J. Braz. Chem. Soc., Vol. 20, No. 9, S1-S19, 2009.
Printed in Brazil - ©2009 Sociedade Brasileira de Química
0103 - 5053 $6.00+0.00

An Efficient Catalyst-Free Protocol for the Synthesis of Quinoxaline Derivatives under Ultrasound Irradiation

Wen-Xue Guo,[a] Hui-Le Jin,[a] Jiu-Xi Chen,*[,a] Fan Chen,[a] Jin-Chang Ding[a,b] and Hua-Yue Wu*[,a]

[a]College of Chemistry and Materials Engineering, Wenzhou University, Wenzhou, 325027, China

[b]Wenzhou Vocational and Technical College, Wenzhou, 325035, China

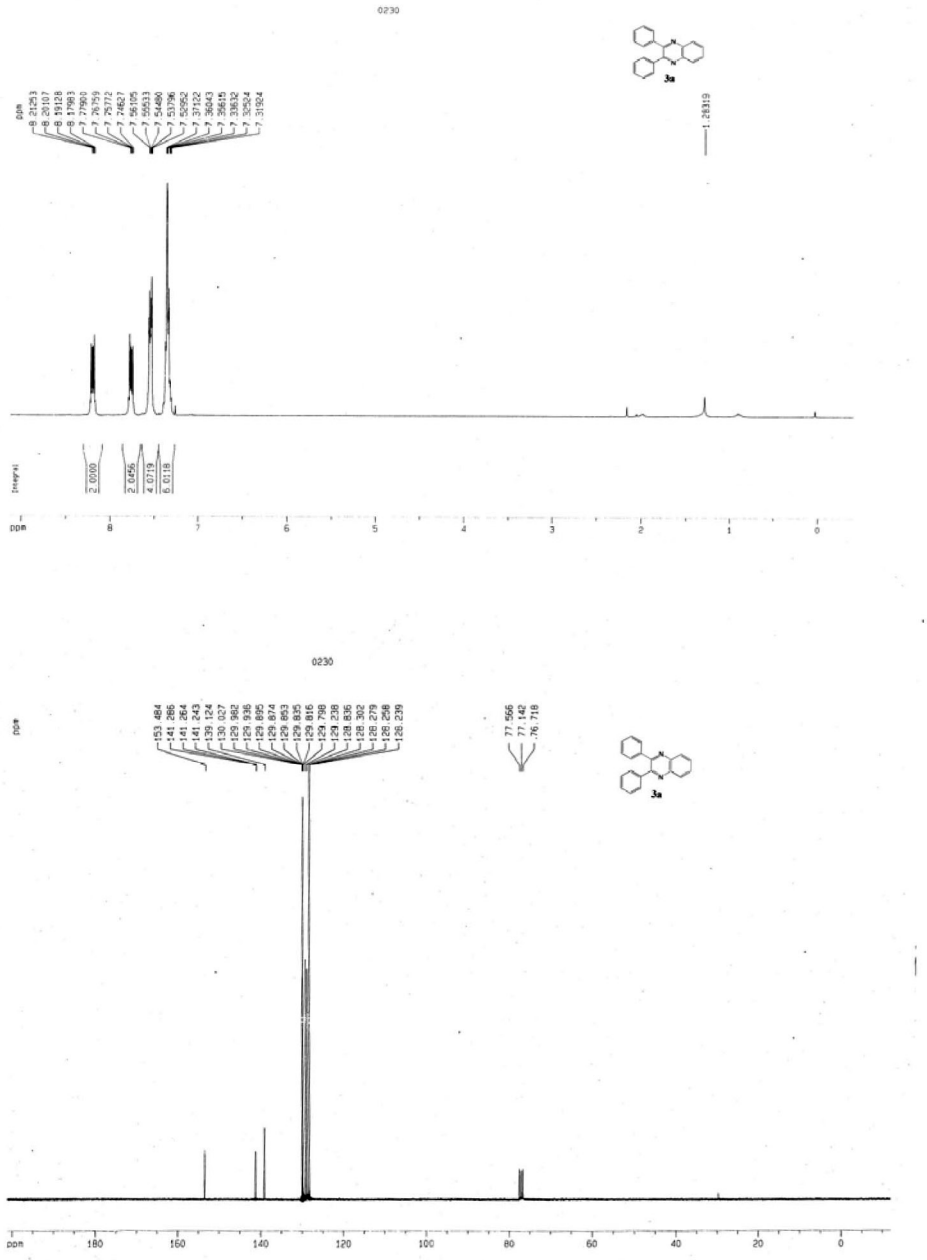

Figure S1. ^{1}H NMR of **3a** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3a** (75 MHz, $CDCl_3$).

*e-mail: jiuxichen@wzu.edu.cn; huayuewu@wzu.edu.cn

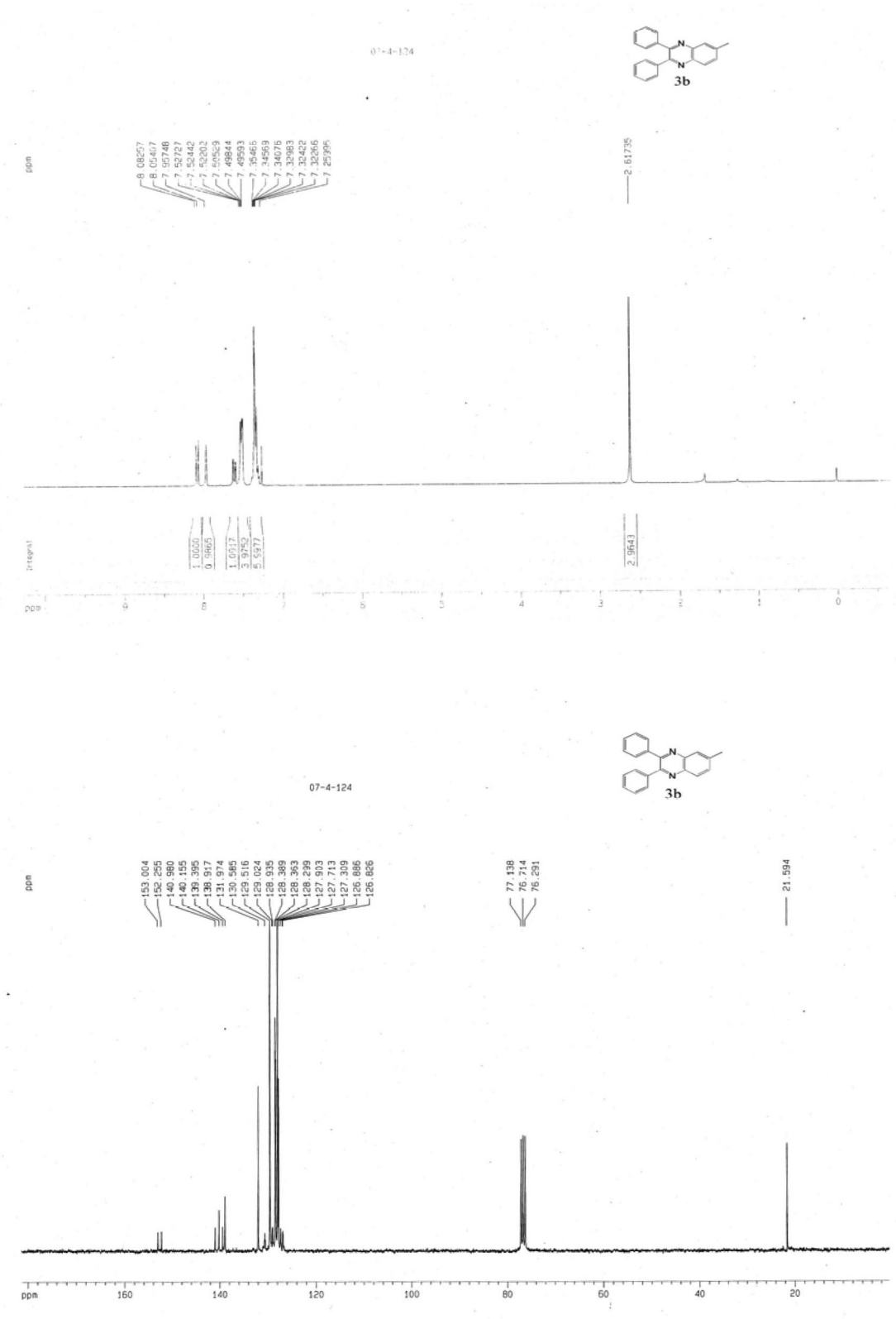

Figure S2. ^{1}H NMR of **3b** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3b** (75 MHz, $CDCl_3$).

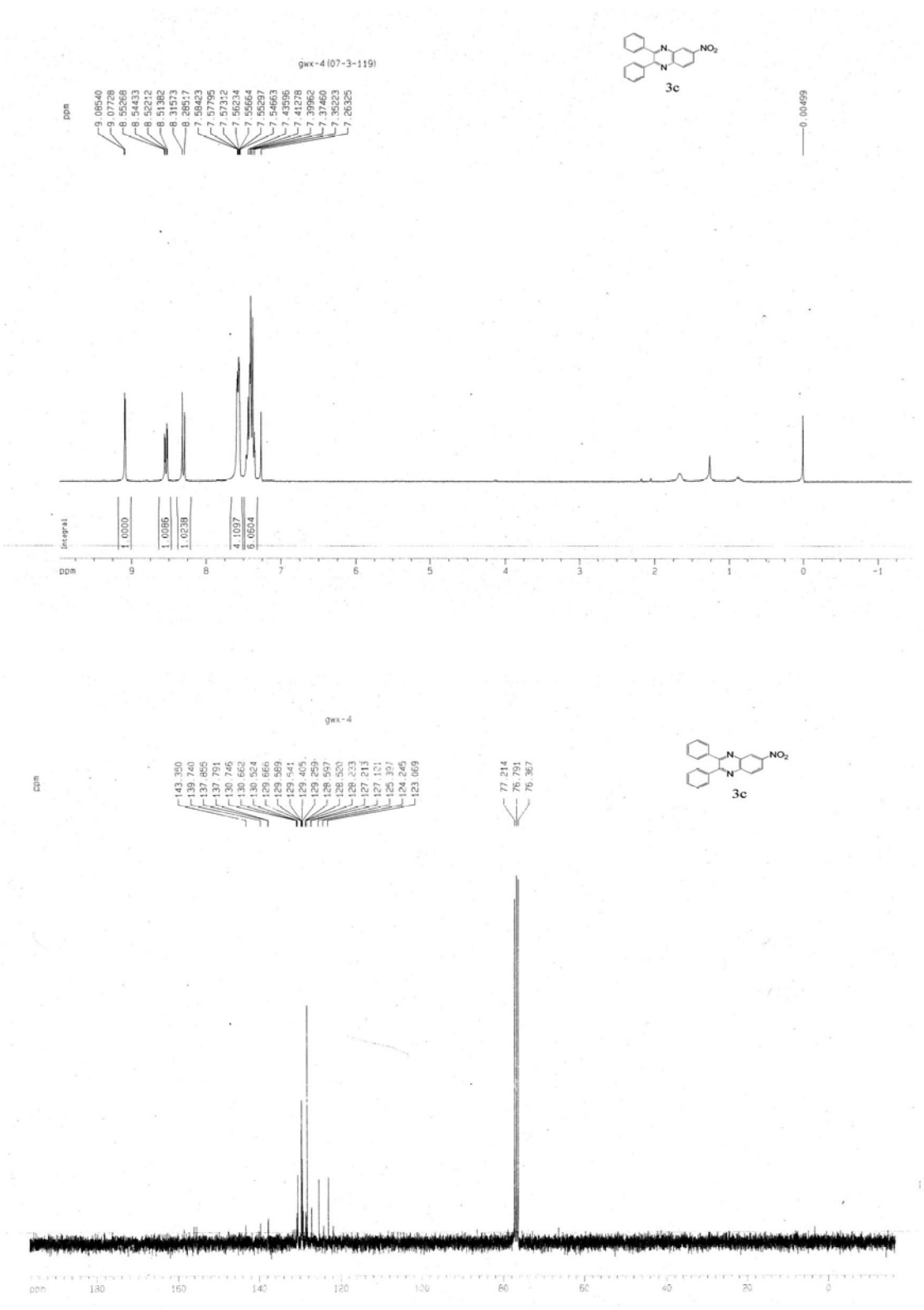

Figure S3. ^{1}H NMR of **3c** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3c** (75 MHz, $CDCl_3$).

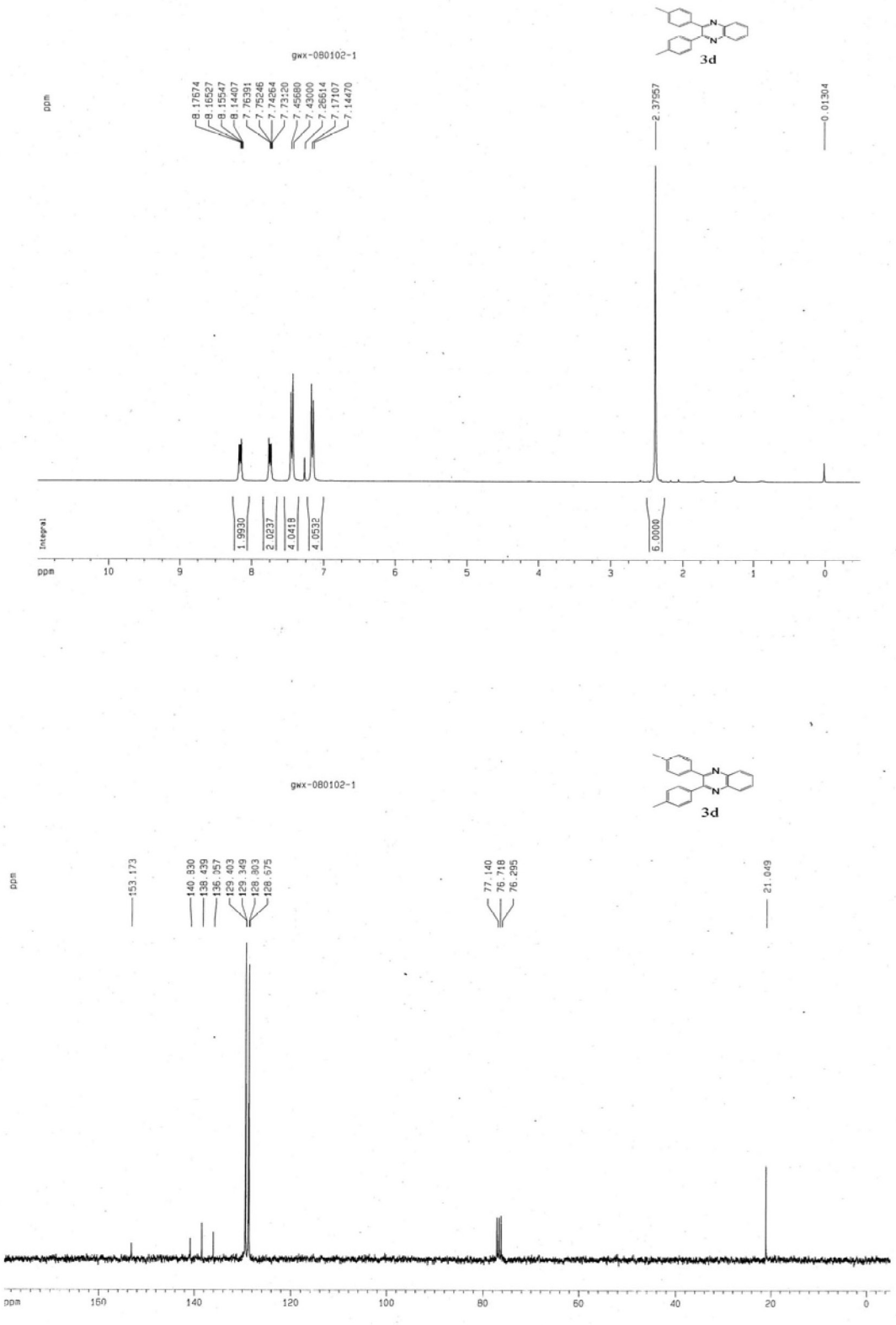

Figure S4. ^{1}H NMR of **3d** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3d** (75 MHz, $CDCl_3$).

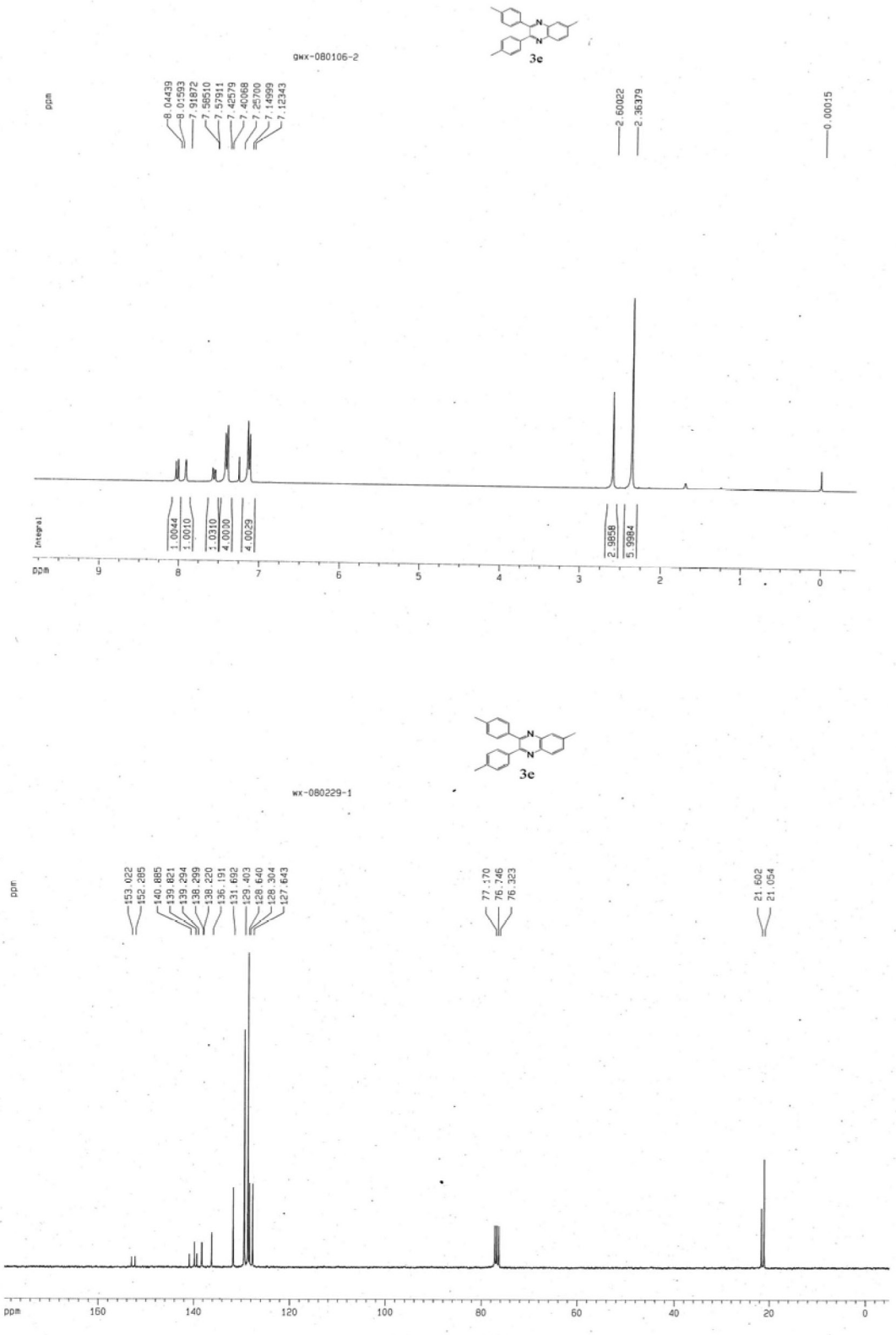

Figure S5. ^{1}H NMR of **3e** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3e** (75 MHz, $CDCl_3$).

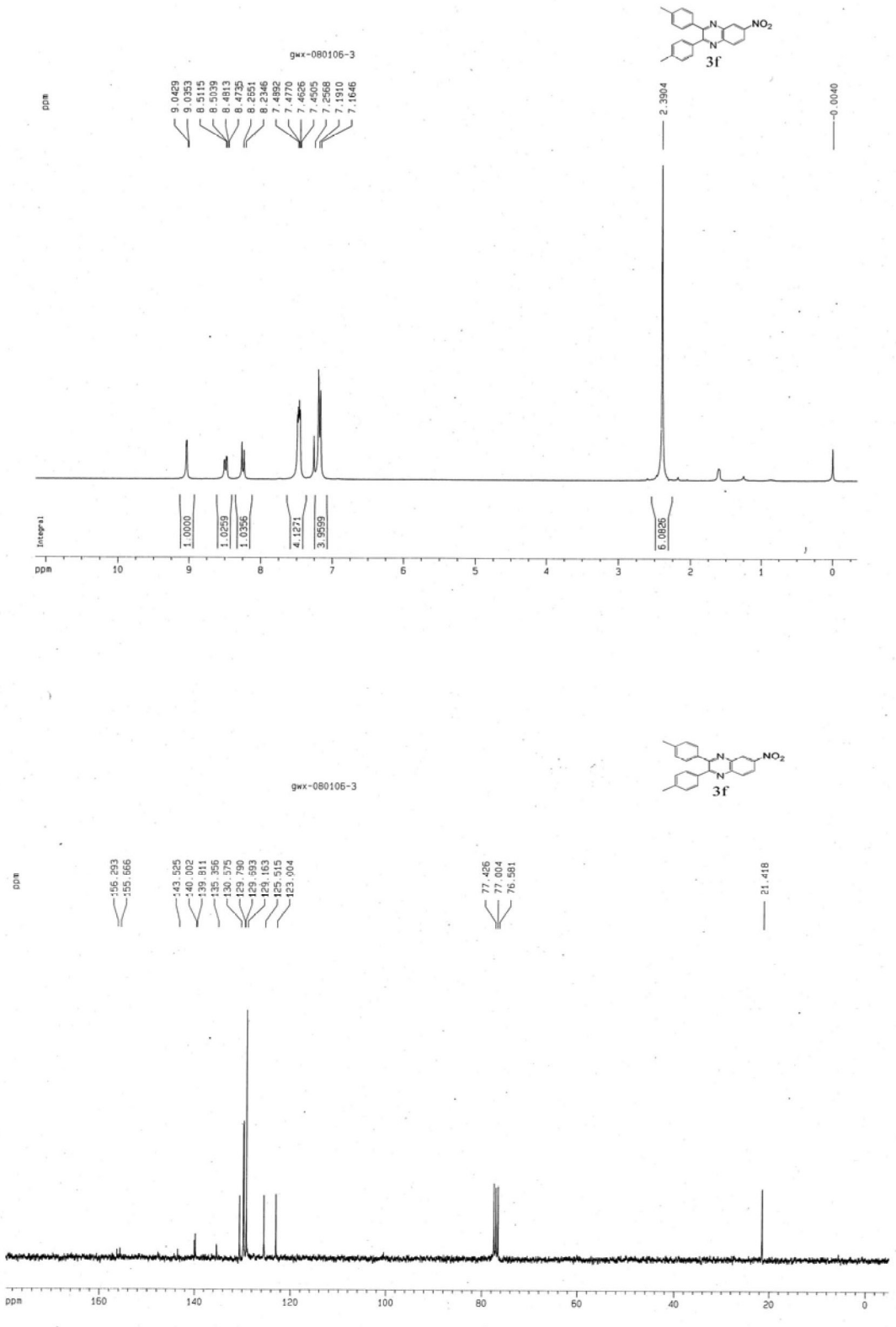

Figure S6. ^{1}H NMR of **3f** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3f** (75 MHz, $CDCl_3$).

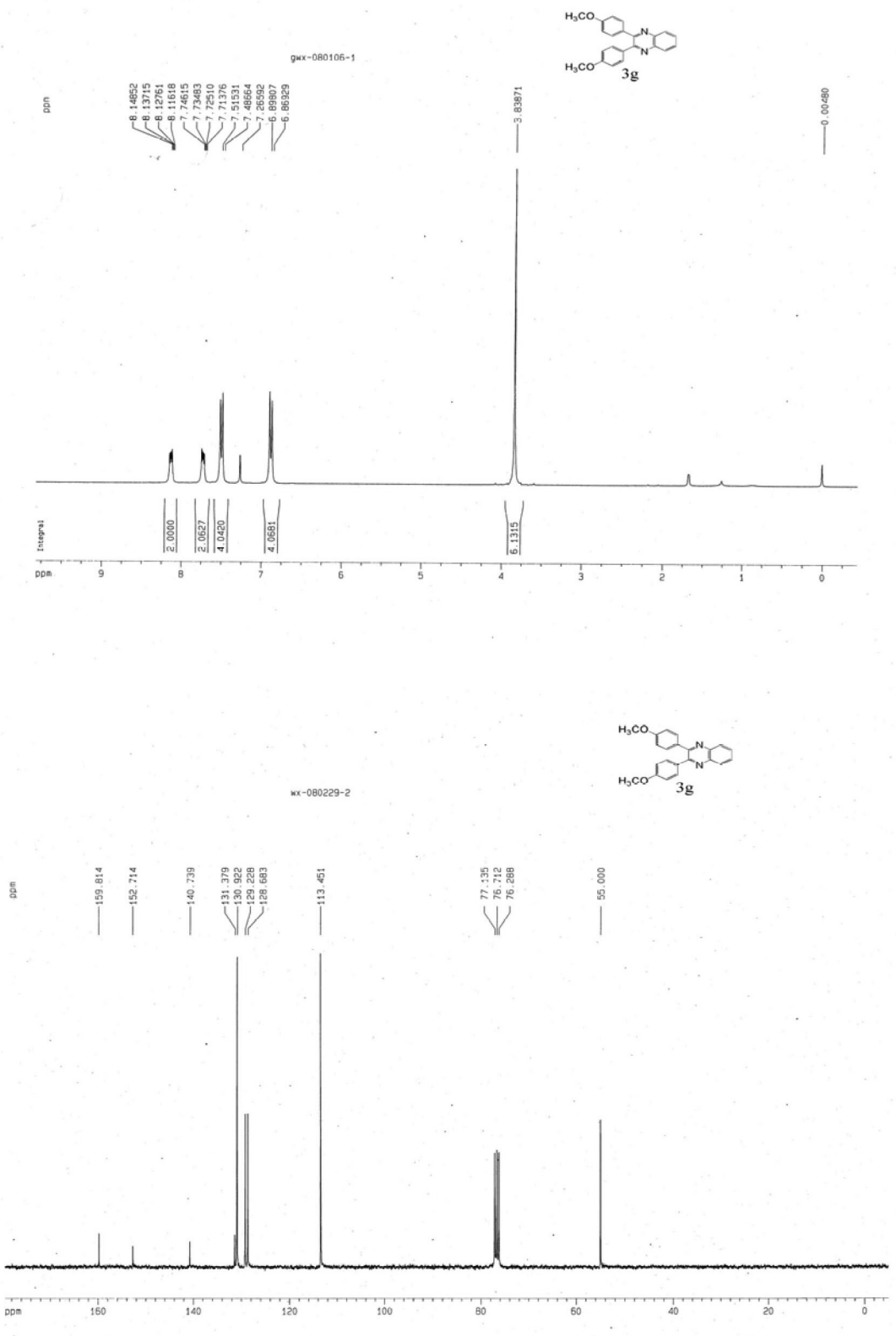

Figure S7. ^{1}H NMR of **3g** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3g** (75 MHz, $CDCl_3$).

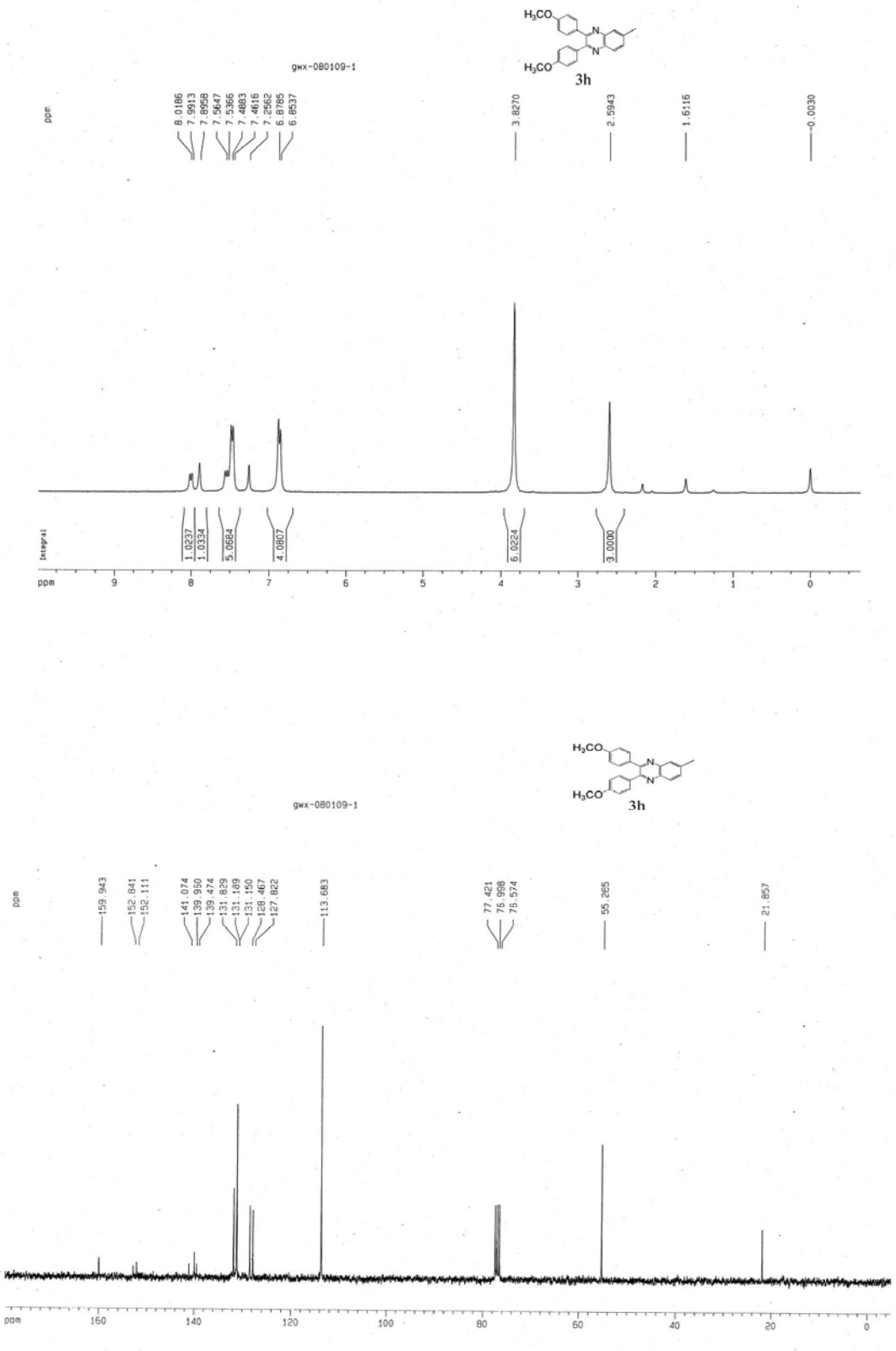

Figure S8. ^{1}H NMR of **3h** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3h** (75 MHz, $CDCl_3$).

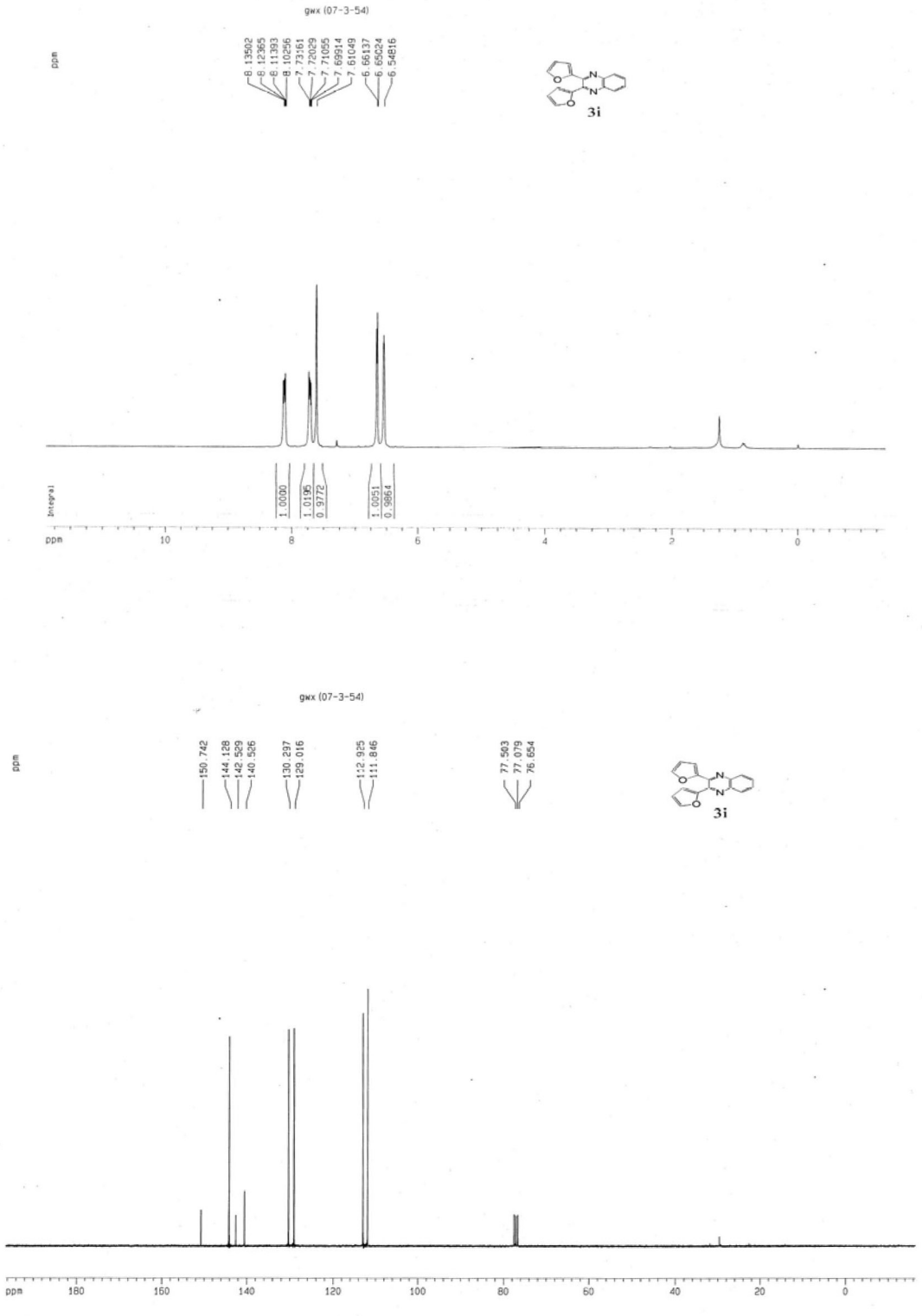

Figure S9. ^{1}H NMR of **3i** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3i** (75 MHz, $CDCl_3$).

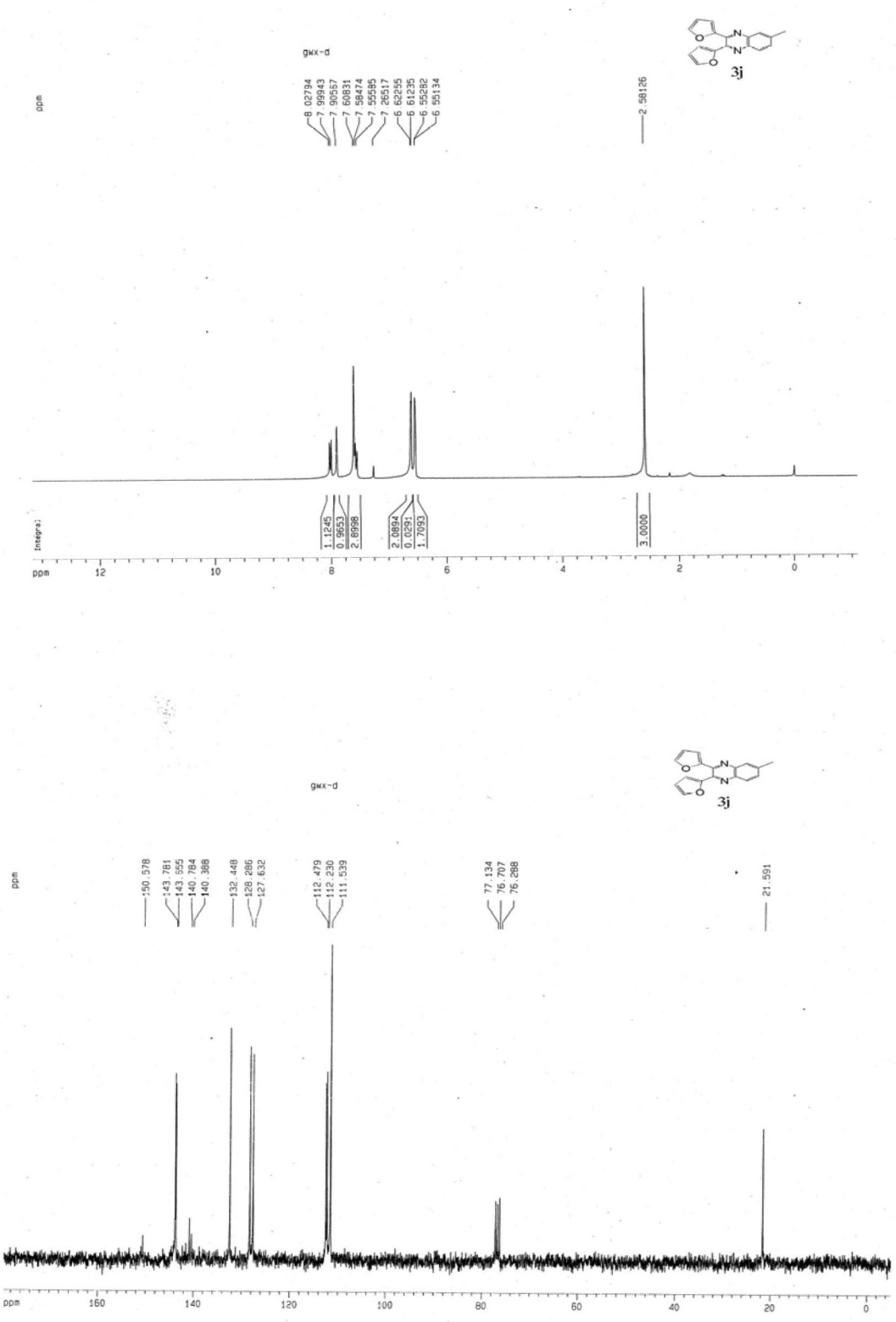

Figure S10. ^{1}H NMR of **3j** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3j** (75 MHz, $CDCl_3$).

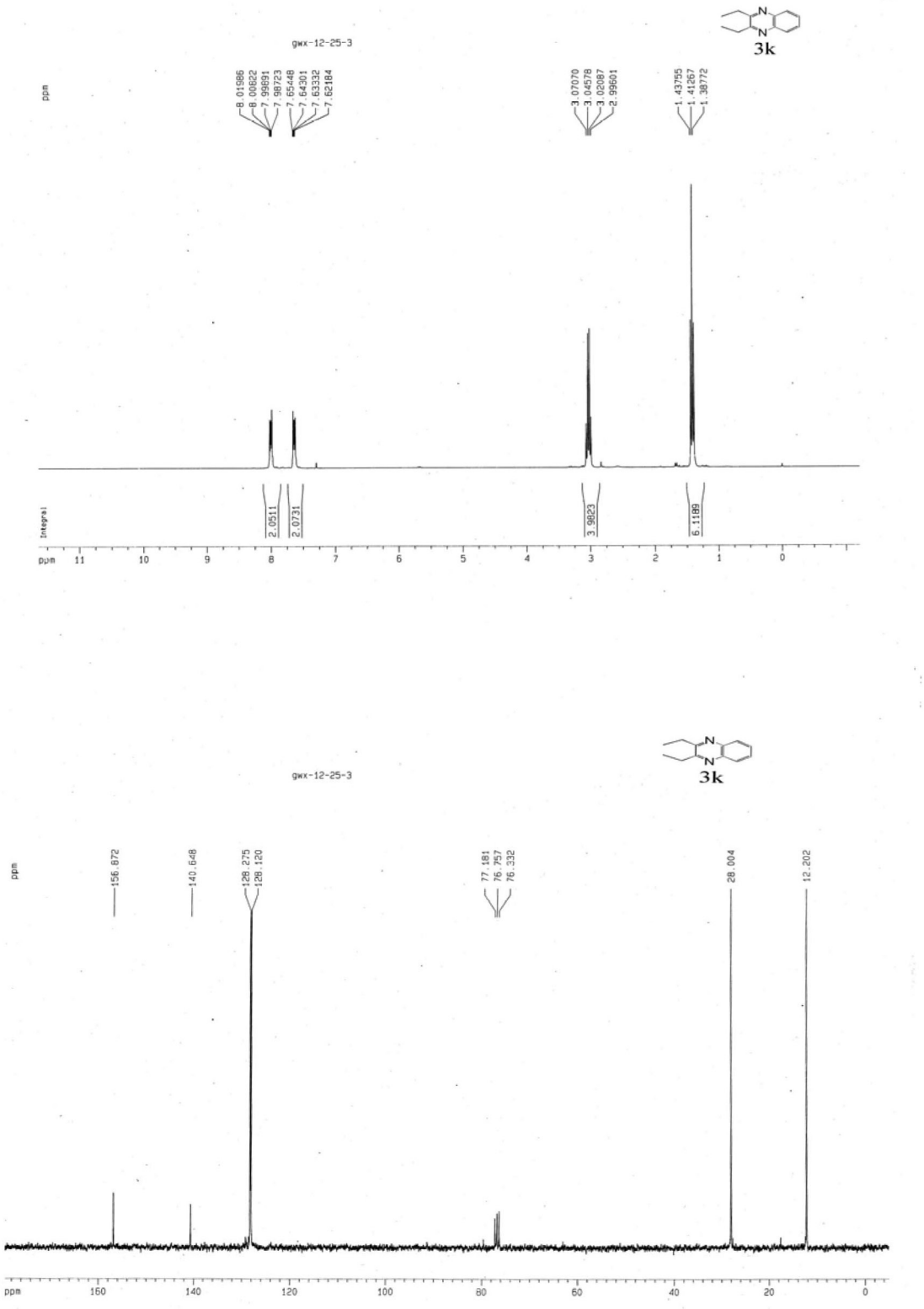

Figure S11. ^{1}H NMR of **3k** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3k** (75 MHz, $CDCl_3$).

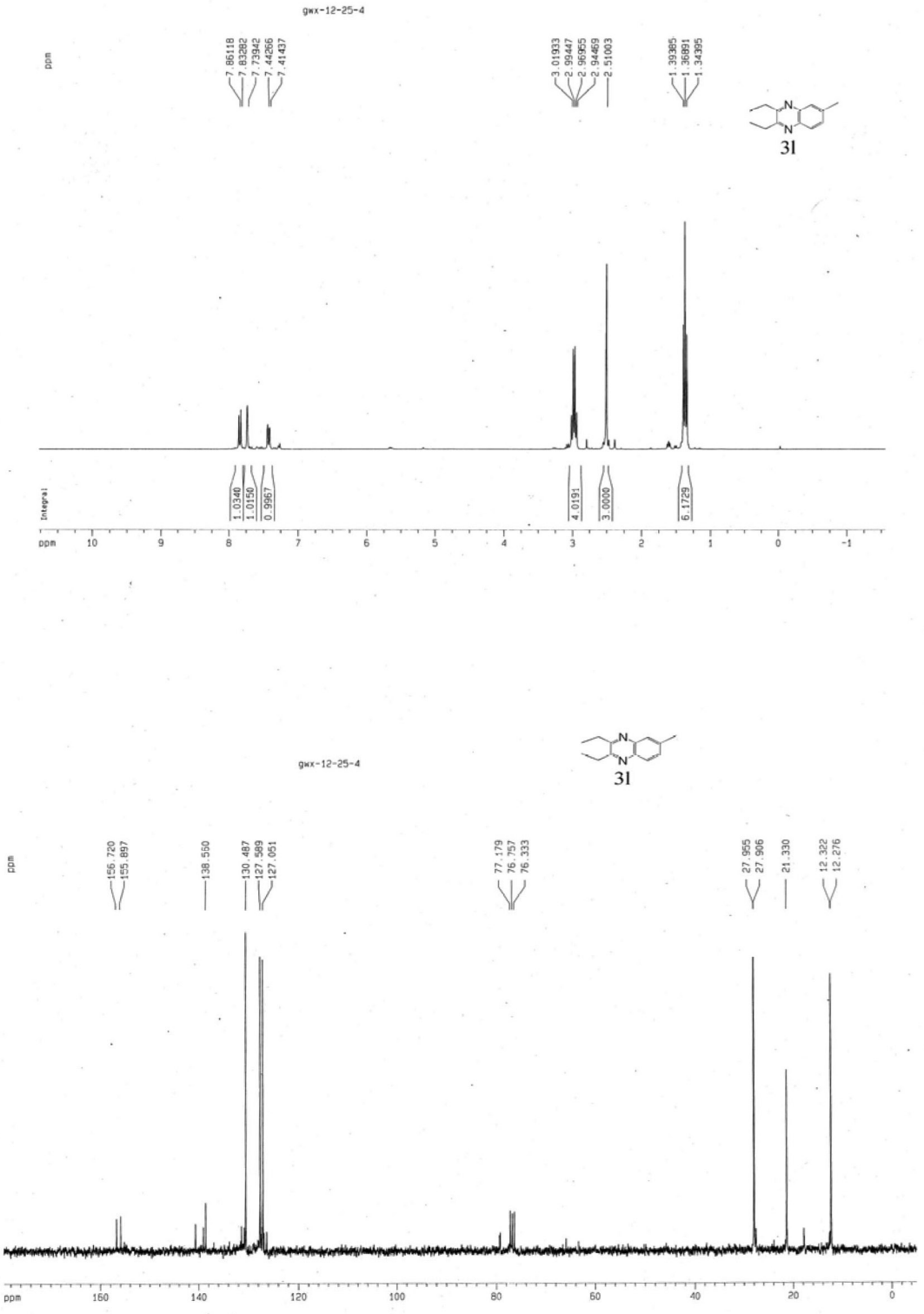

Figure S12. ^{1}H NMR of **3l** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3l** (75 MHz, $CDCl_3$).

Figure S13. ^{1}H NMR of **3m** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3m** (75 MHz, $CDCl_3$).

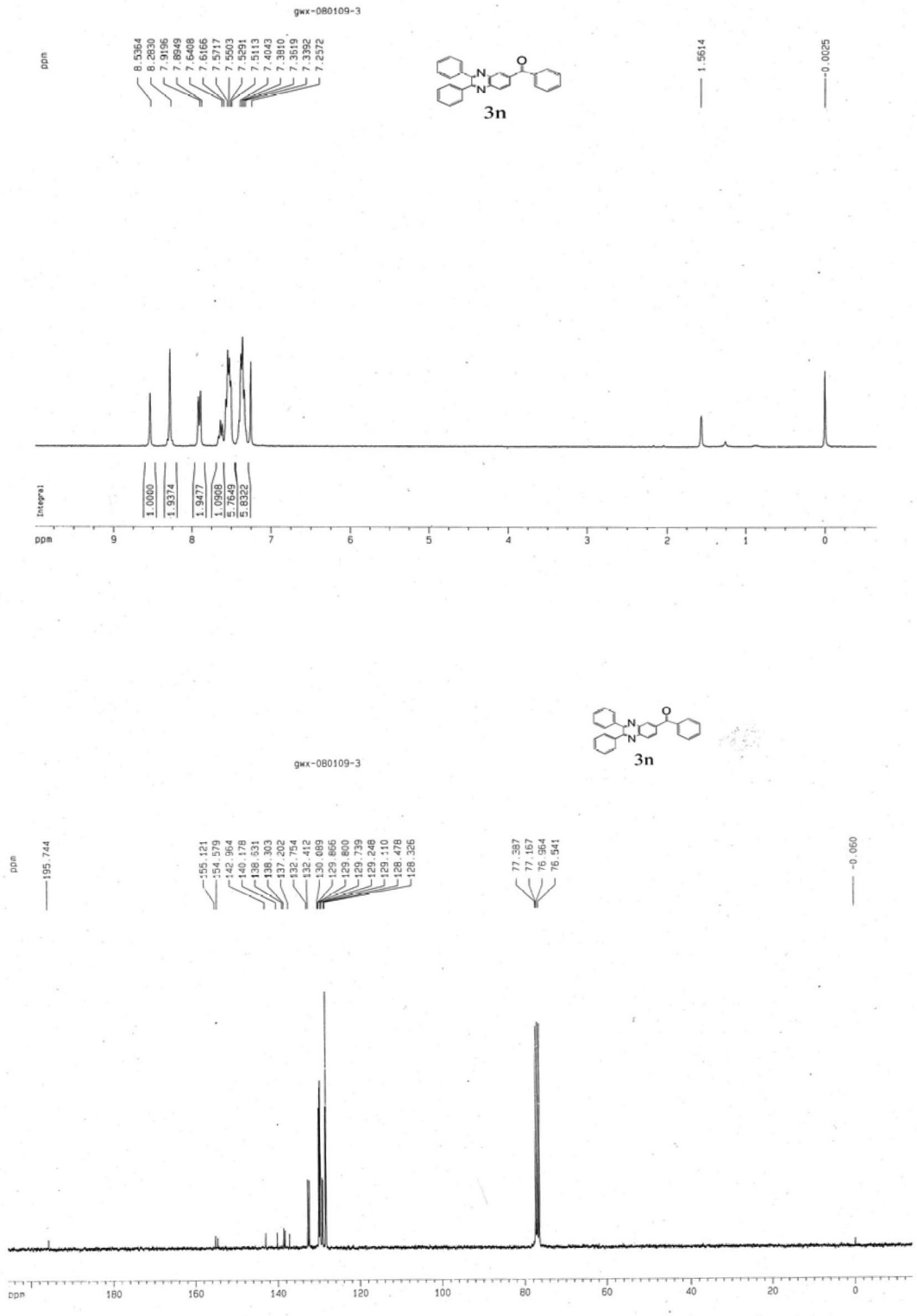

Figure S14. ^{1}H NMR of **3n** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3n** (75 MHz, $CDCl_3$).

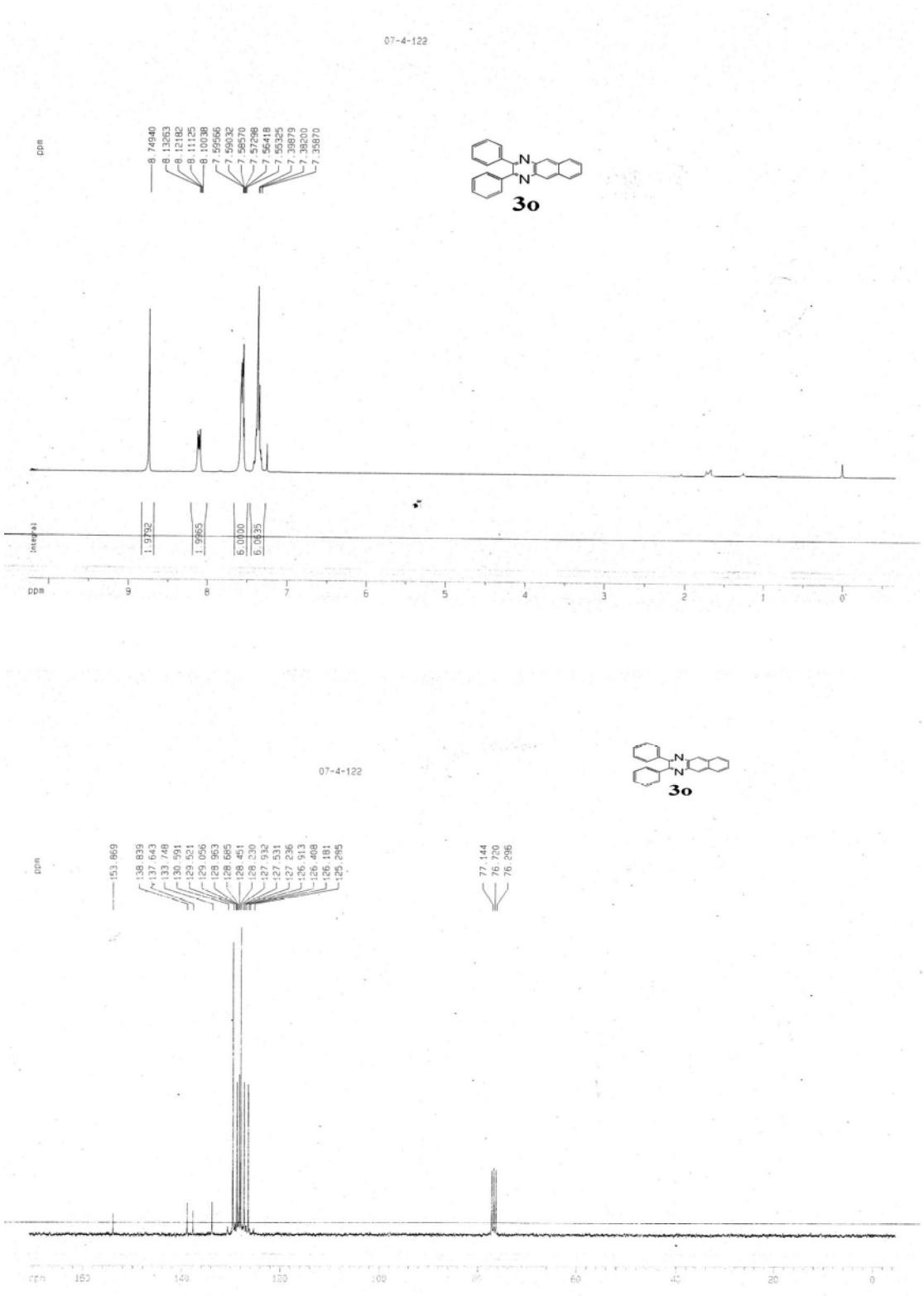

Figure S15. ^{1}H NMR of **3o** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3o** (75 MHz, $CDCl_3$).

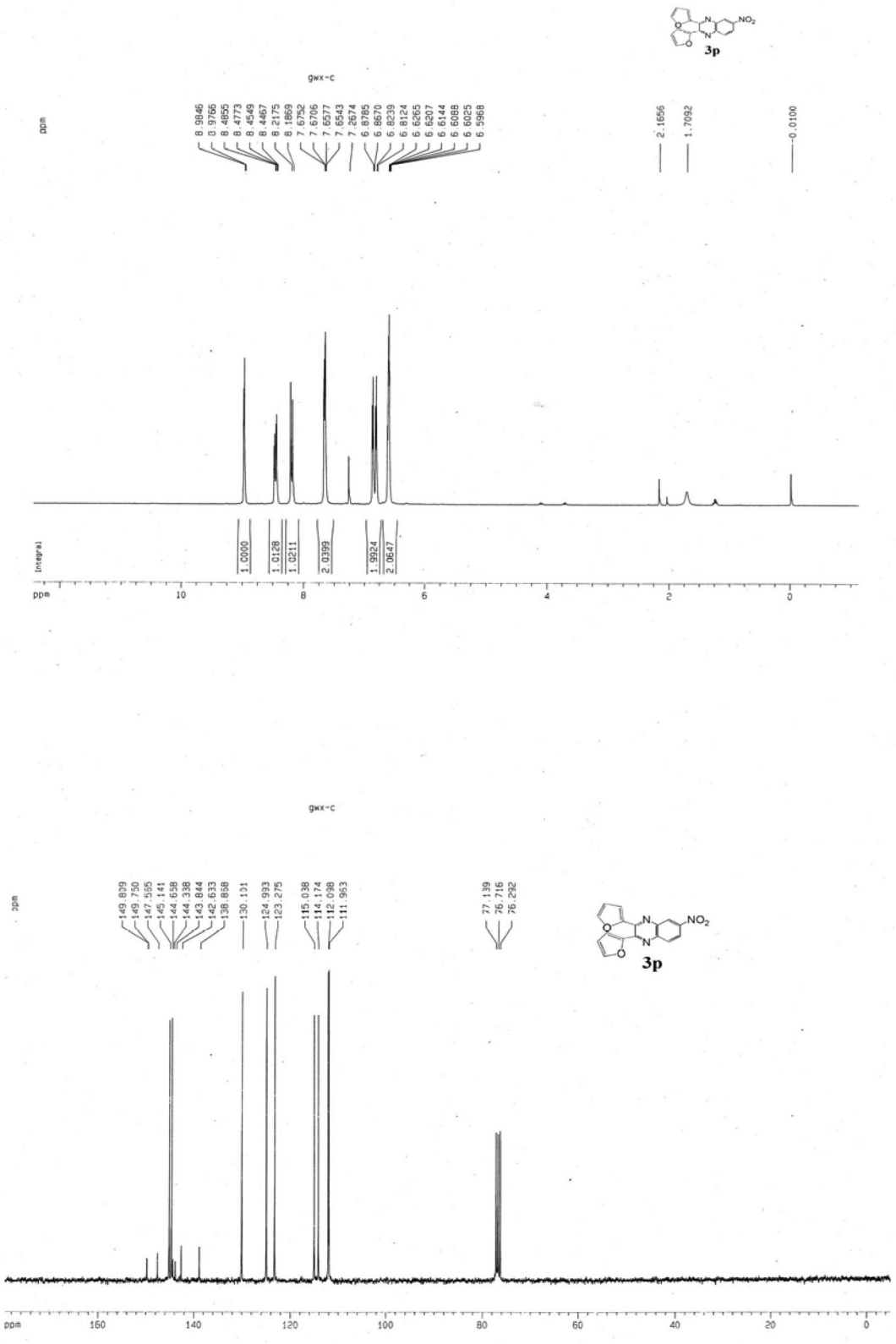

Figure S16. ^{1}H NMR of **3p** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3p** (75 MHz, $CDCl_3$).

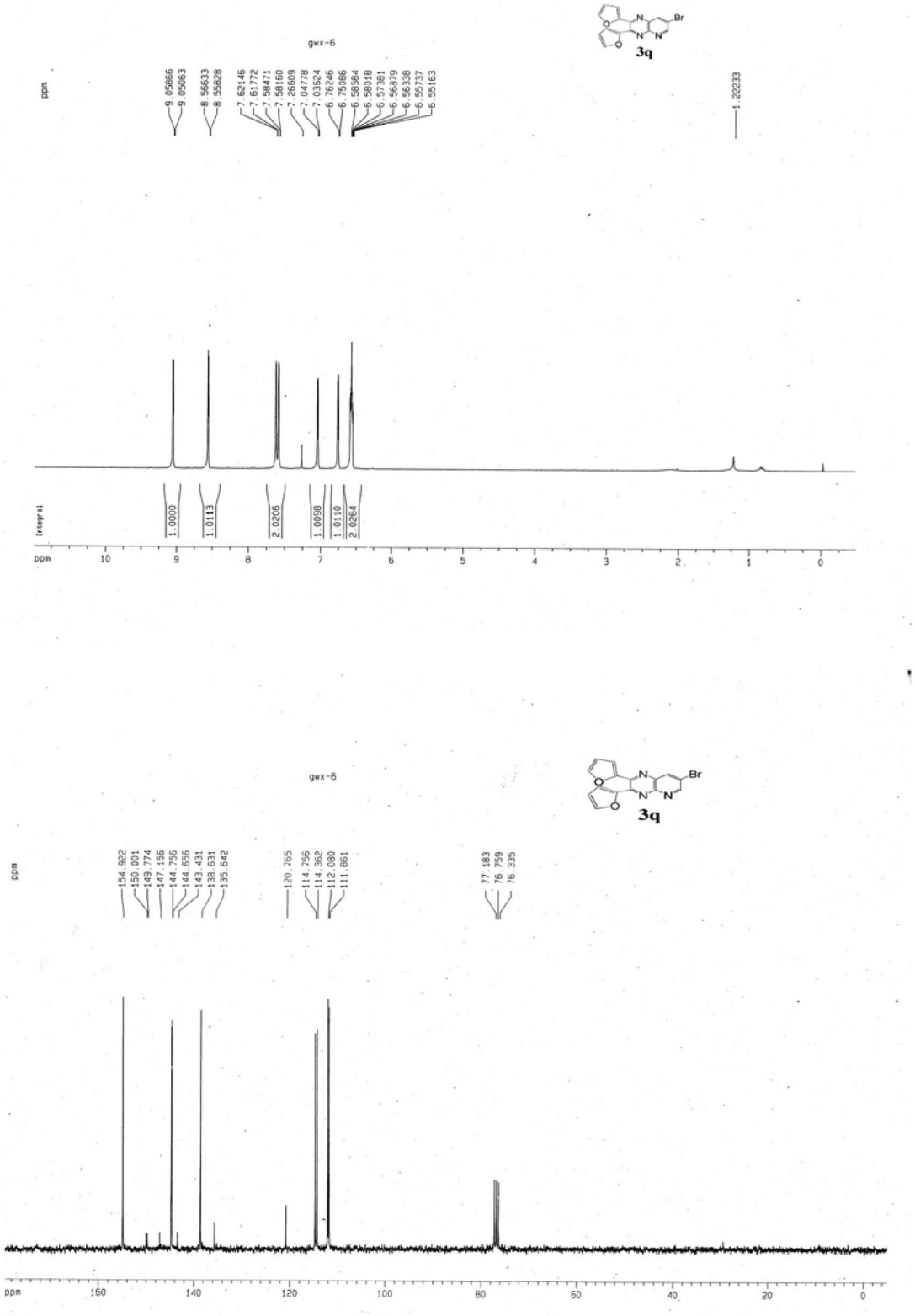

Figure S17. ^{1}H NMR of **3q** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3q** (75 MHz, $CDCl_3$).

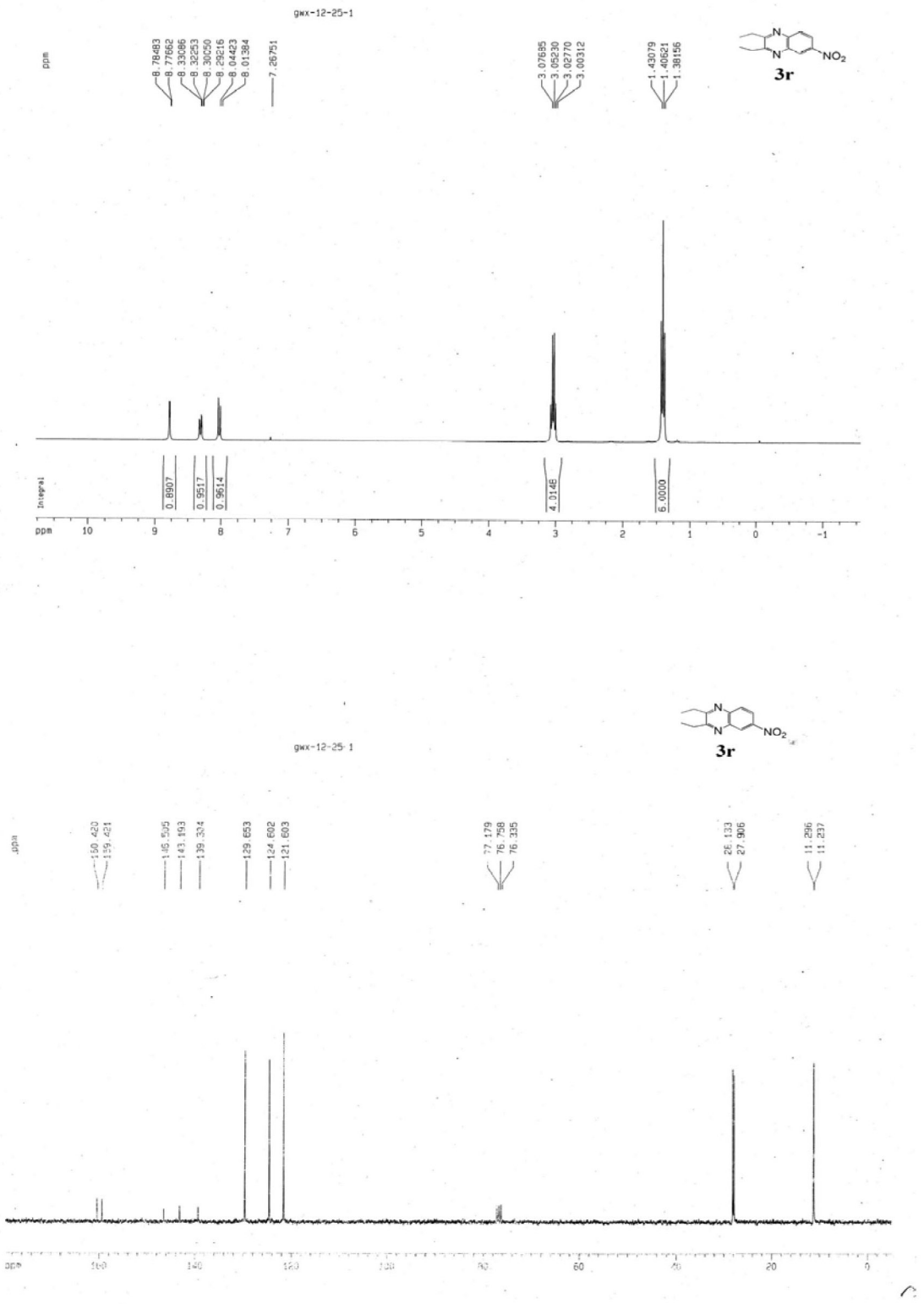

Figure S18. ^{1}H NMR of **3r** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3r** (75 MHz, $CDCl_3$).

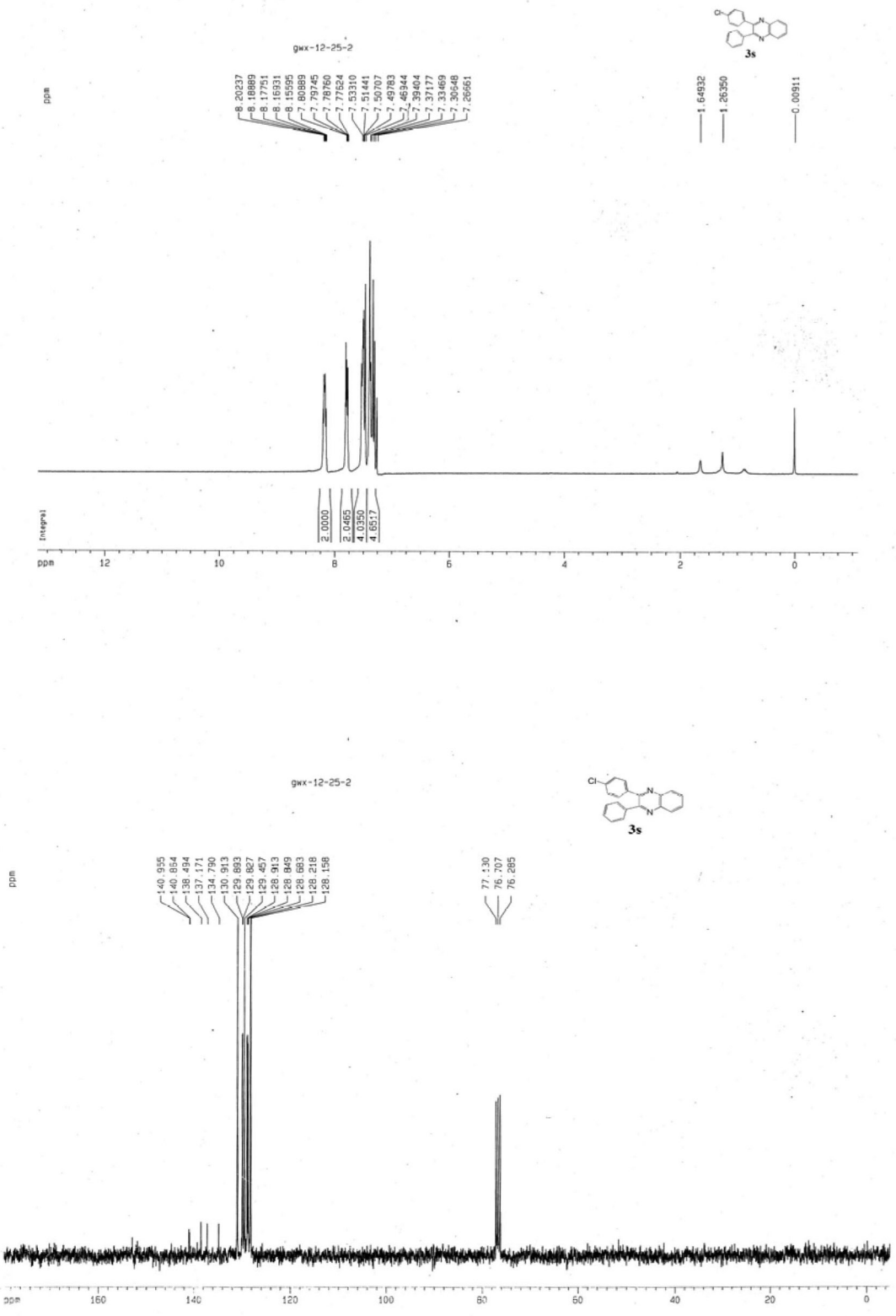

Figure S19. ^{1}H NMR of **3s** (300 MHz, $CDCl_3$) and ^{13}C NMR of **3s** (75 MHz, $CDCl_3$).