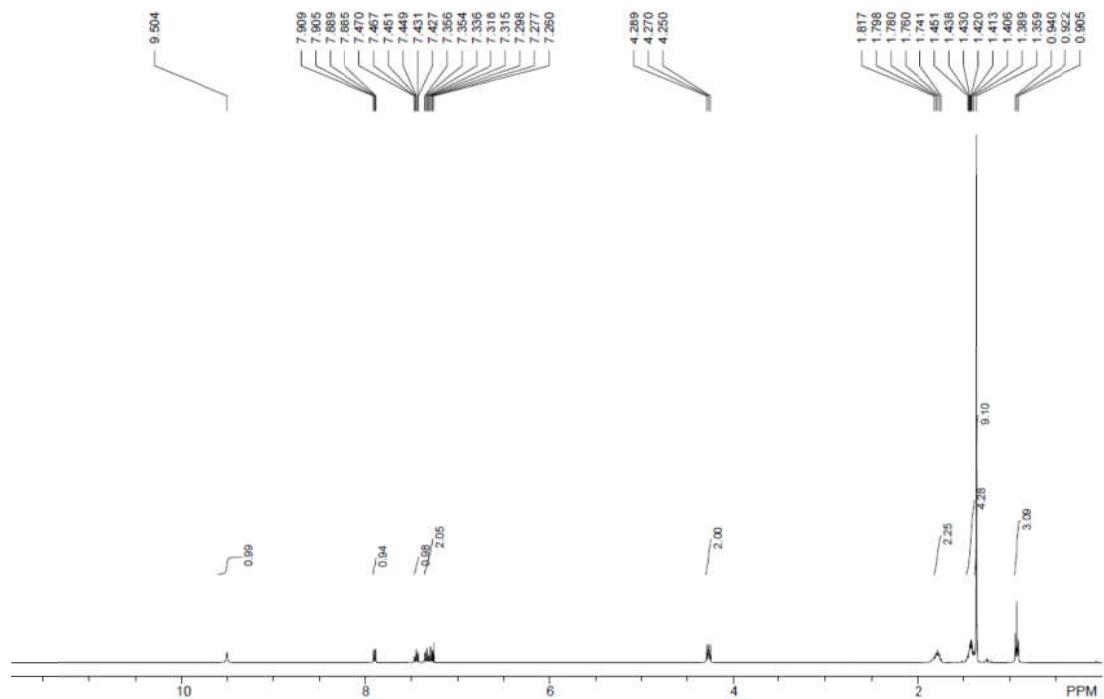


Figure S59  $^1\text{H}$  spectra of 3an

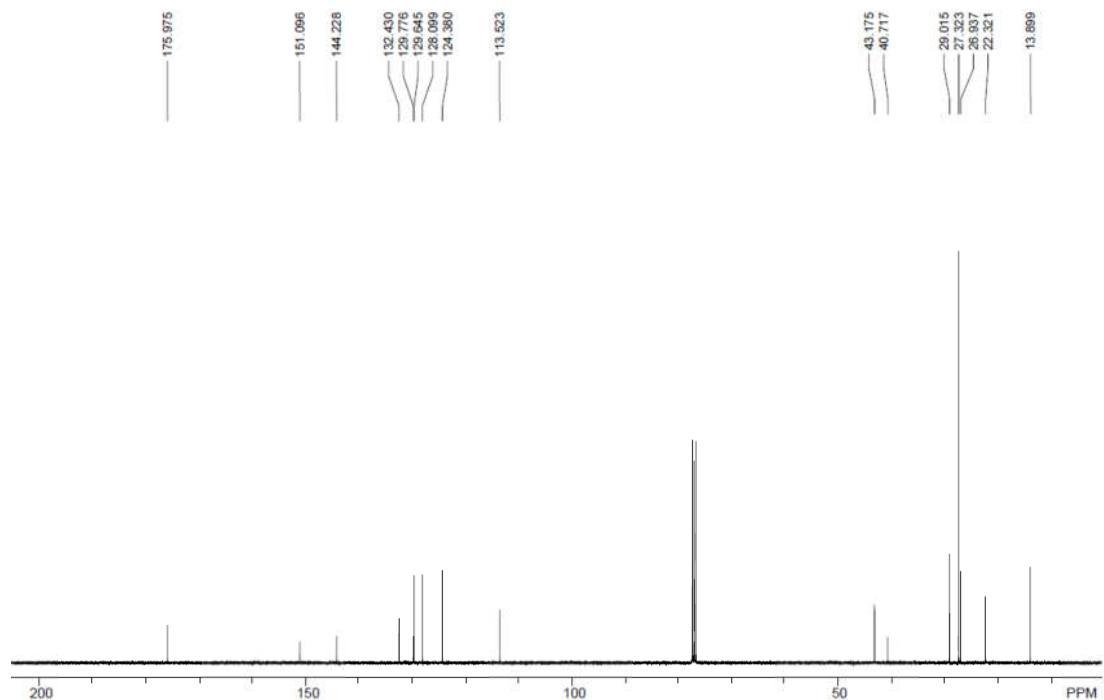


Figure S60  $^{13}\text{C}$  spectra of 3an

***N*-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)cyclopropanecarboxamide (3ao)**

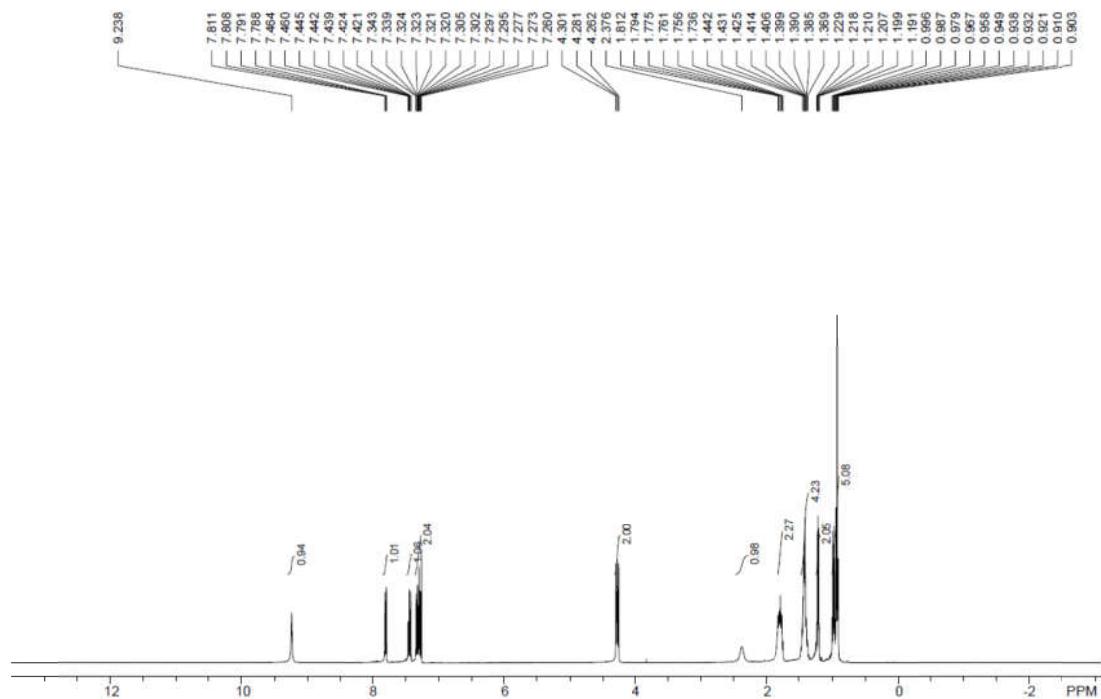


Figure S61 <sup>1</sup>H spectra of 3ao

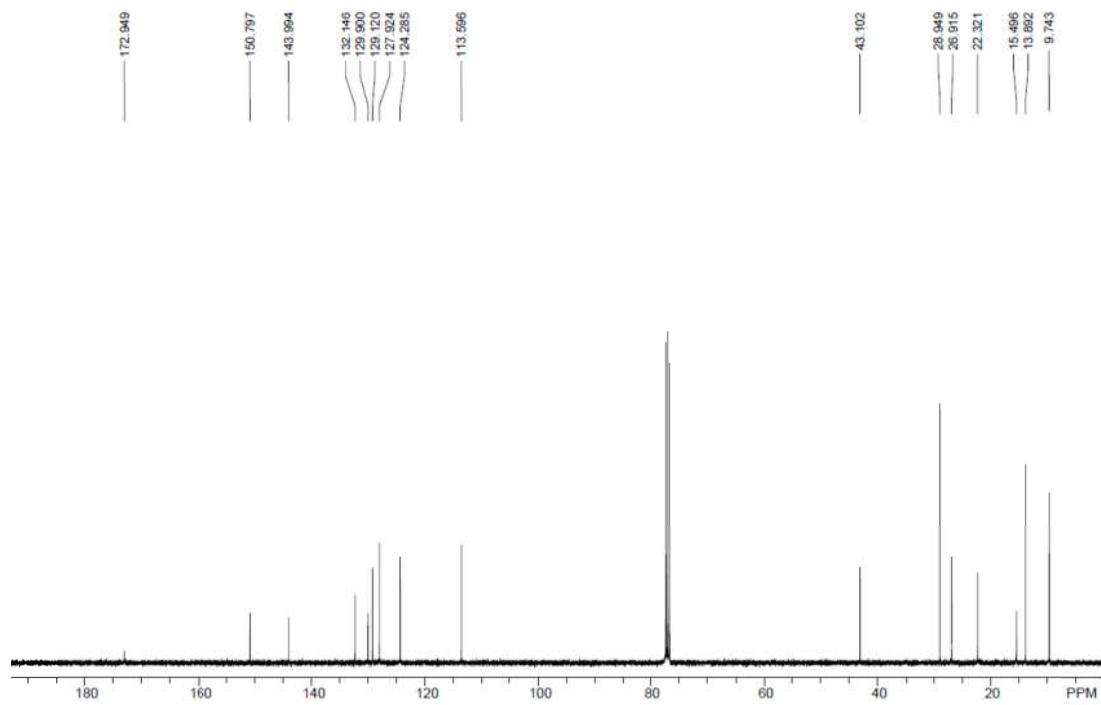
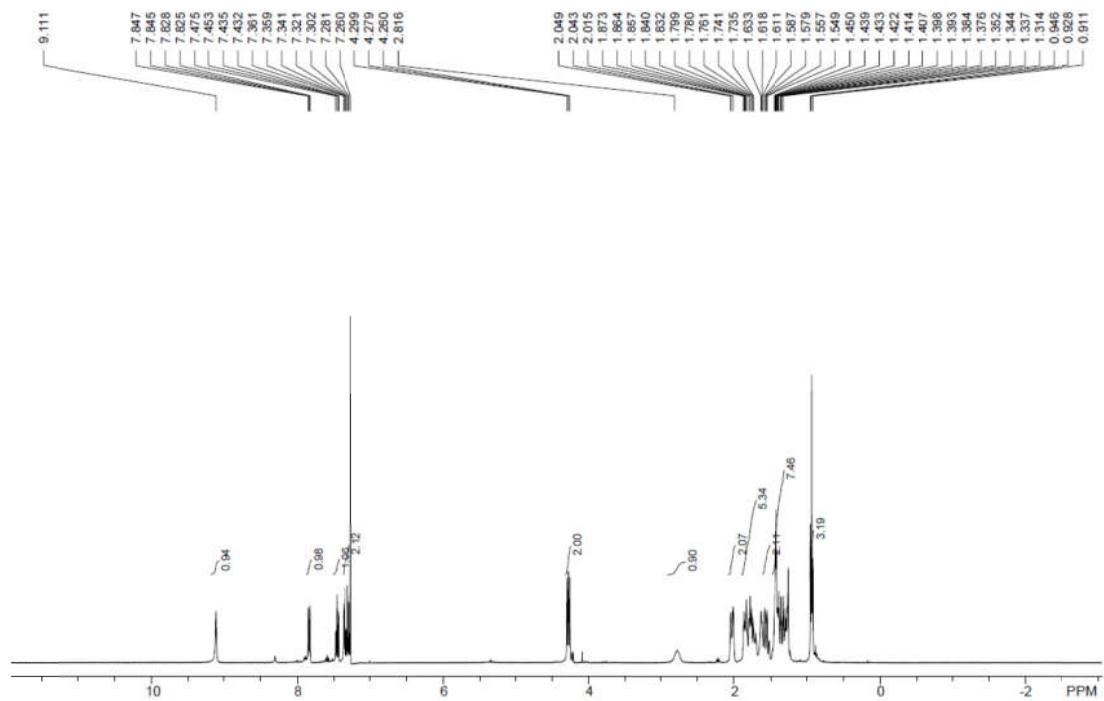
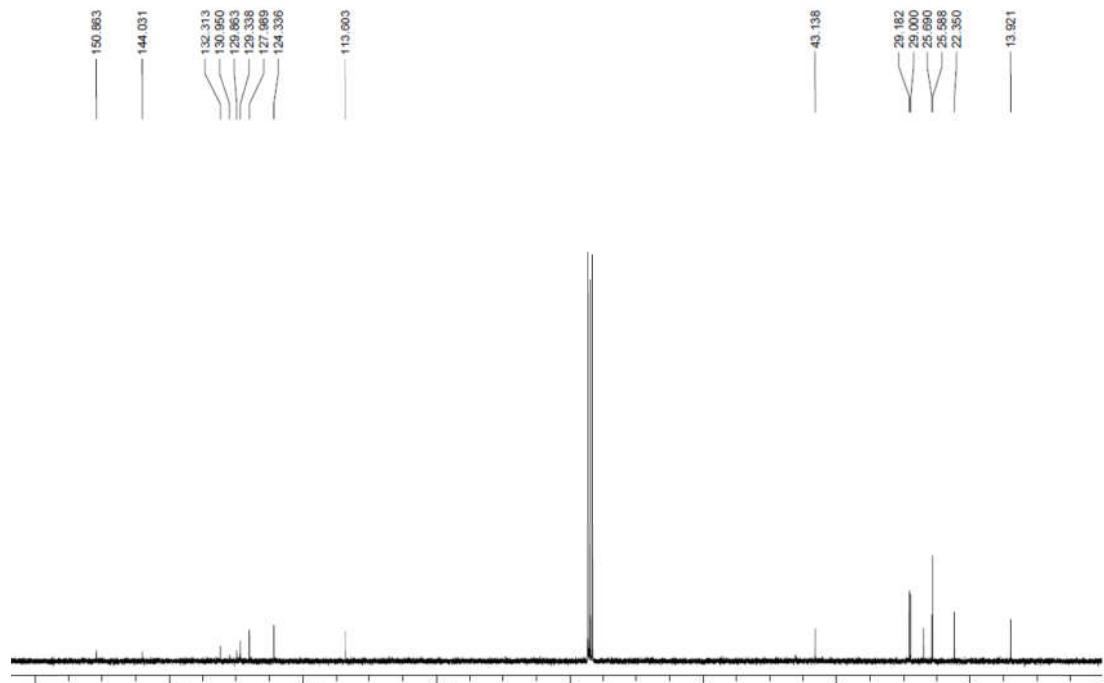


Figure S62 <sup>13</sup>C spectra of 3ao

***N*-(3-oxo-4-pentyl-3,4-dihydroquinoxalin-2-yl)cyclohexanecarboxamide (3ap)**



**Figure S63** <sup>1</sup>H spectra of 3ap



**Figure S64** <sup>13</sup>C spectra of 3ap