

## Supporting Information

*Org. Commun.* 16:4 (2023) 187-196

### An efficient synthesis of quinoxaline derivatives using HCTU as catalyst in DMF

Nitin A. Sasane<sup>1,2,\*</sup>, Bhushan B. Papatkar<sup>2</sup> and Gangadhar A. Meshram<sup>2</sup>

<sup>1</sup>*Department of Chemistry, Mahatma Phule Arts, Science and Commerce College, Panvel, Dist- Raigad. 410 206 (MS), India*

<sup>2</sup>*Department of Chemistry, University of Mumbai, Vidyanagari, Kalina, Santacruz (E), Mumbai 400 098 (MS) India*

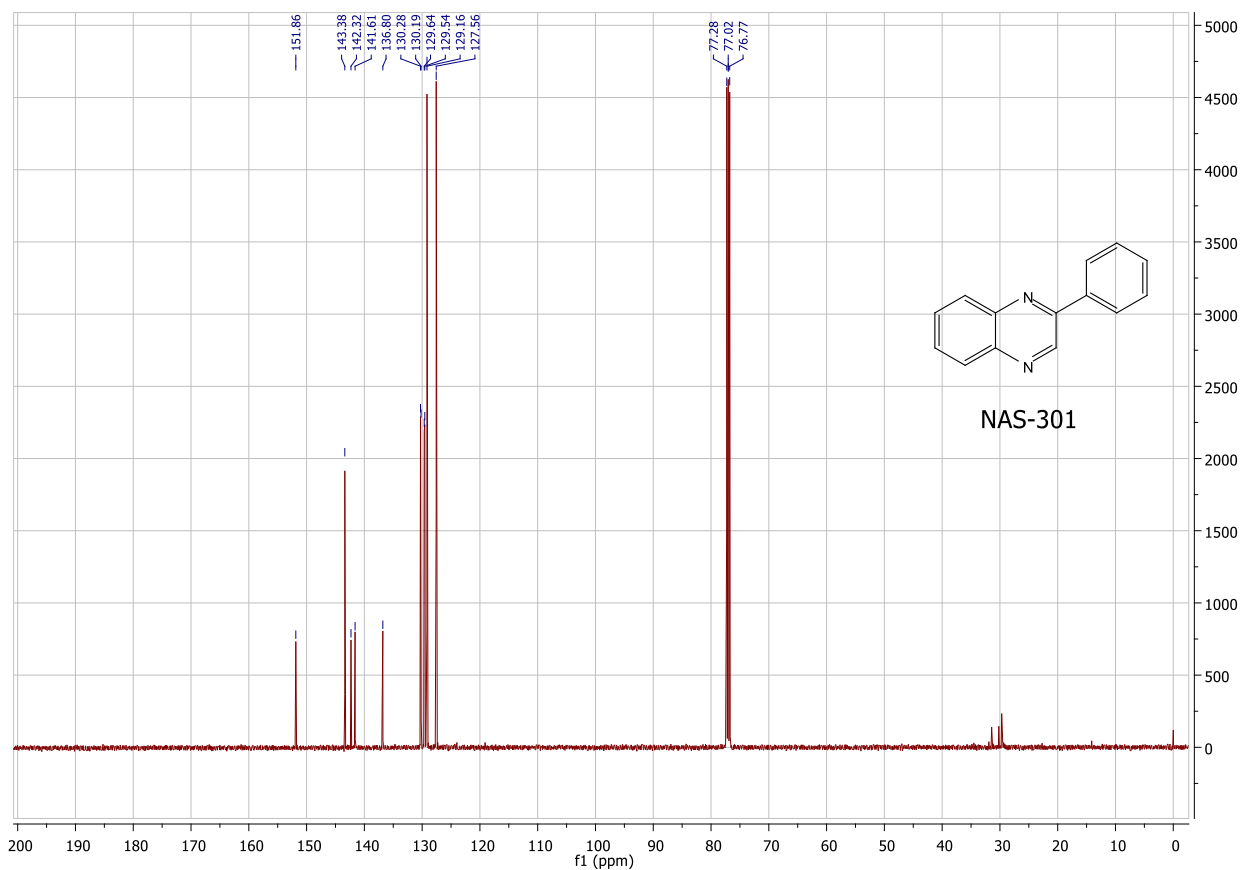
Table of Contents	Page
Figure S1: IR Spectrum of compound <b>3a</b>	3
Figure S2: <sup>1</sup> H-NMR (300 MHz, CDCl <sub>3</sub> ) Spectrum of compound <b>3a</b>	3
Figure S3: <sup>13</sup> C-NMR (75 MHz, CDCl <sub>3</sub> ) Spectrum of compound <b>3a</b>	4
Figure S4: LC-MS spectrum of compound <b>3a</b>	4
Figure S5: IR Spectrum of compound <b>3b</b>	5
Figure S6: <sup>1</sup> H-NMR (300 MHz, CDCl <sub>3</sub> ) Spectrum of compound <b>3b</b>	5
Figure S7: <sup>13</sup> C-NMR (75 MHz, CDCl <sub>3</sub> ) Spectrum of compound <b>3b</b>	6
Figure S8: LC-MS spectrum of compound <b>3b</b>	6
Figure S9: <sup>1</sup> H-NMR (300 MHz, CDCl <sub>3</sub> ) Spectrum of compound <b>3c</b>	7
Figure S10: IR Spectrum of compound <b>3d</b>	7
Figure S11: <sup>1</sup> H-NMR (300 MHz, CDCl <sub>3</sub> ) Spectrum of compound <b>3d</b>	8
Figure S12: <sup>13</sup> C-NMR (75 MHz, CDCl <sub>3</sub> ) Spectrum of compound <b>3d</b>	8
Figure S13: LC-MS spectrum of compound <b>3d</b>	9
Figure S14: IR Spectrum of compound <b>3e</b>	9
Figure S15: <sup>1</sup> H-NMR (300 MHz, CDCl <sub>3</sub> ) Spectrum of compound <b>3e</b>	10
Figure S16: <sup>13</sup> C-NMR (75 MHz, CDCl <sub>3</sub> ) Spectrum of compound <b>3e</b>	10
Figure S17: LC-MS spectrum of compound <b>3e</b>	11
Figure S18: IR Spectrum of compound <b>3f</b>	11
Figure S19: <sup>1</sup> H-NMR (300 MHz, CDCl <sub>3</sub> ) Spectrum of compound <b>3f</b>	12
Figure S20: <sup>13</sup> C-NMR (75 MHz, CDCl <sub>3</sub> ) Spectrum of compound <b>3f</b>	12
Figure S21: LC-MS spectrum of compound <b>3f</b>	13
Figure S22: IR Spectrum of compound <b>3g</b>	13
Figure S23: <sup>1</sup> H-NMR (300 MHz, CDCl <sub>3</sub> ) Spectrum of compound <b>3g</b>	14
Figure S24: LC-MS spectrum of compound <b>3g</b>	14
Figure S25: IR Spectrum of compound <b>3h</b>	15
Figure S26: <sup>1</sup> H-NMR (300 MHz, CDCl <sub>3</sub> ) Spectrum of compound <b>3h</b>	15
Figure S27: <sup>13</sup> C-NMR (75 MHz, CDCl <sub>3</sub> ) Spectrum of compound <b>3h</b>	16
Figure S28: LC-MS spectrum of compound <b>3h</b>	16
Figure S29: IR Spectrum of compound <b>3i</b>	17
Figure S30: <sup>1</sup> H-NMR (300 MHz, CDCl <sub>3</sub> ) Spectrum of compound <b>3i</b>	17
Figure S31: LC-MS spectrum of compound <b>3i</b>	18
Figure S32: LC-MS spectrum of compound <b>3j</b>	18
Figure S33: IR Spectrum of compound <b>3k</b>	19

---

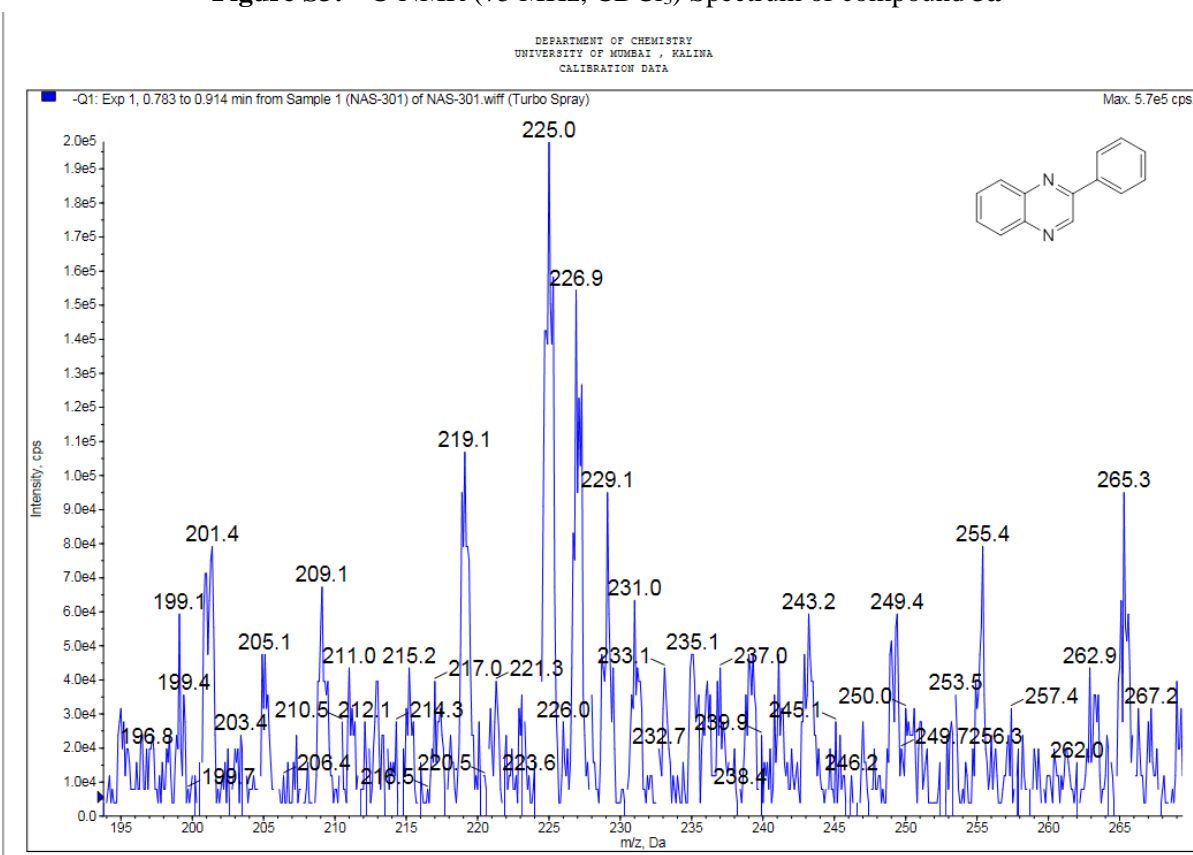
<b>Figure S34:</b> $^1\text{H-NMR}$ (300 MHz, $\text{CDCl}_3$ ) Spectrum of compound <b>3k</b>	19
<b>Figure S35:</b> LC-MS spectrum of compound <b>3k</b>	20

---

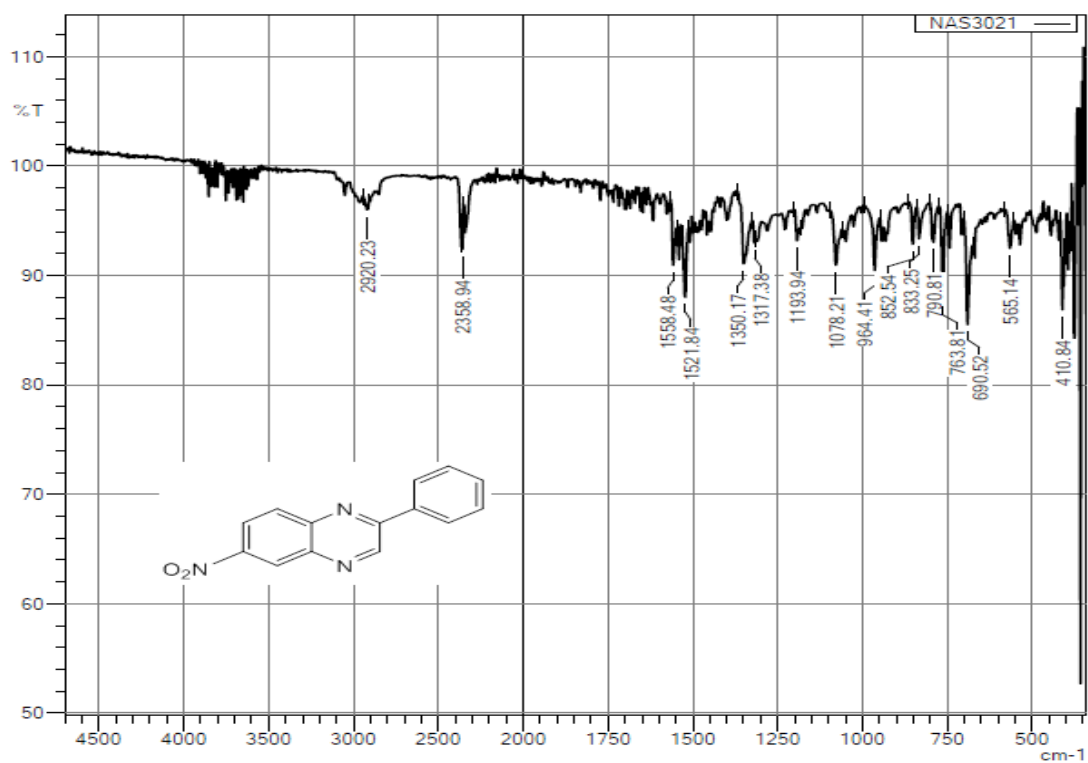




**Figure S3:**  $^{13}\text{C}$ -NMR (75 MHz,  $\text{CDCl}_3$ ) Spectrum of compound **3a**



**Figure S4:** LC-MS spectrum of compound **3a**



C:\Users\Admin\Desktop\220622\*SET B (11 Sample)\*NAS302.ispd

Figure S5: IR Spectrum of compound 3b

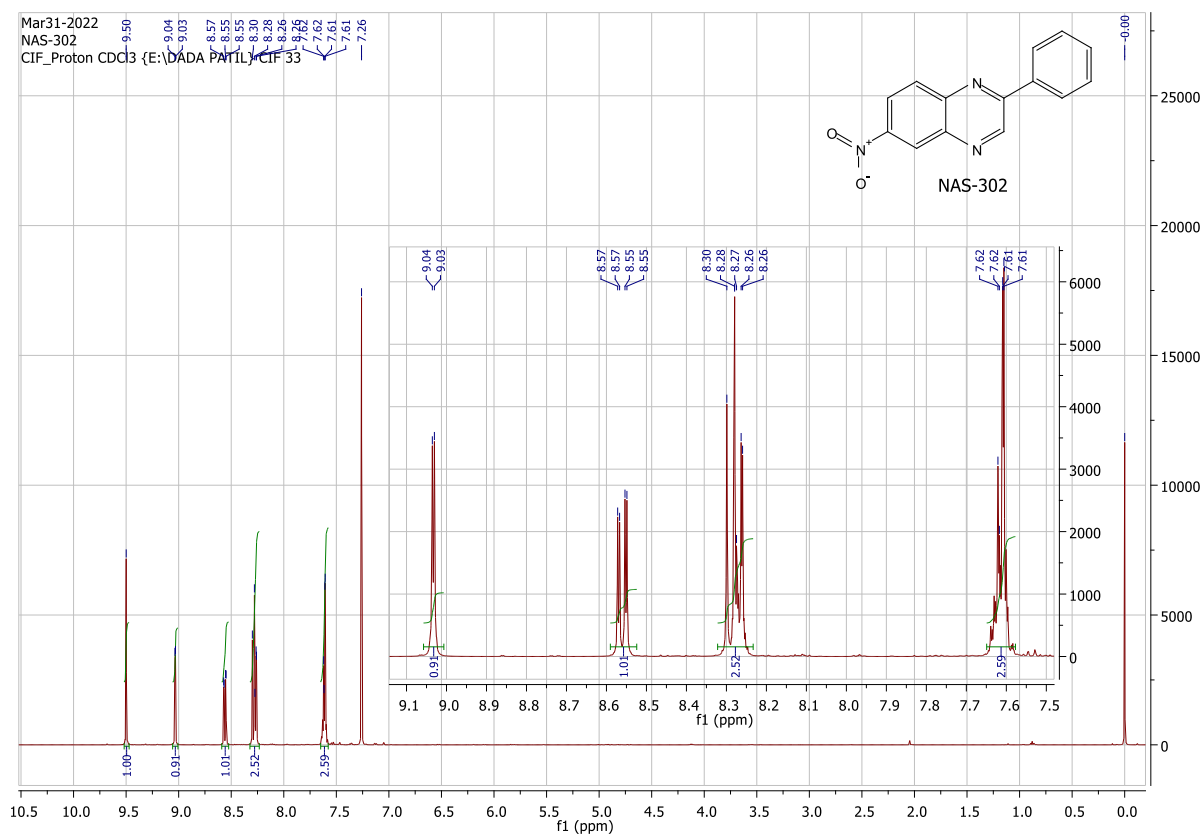
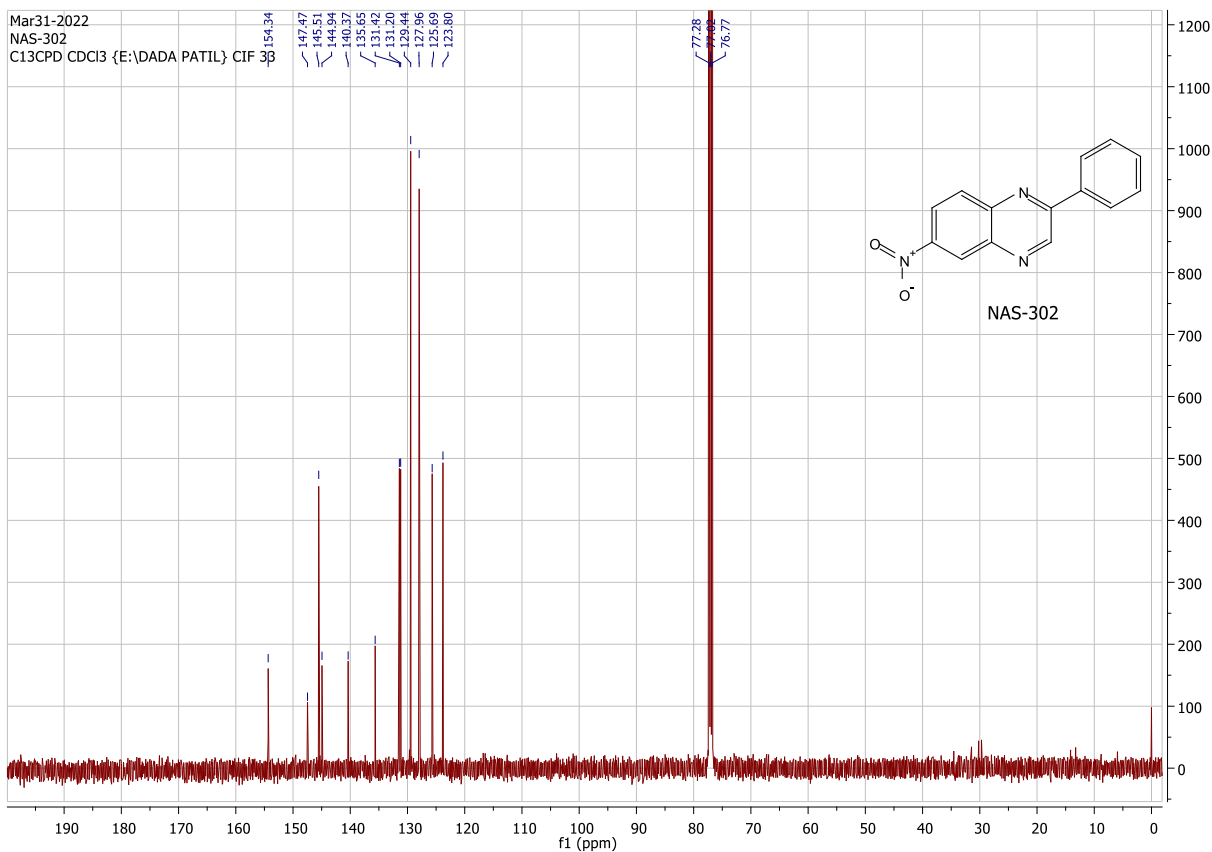
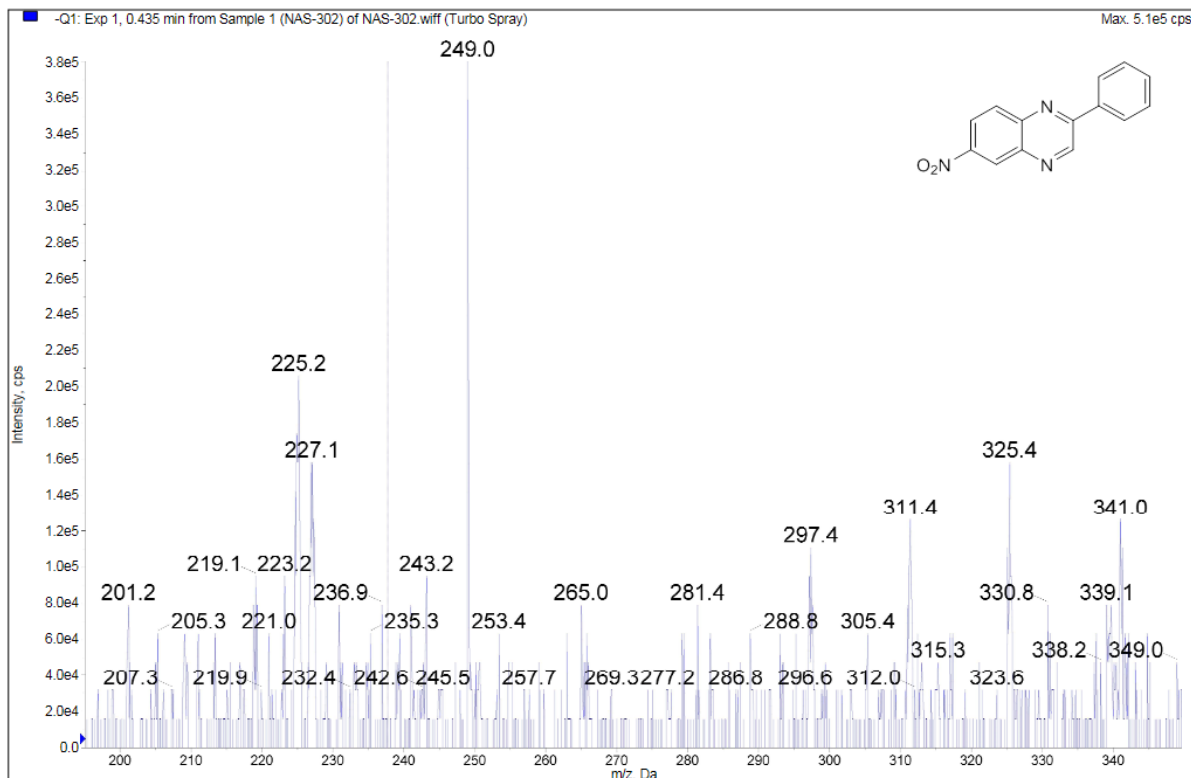


Figure S6: <sup>1</sup>H-NMR (300 MHz, CDCl<sub>3</sub>) Spectrum of compound 3b



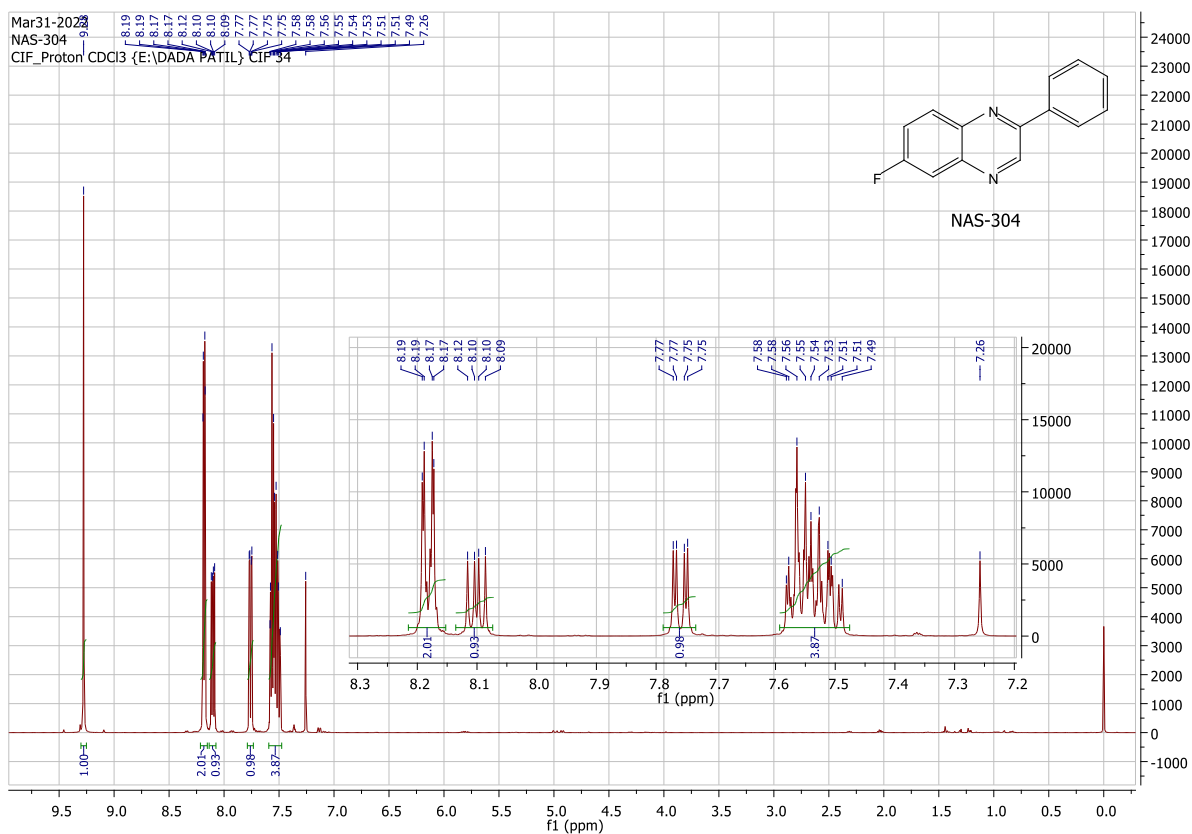
**Figure S7:**  $^{13}\text{C}$ -NMR (75 MHz,  $\text{CDCl}_3$ ) Spectrum of compound **3b**

DEPARTMENT OF CHEMISTRY  
UNIVERSITY OF MUMBAI, KALINA  
CALIBRATION DATA

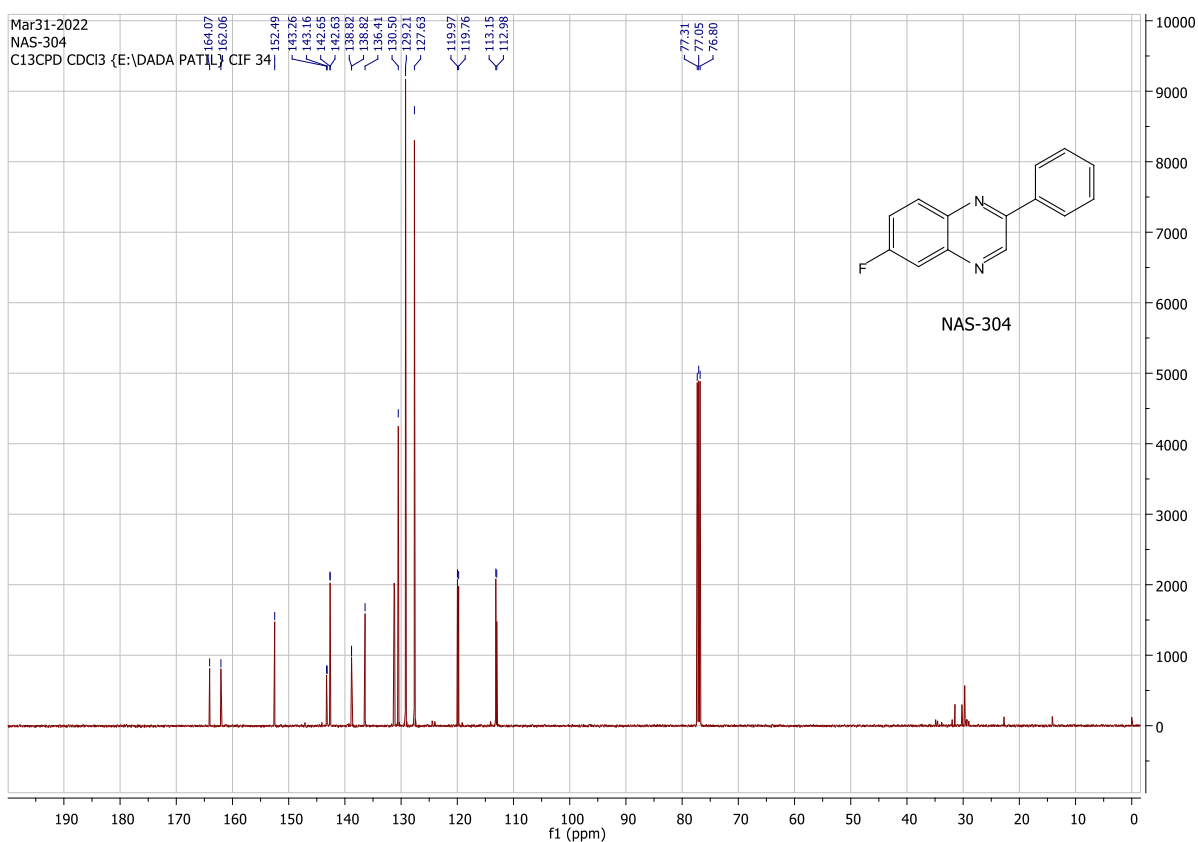


**Figure S8:** LC-MS spectrum of compound **3b**





**Figure S11:**  $^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) Spectrum of compound **3d**



**Figure S12:**  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) Spectrum of compound **3d**



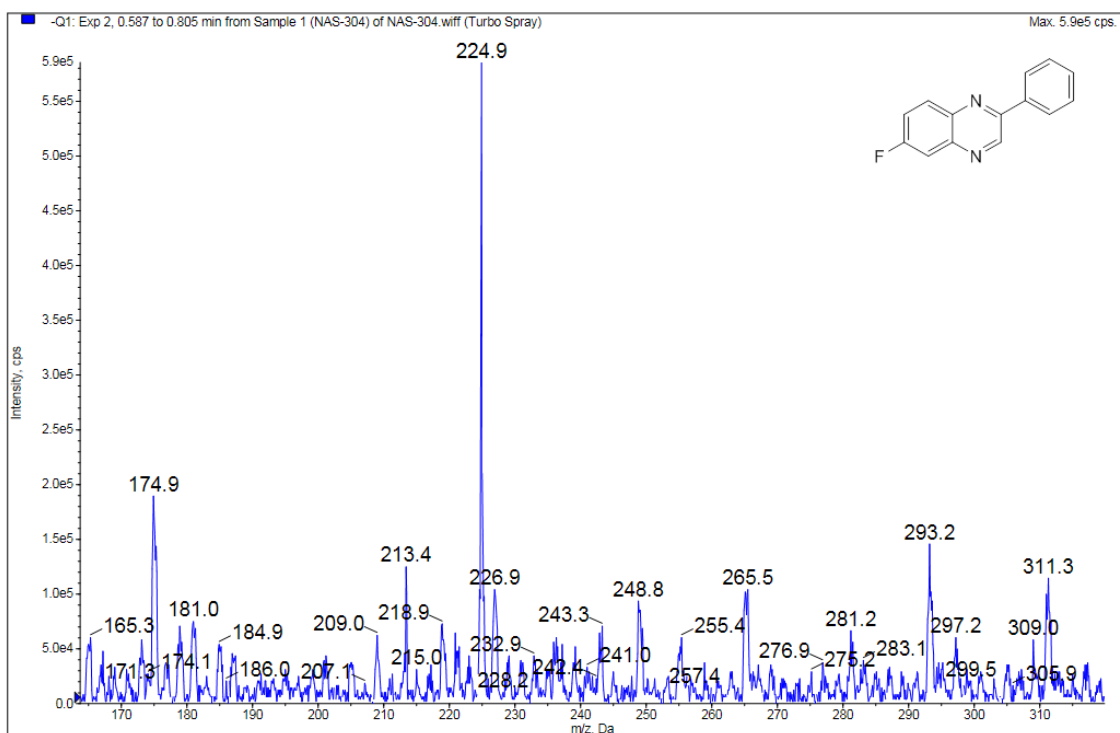
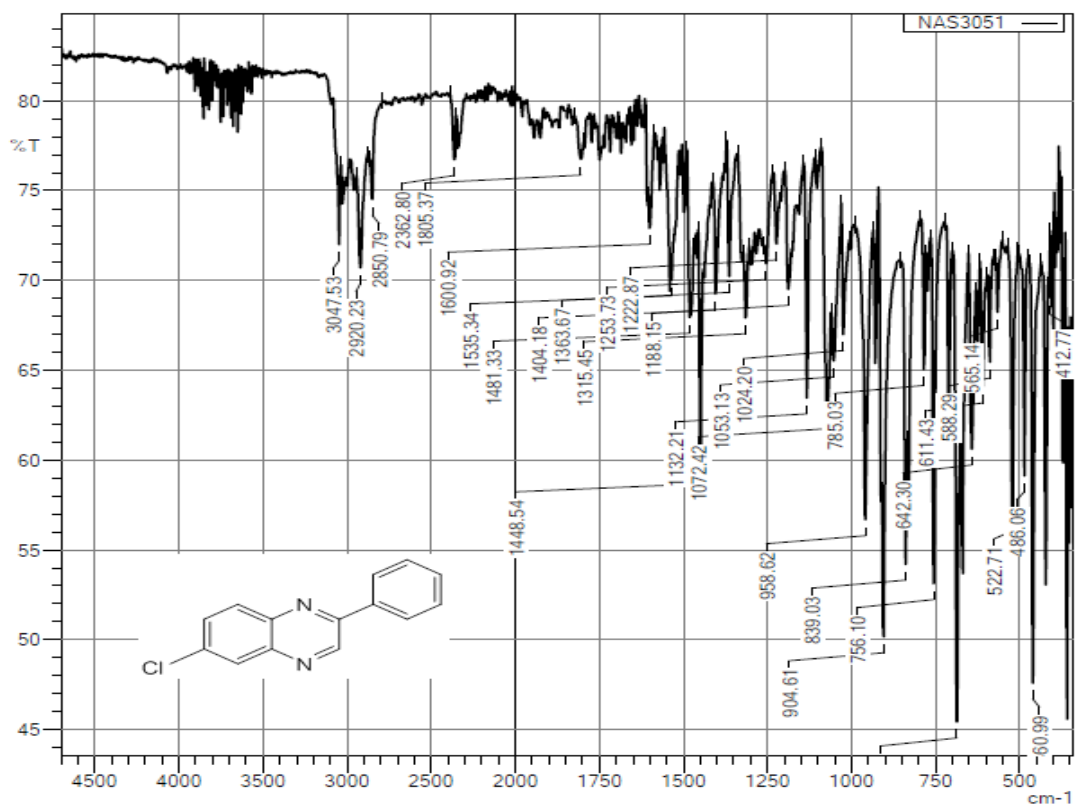


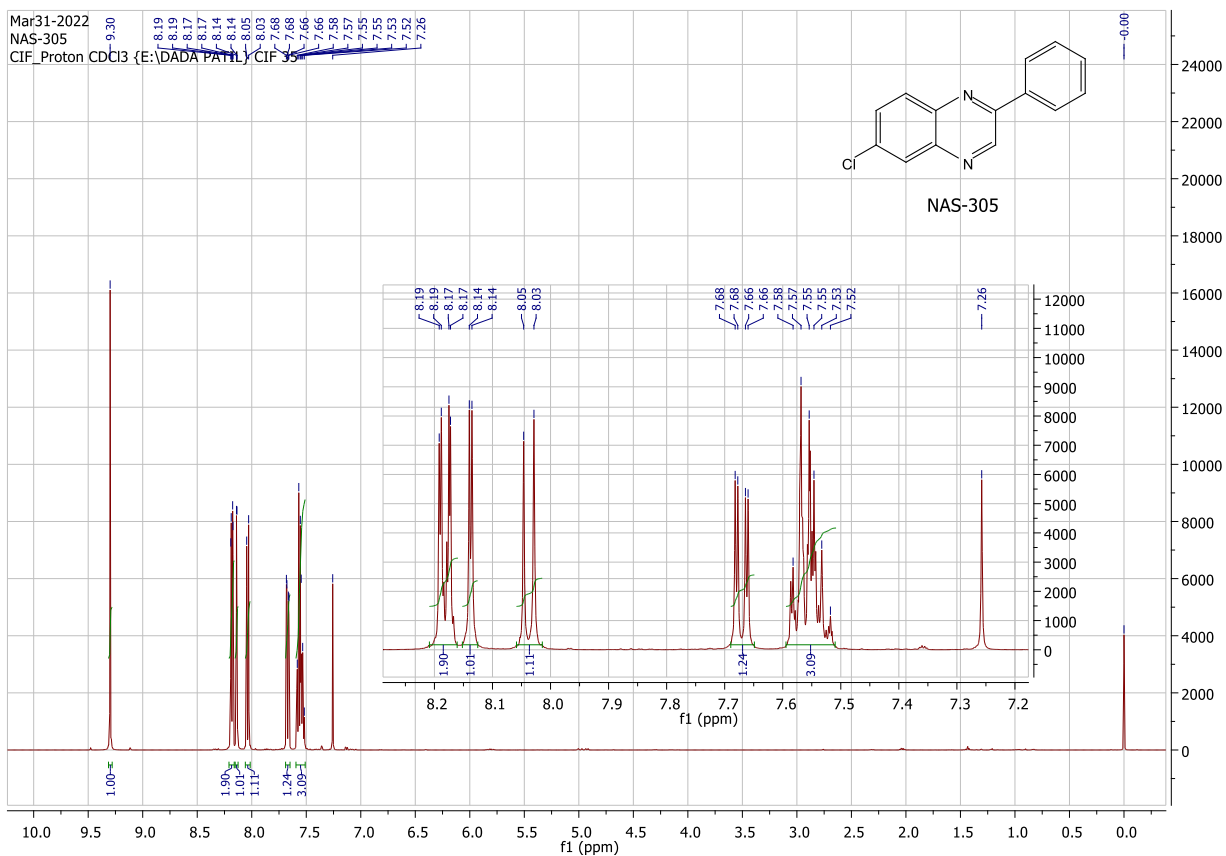
Figure S13: LC-MS spectrum of compound 3d

SHIMADZU

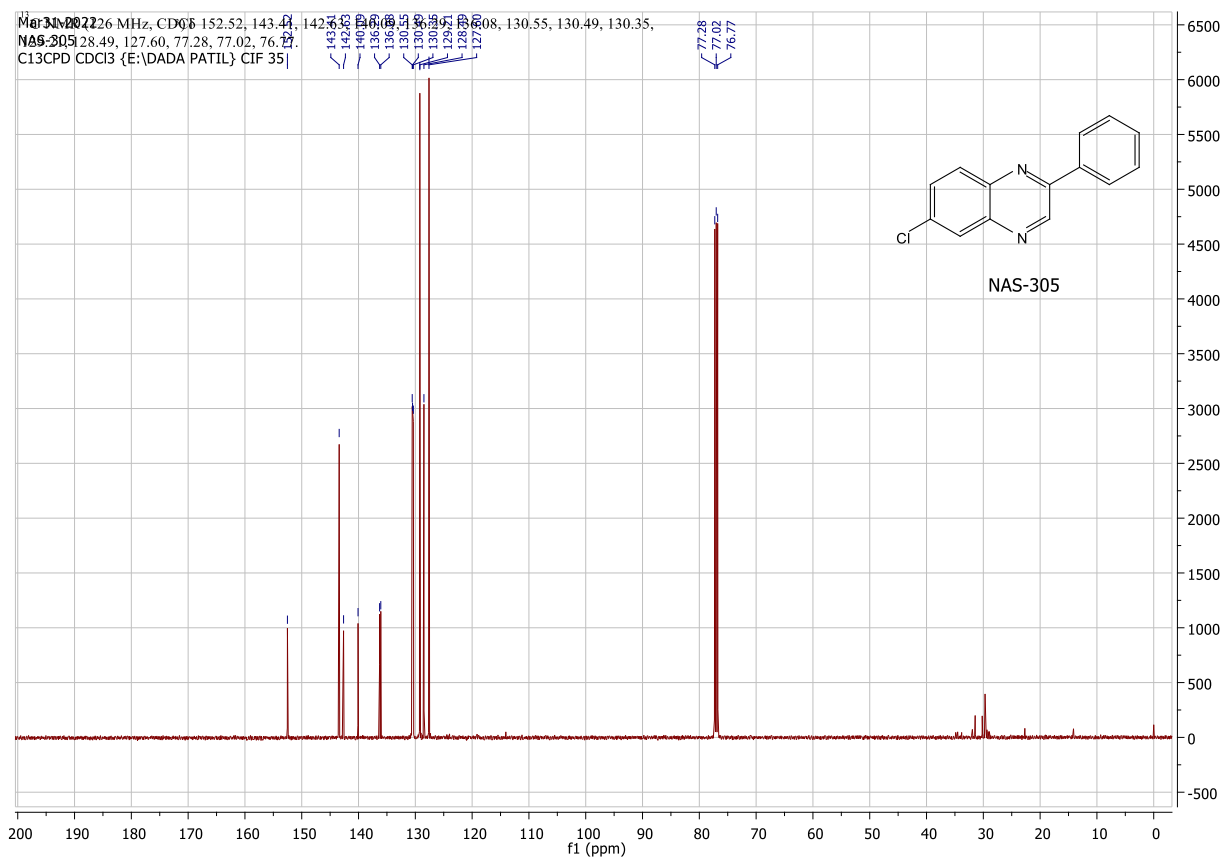


C:\Users\Admin\Desktop\220622\SET B (11 Sample)\NAS305.ispd

Figure S14: IR Spectrum of compound 3e



**Figure S15:**  $^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) Spectrum of compound **3e**



**Figure S16:**  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) Spectrum of compound **3e**

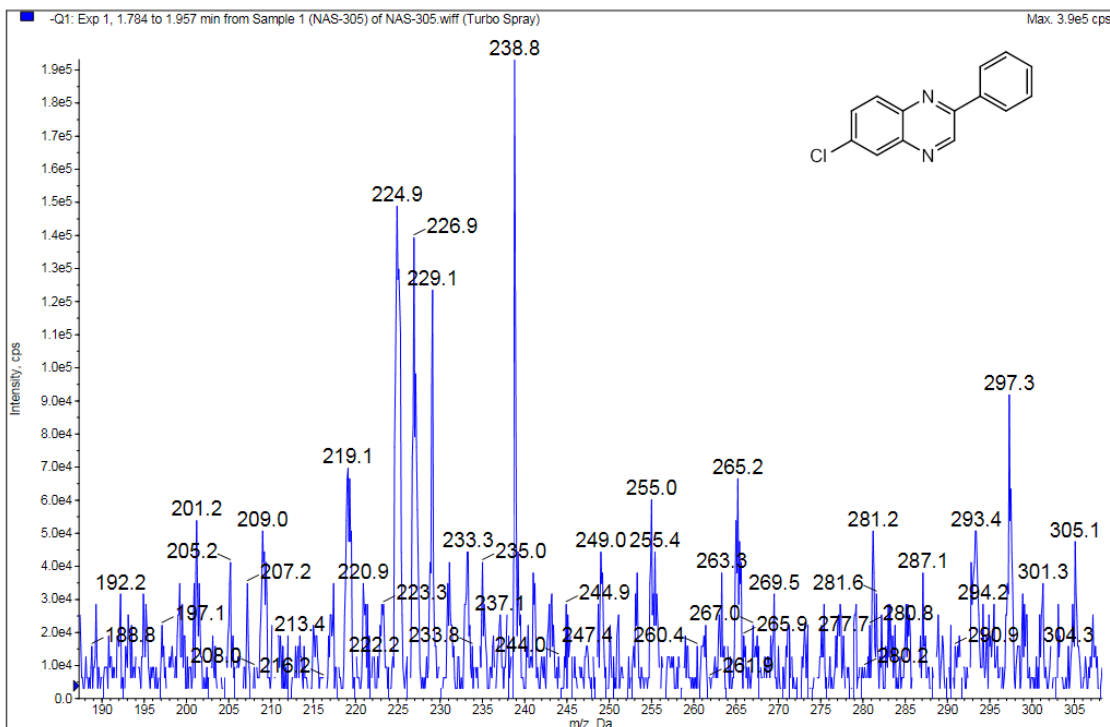
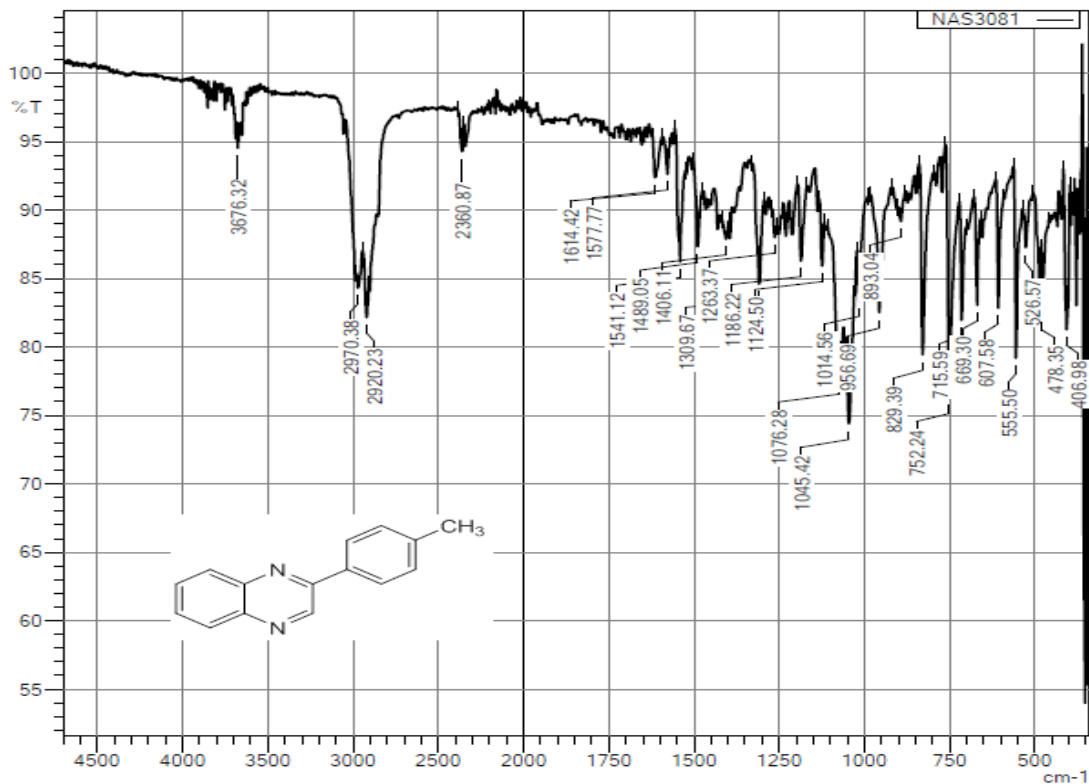


Figure S17: LC-MS spectrum of compound 3e

SHIMADZU



C:\Users\Admin\Desktop\220622\*SET B (11 Sample)\*NAS308.ispd

Figure S18: IR Spectrum of compound 3f

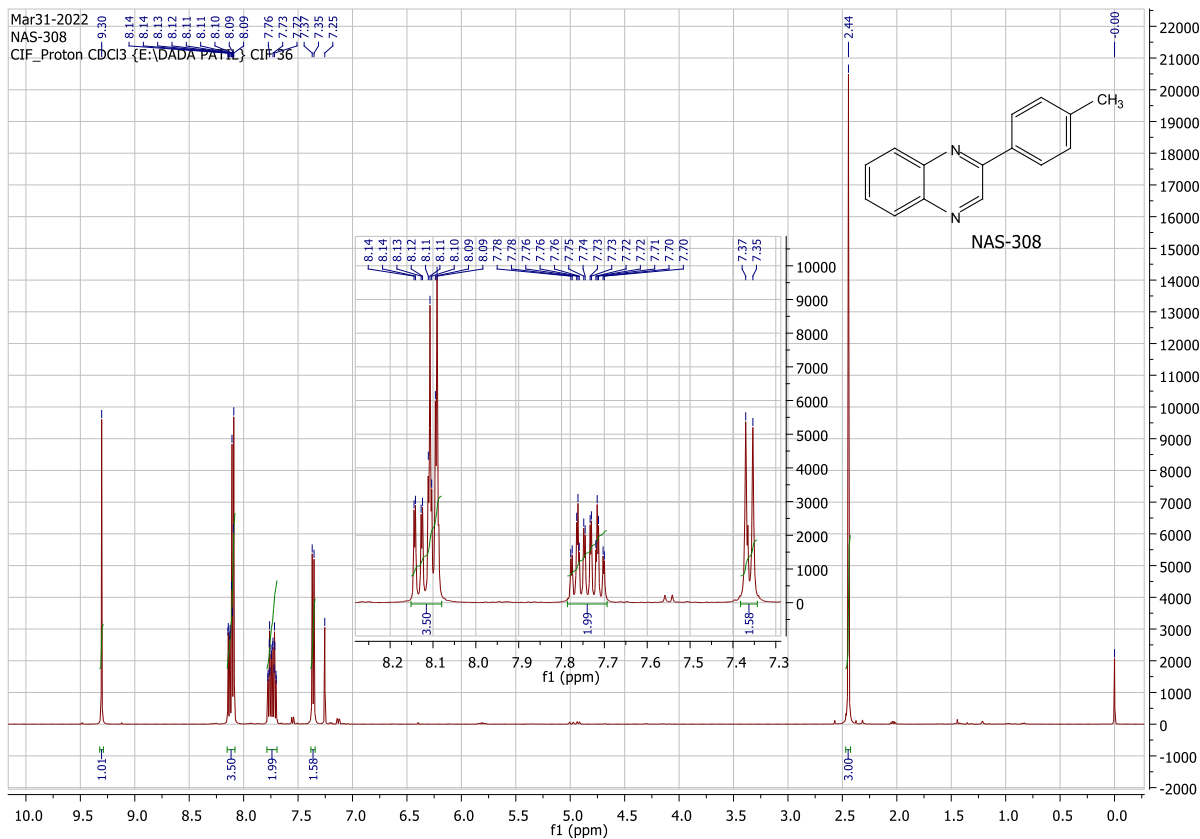
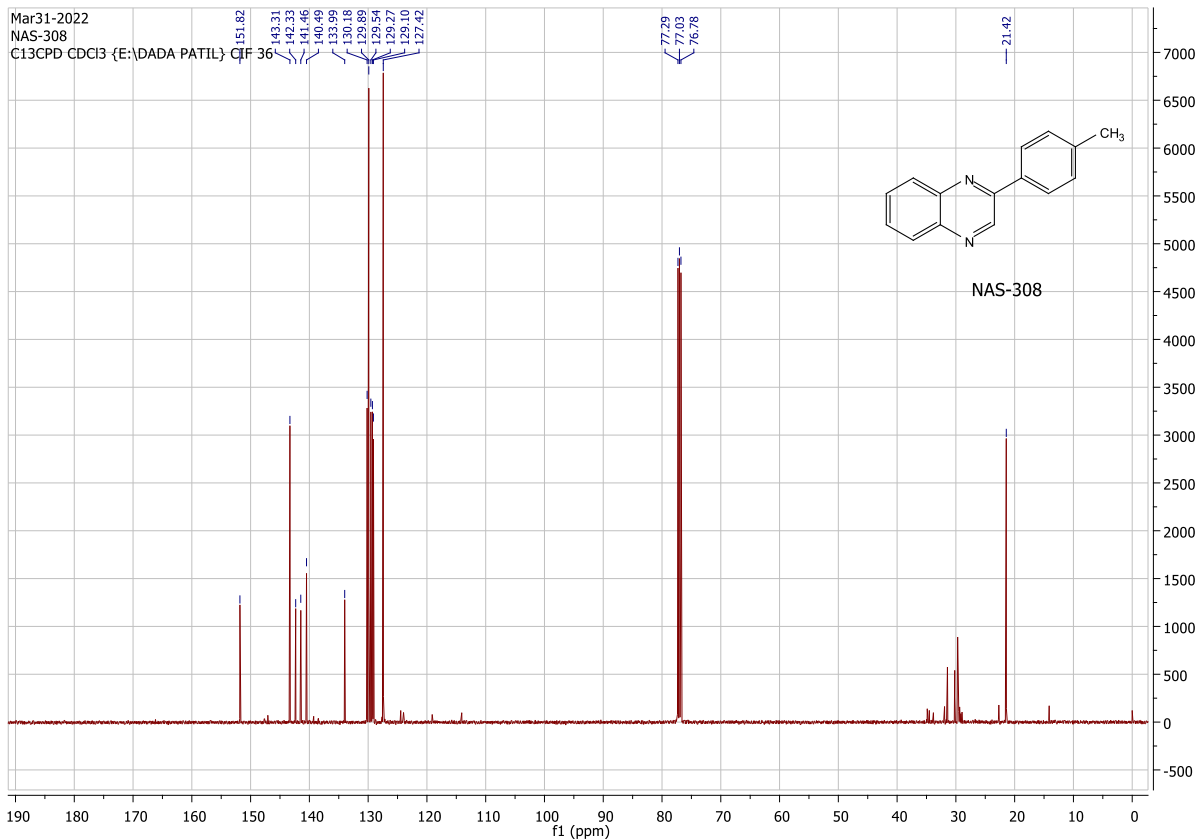
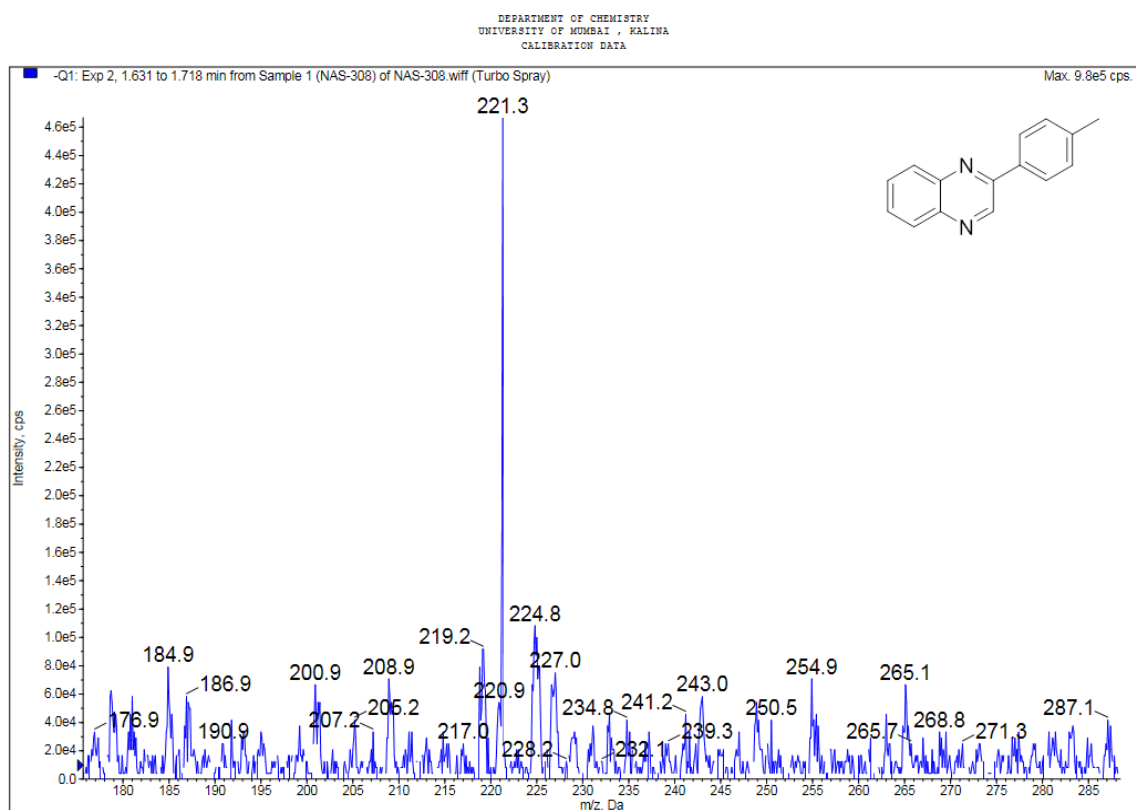


Figure S19: <sup>13</sup>C-NMR (300 MHz, CDCl<sub>3</sub>) Spectrum of compound 3f



**Figure S20:**  $^{13}\text{C}$ -NMR (75 MHz,  $\text{CDCl}_3$ ) Spectrum of compound **3f**



**Figure S21:** LC-MS spectrum of compound **3f**

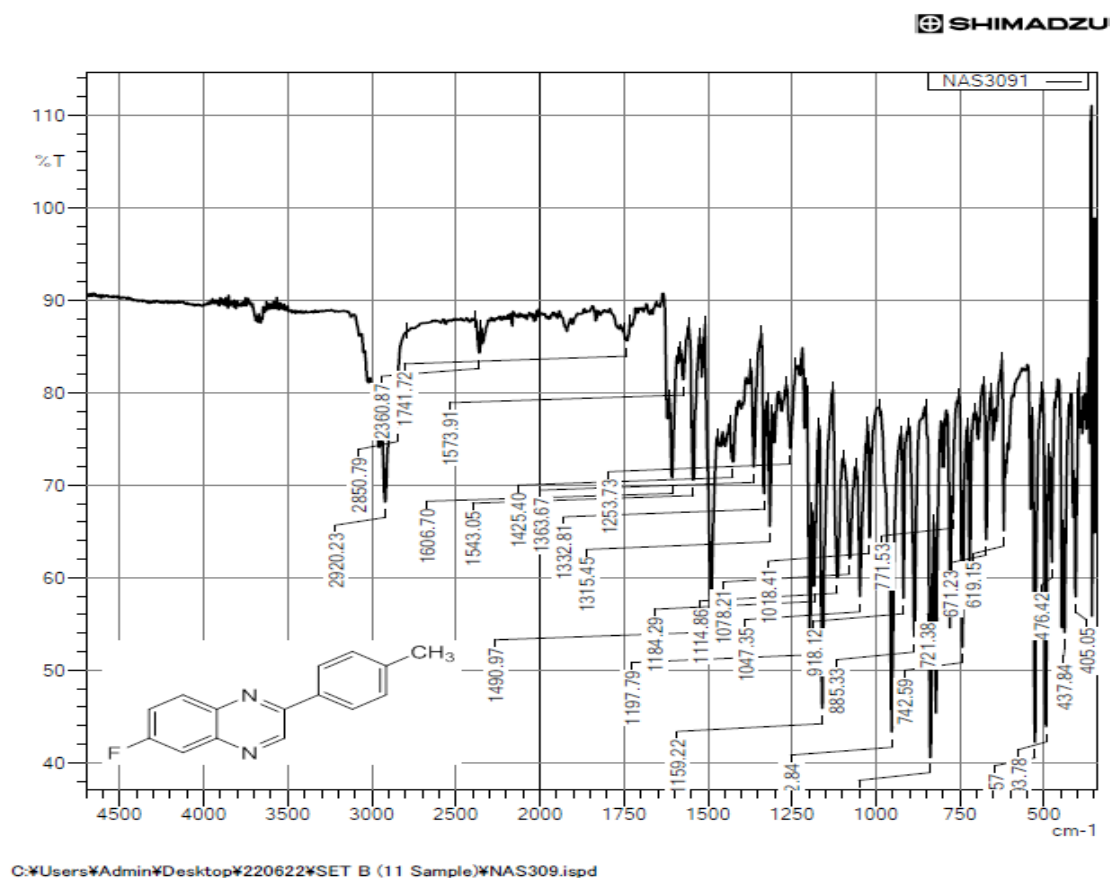


Figure S22: IR Spectrum of compound 3g

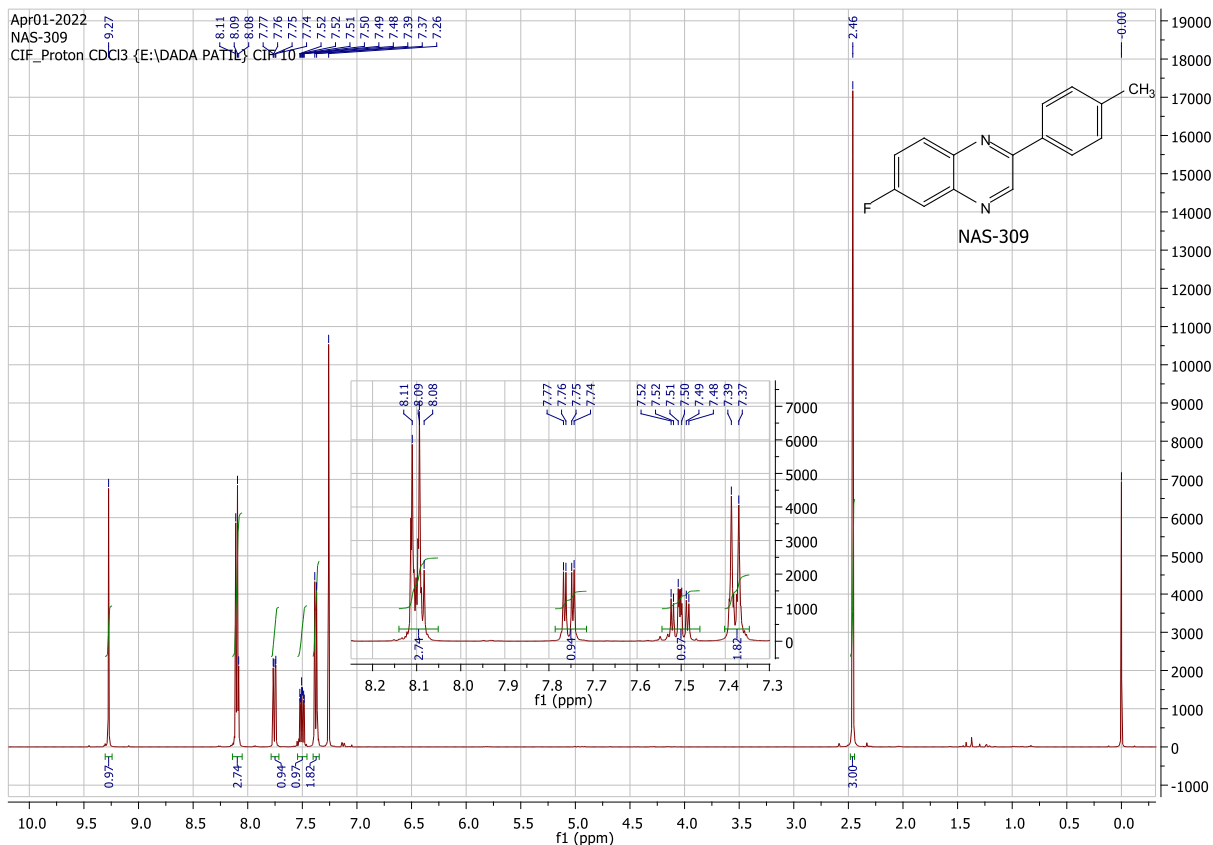


Figure S23: <sup>1</sup>H-NMR (300 MHz, CDCl<sub>3</sub>) Spectrum of compound 3g

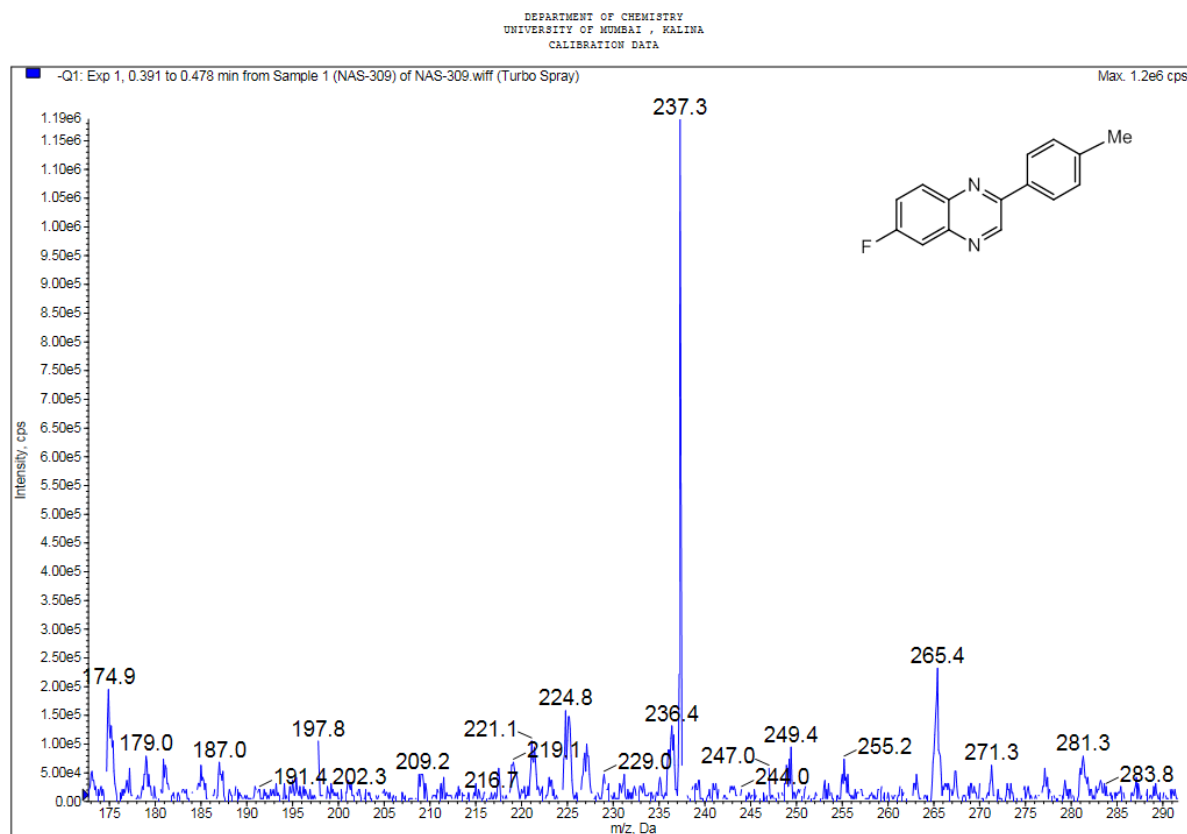


Figure S24: LC-MS spectrum of compound 3g

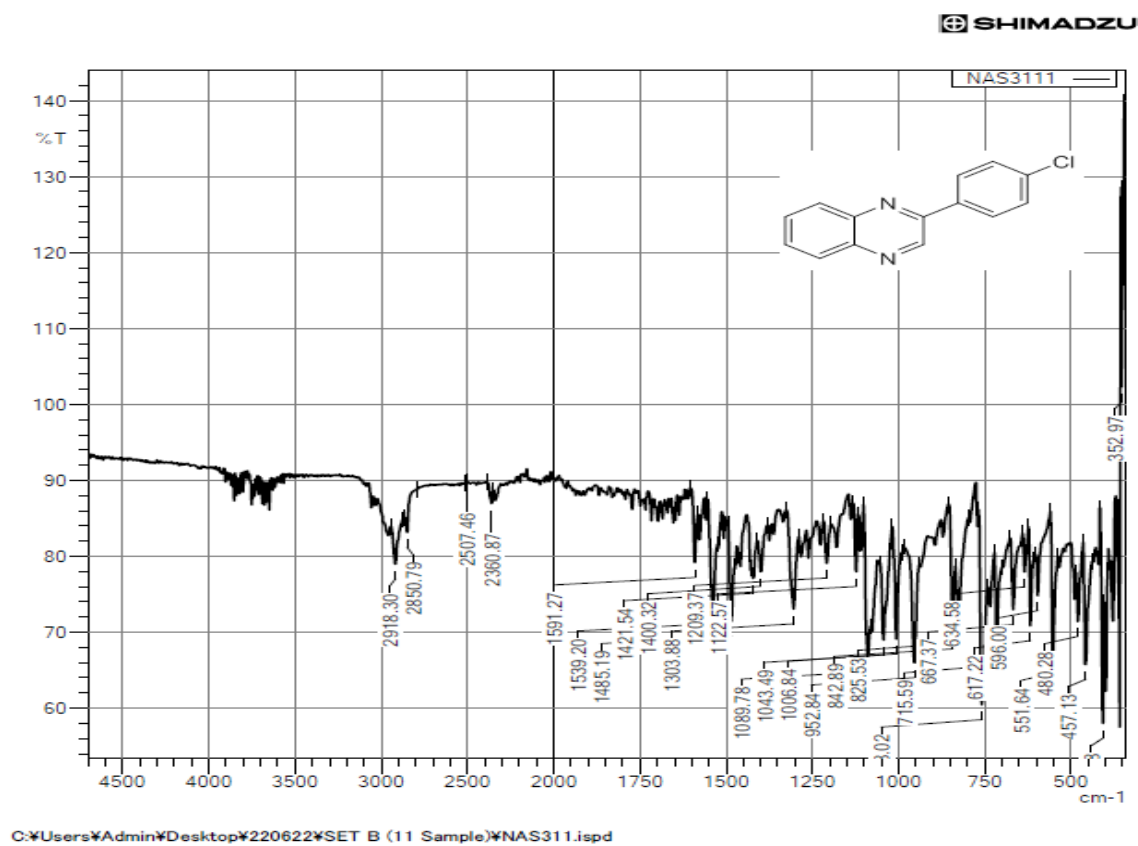
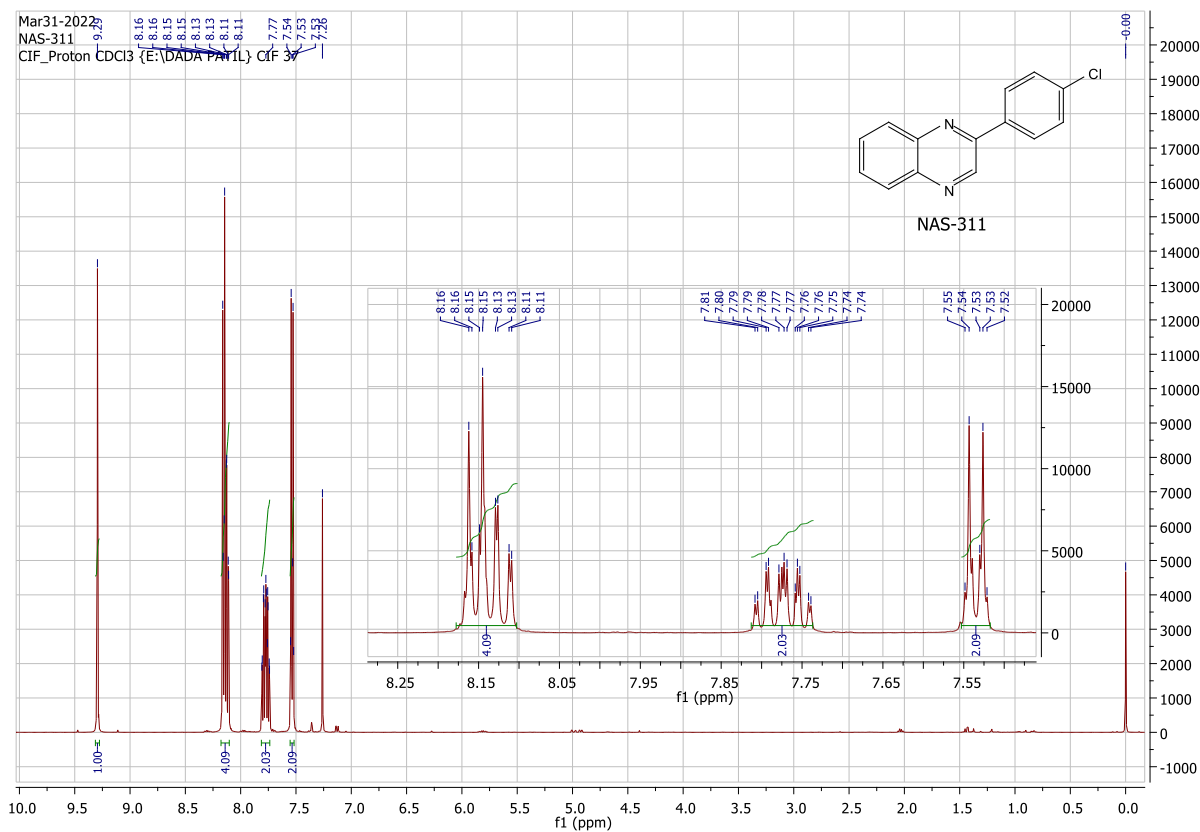
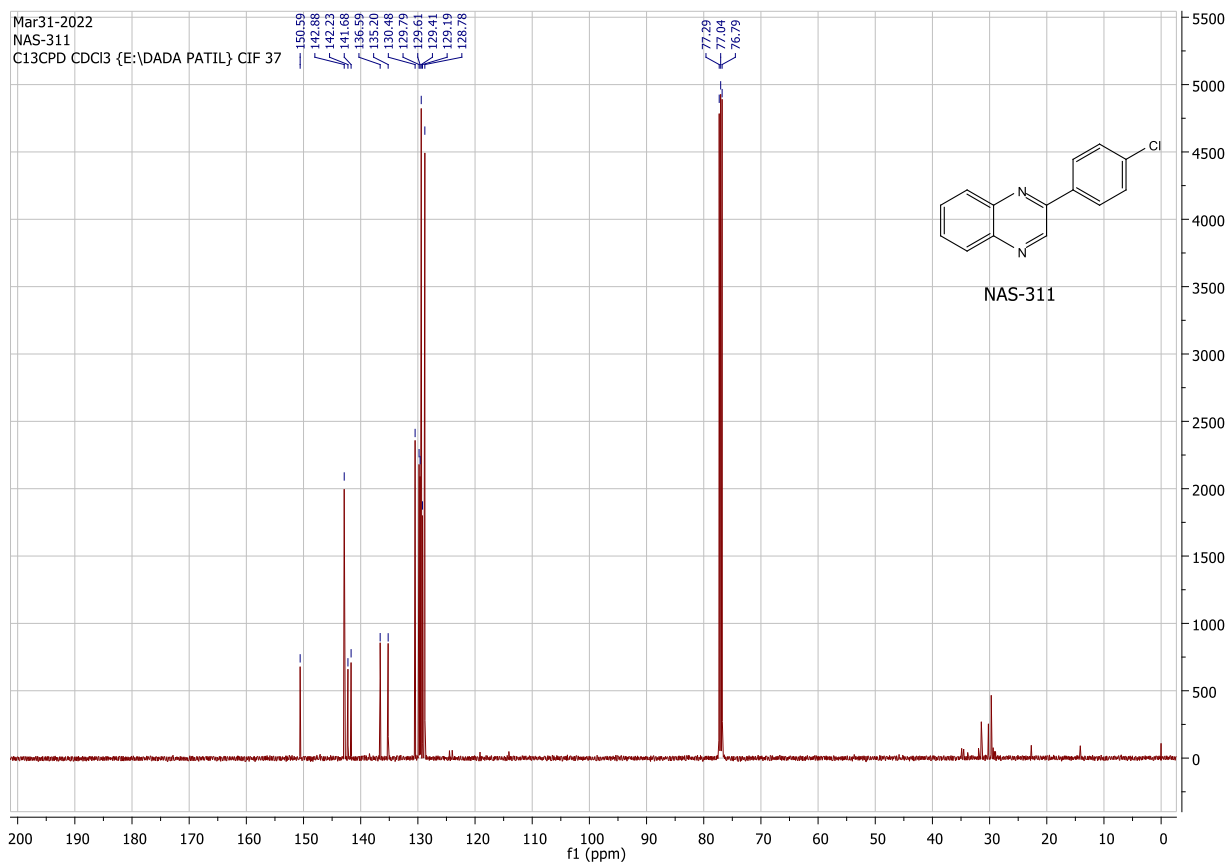


Figure S25: IR Spectrum of compound 3h



**Figure S26:**  $^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) Spectrum of compound **3h**



**Figure S27:**  $^{13}\text{C-NMR}$  (75 MHz,  $\text{CDCl}_3$ ) Spectrum of compound **3h**

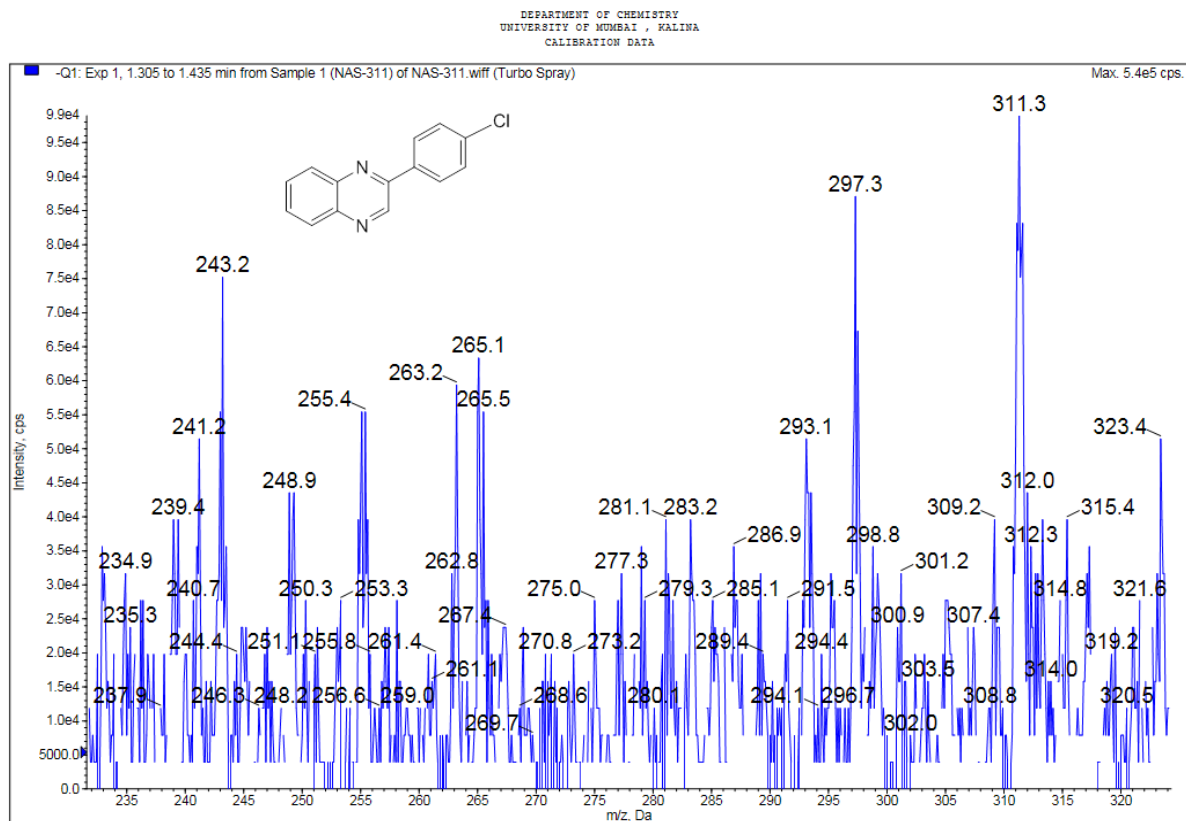




Figure S28: LC-MS spectrum of compound 3h

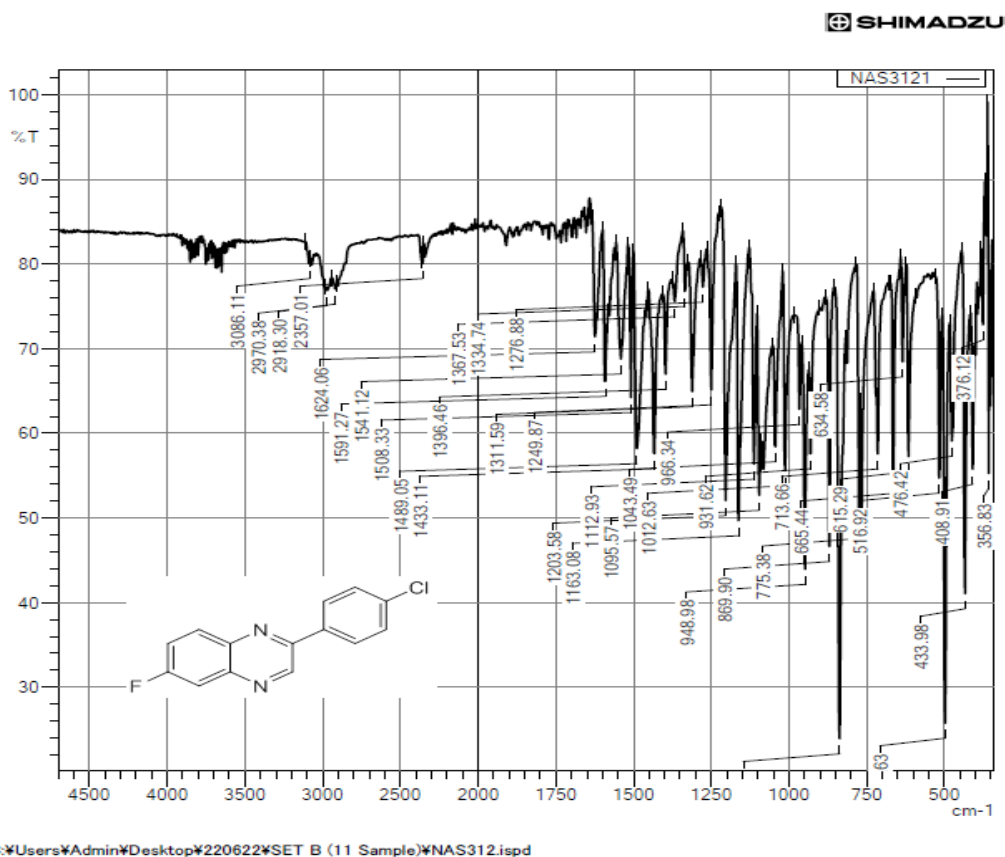
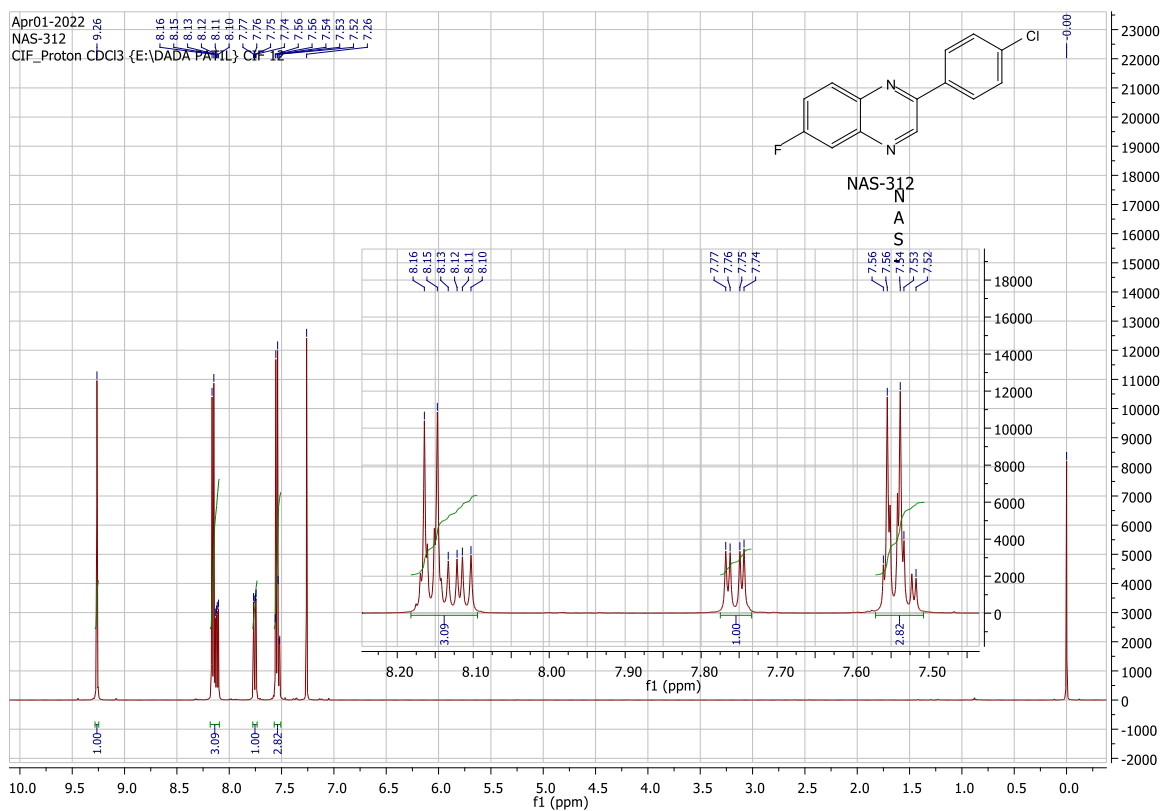
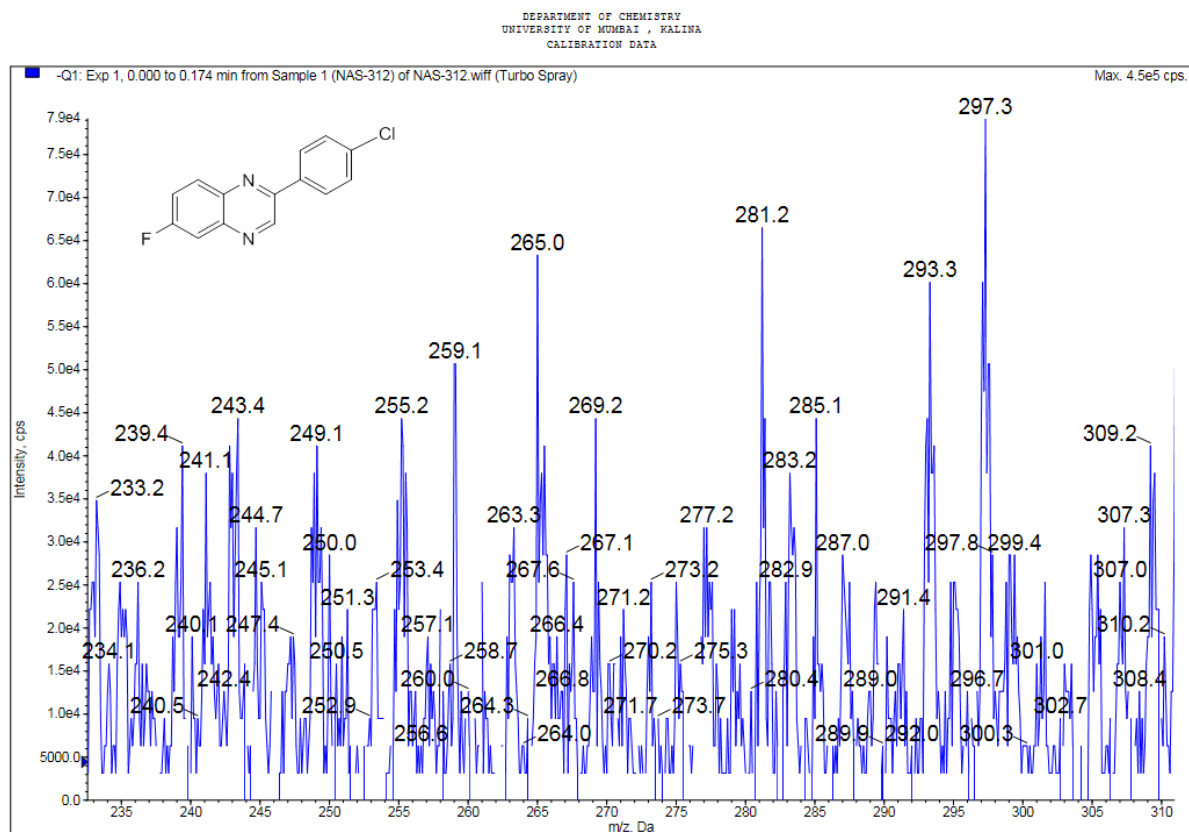


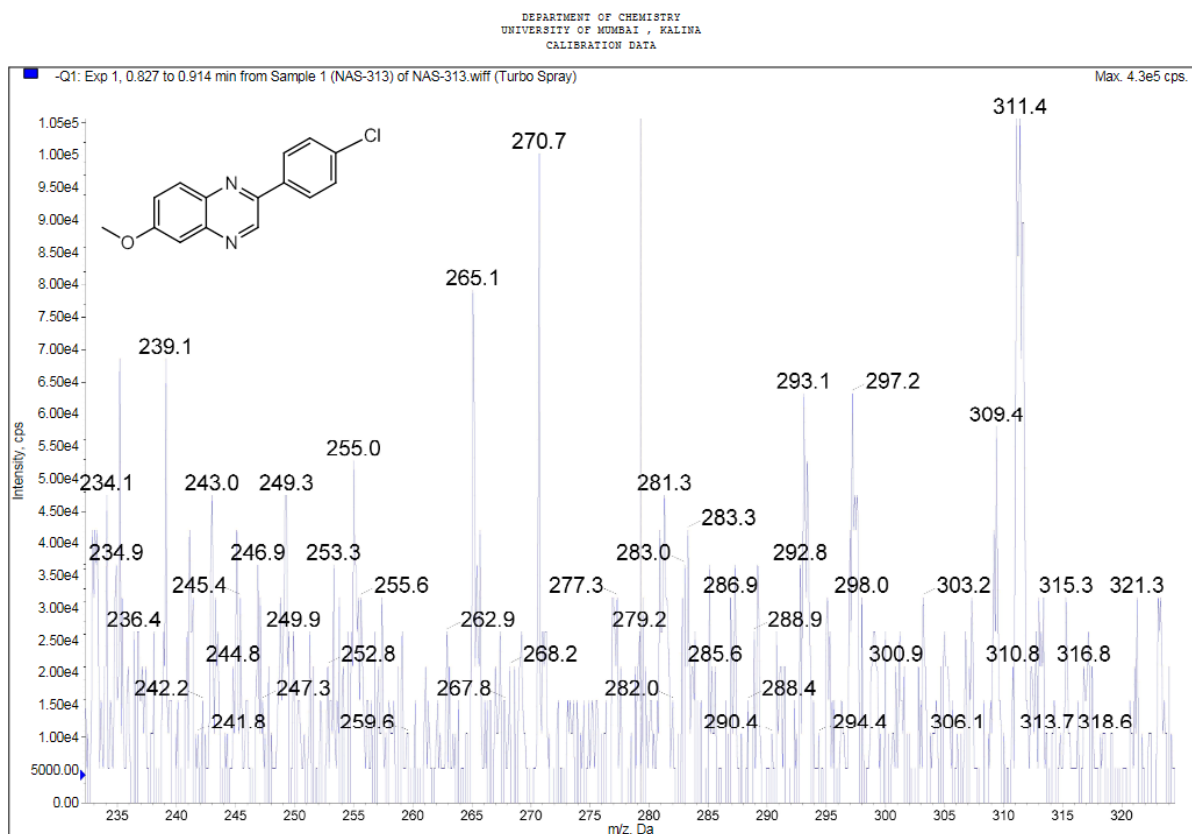
Figure S29: IR Spectrum of compound 3i



**Figure S30:**  $^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) Spectrum of compound **3i**



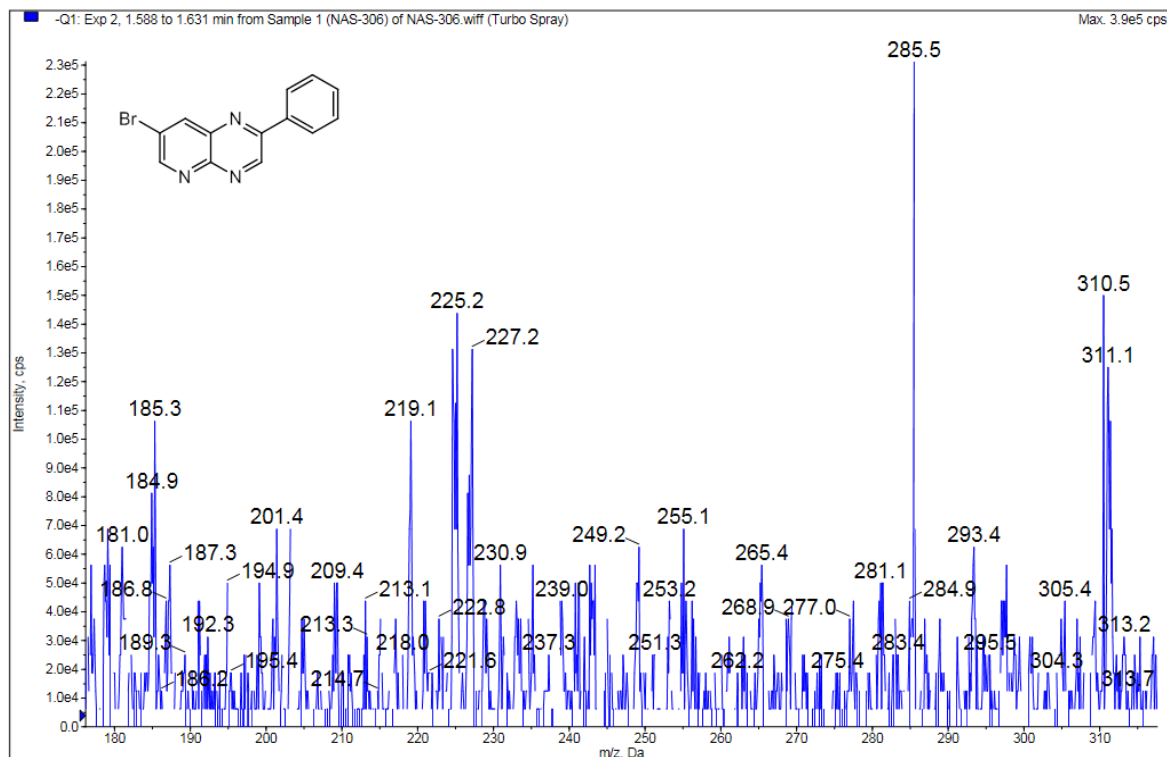
**Figure S31:** LC-MS spectrum of compound **3i**





**Figure S34:**  $^1\text{H-NMR}$  (300 MHz,  $\text{CDCl}_3$ ) Spectrum of compound **3k**

DEPARTMENT OF CHEMISTRY  
UNIVERSITY OF MUMBAI, KALINA  
CALIBRATION DATA



**Figure S35:** LC-MS spectrum of compound **3k**