

A General Approach for the Asymmetric Synthesis of Densely Substituted Piperidines and Fully Substituted Piperidinones Employing the Asymmetric Mannich Reaction as Key Step

Ainara Iza^a, Uxue Uria^a, Efraím Reyes^a, Luisa Carrillo^{*a} and Jose L. Vicario^{*a}

^a*Departamento de Química Orgánica II, Facultad de Ciencia y Tecnología, Universidad del País Vasco/Euskal Herriko Unibertsitatea (UPV/EHU), P.O. Box 644, E-48080 Bilbao, Spain.*

* Corresponding author. Tel.: +34-94-601-5434; fax: +34-94-601-2748; e-mail: marisa.carrillo@ehu.es

* Corresponding author. Tel.: +34-94-601-5454; fax: +34-94-601-2748; e-mail: joseluis.vicario@ehu.es

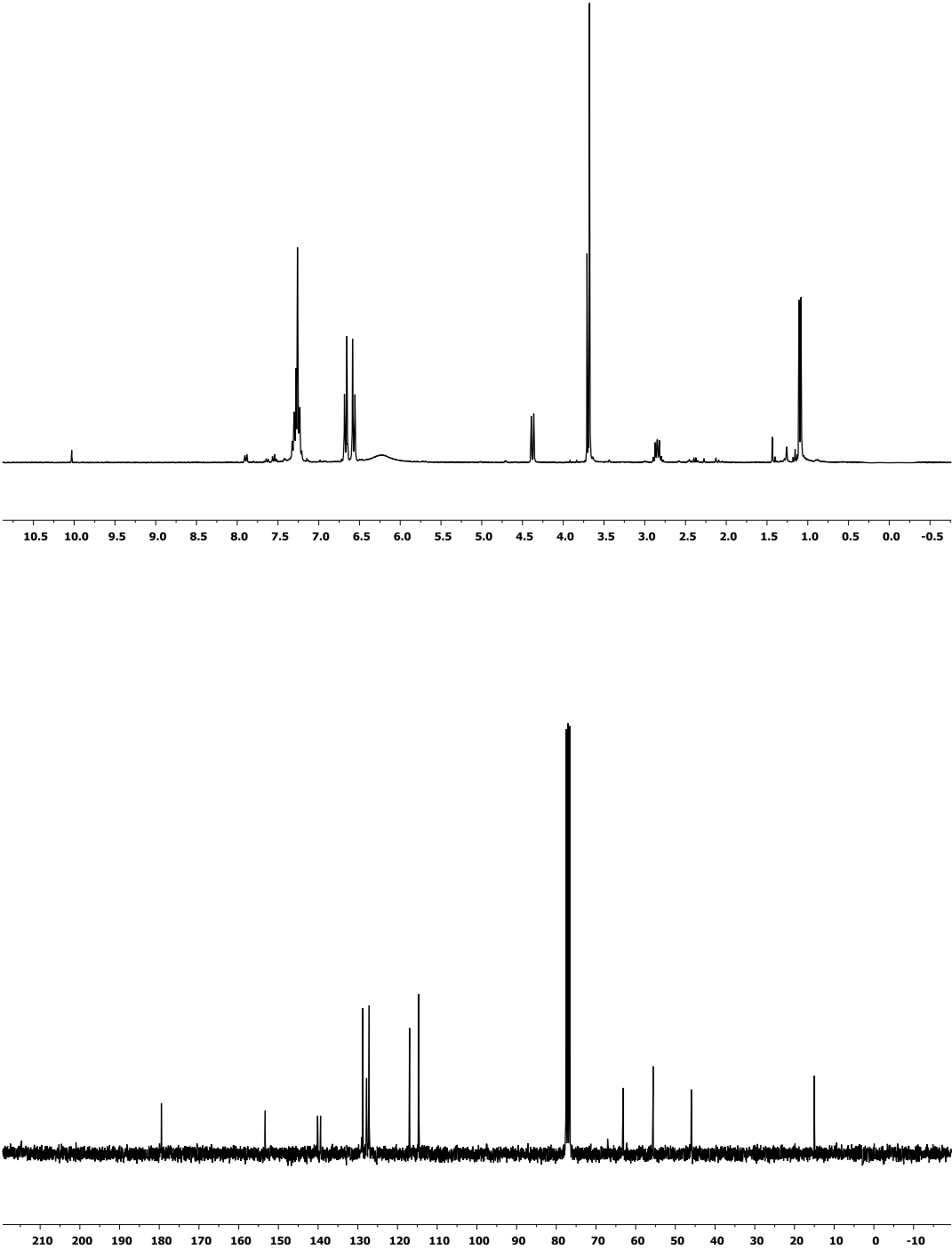


Figure 1. NMR spectra of compound 4

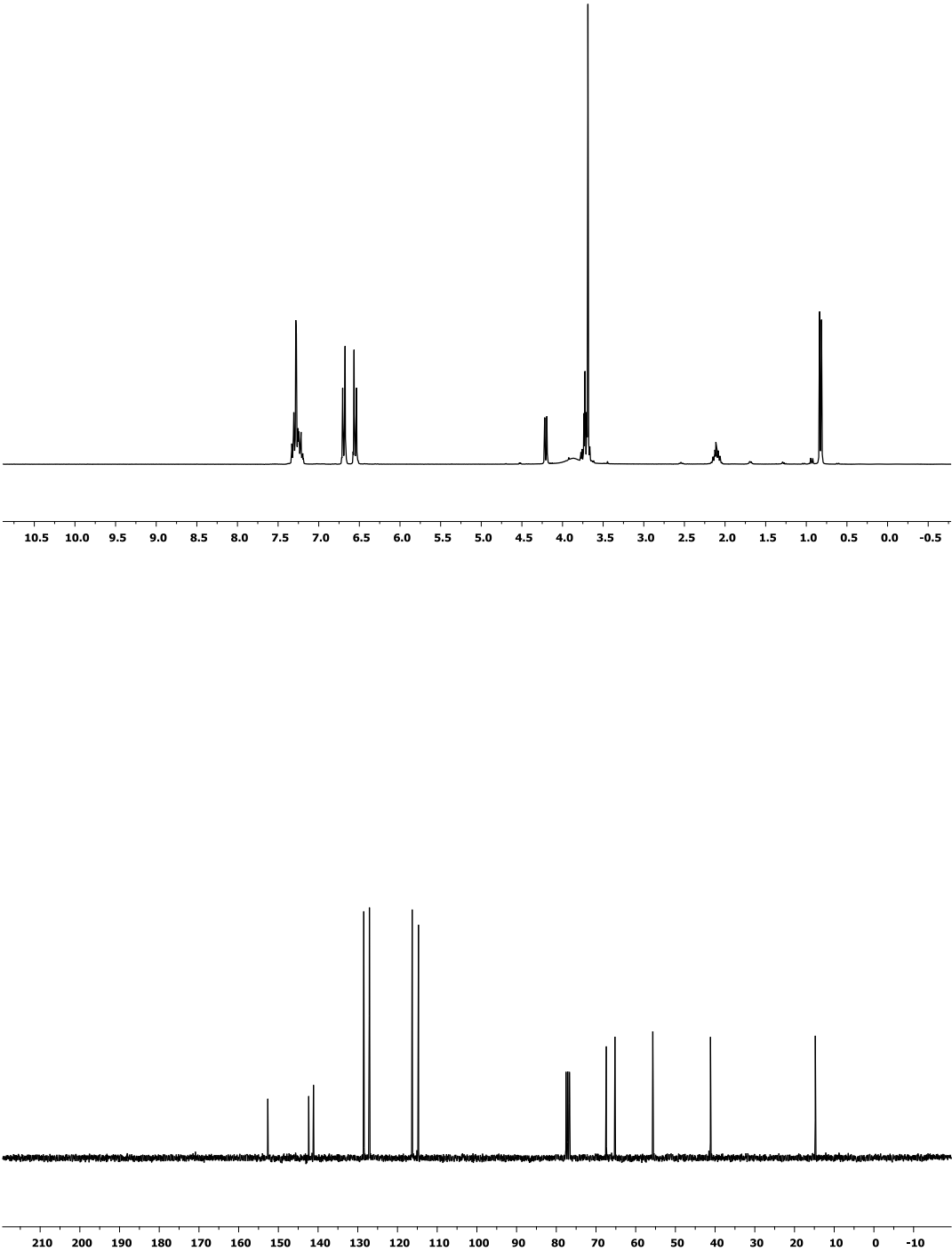


Figure 2. NMR spectra of compound 5

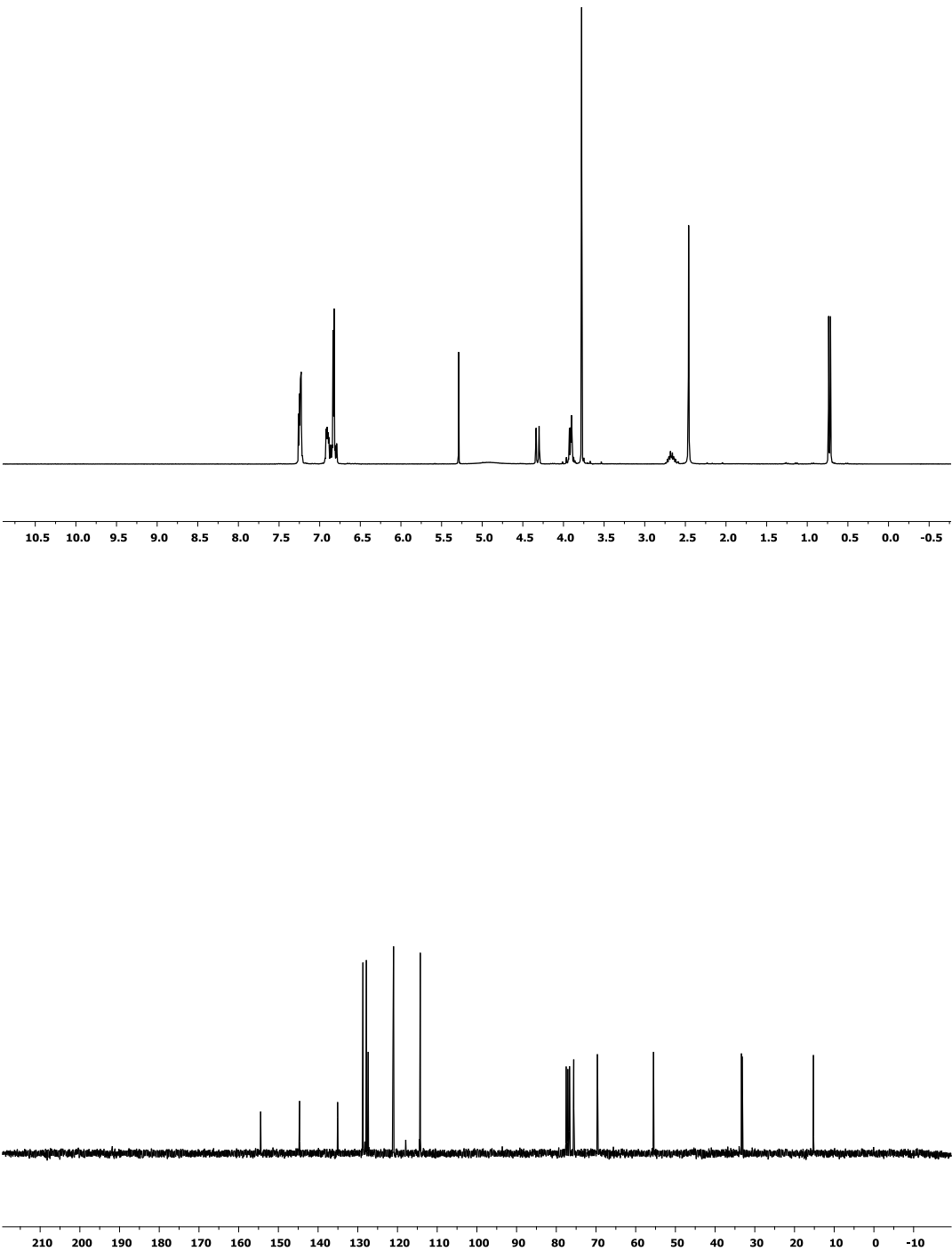


Figure 3. NMR spectra of compound 6

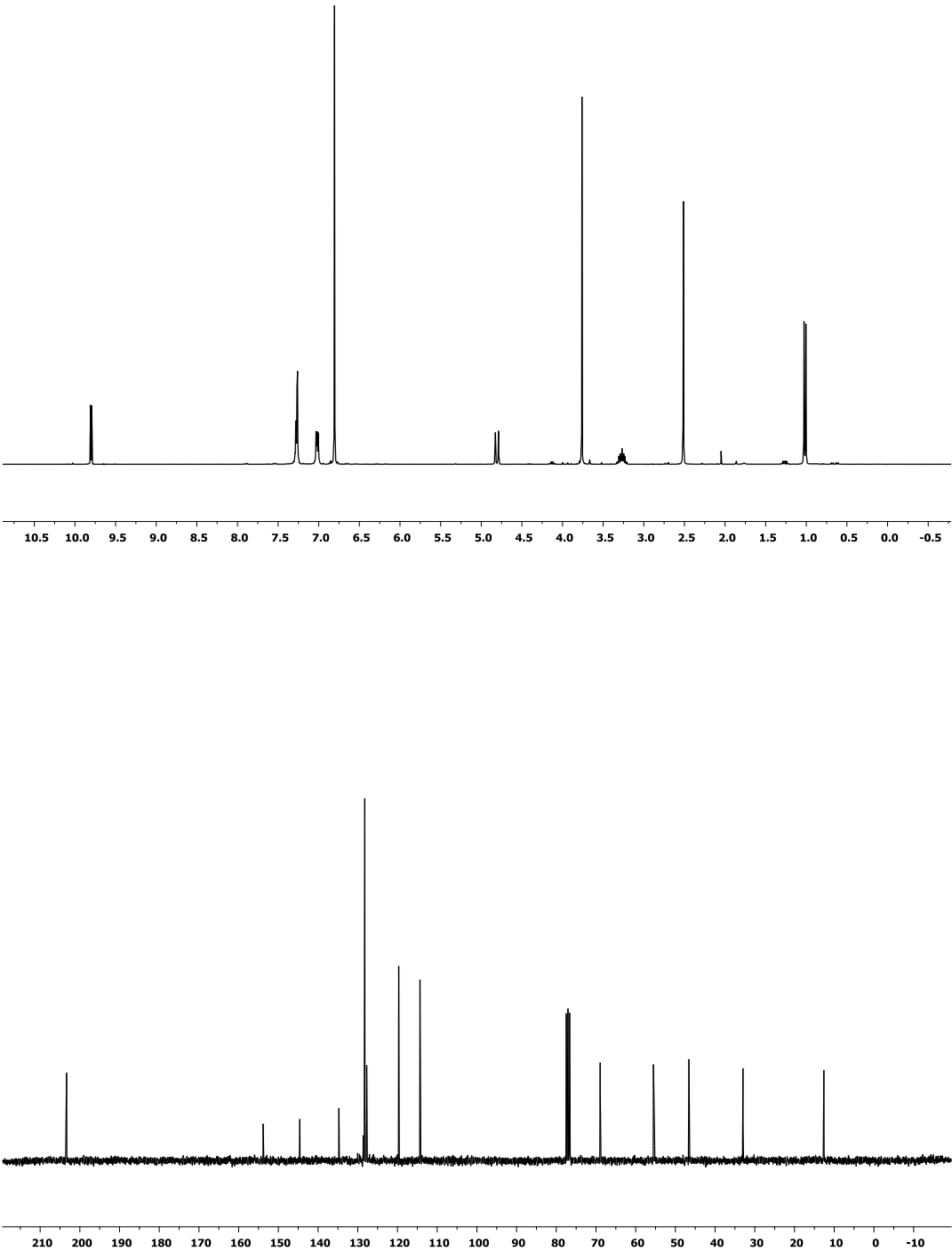


Figure 4. NMR spectra of compound 7

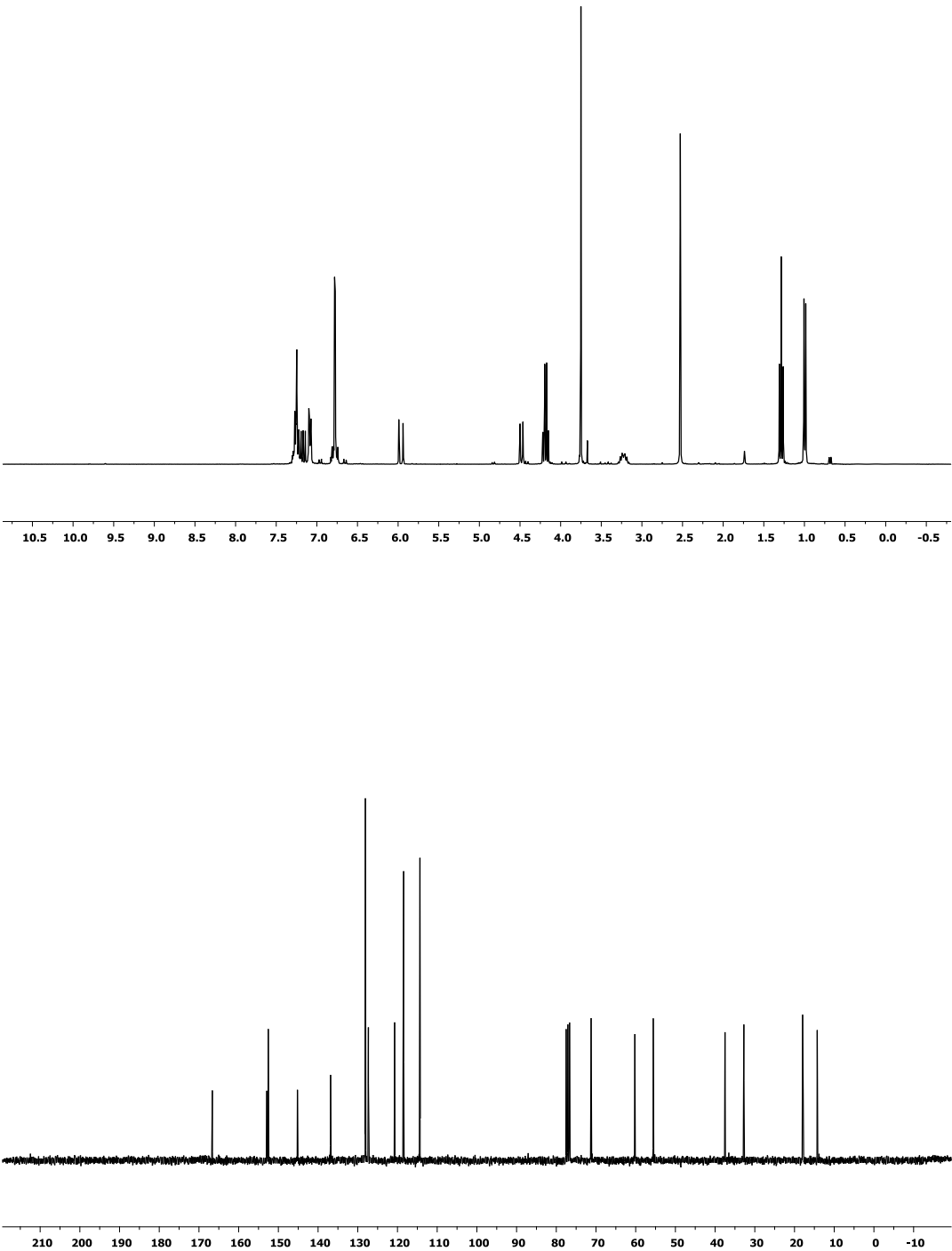


Figure 5. NMR spectra of compound 8

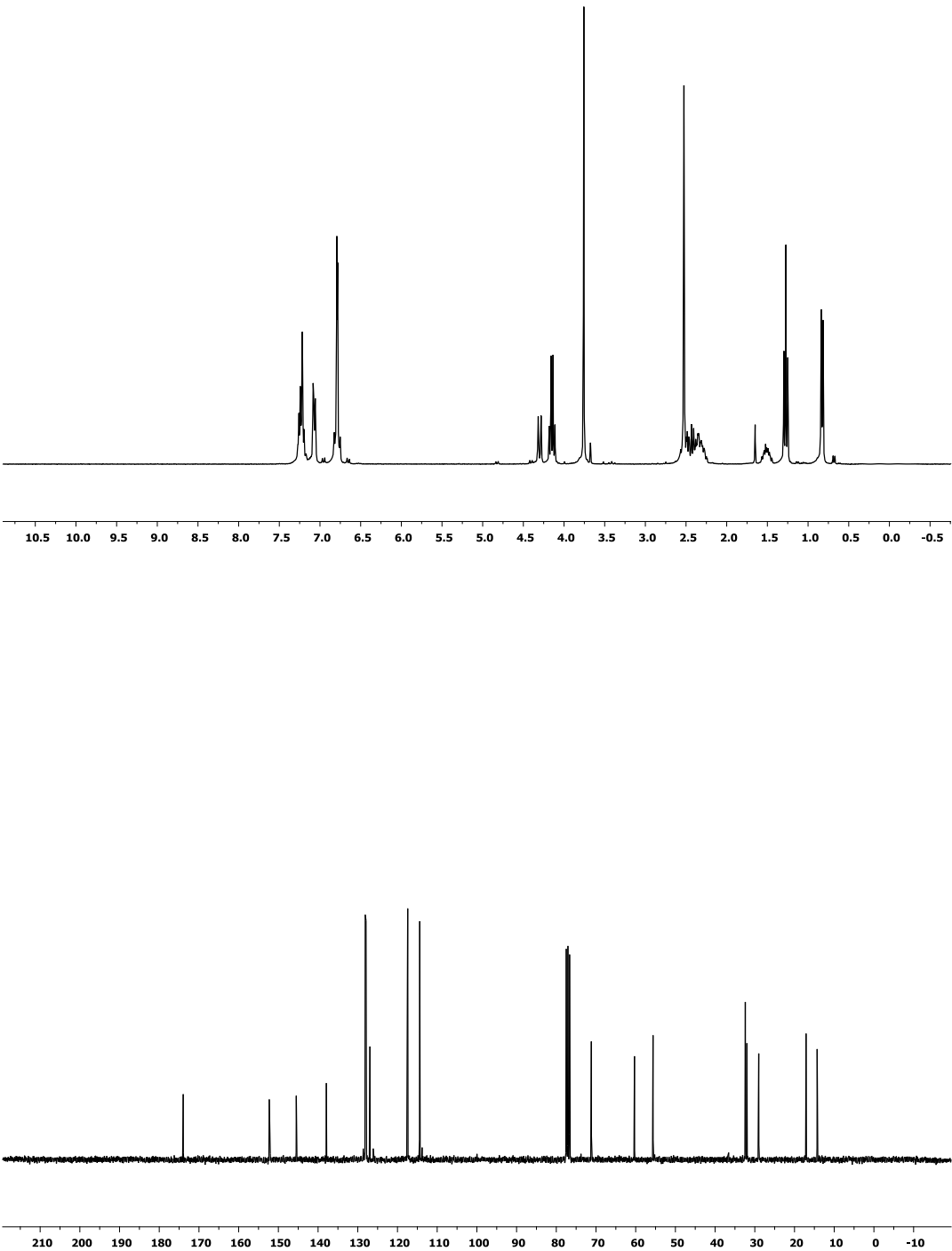


Figure 6. NMR spectra of compound 9

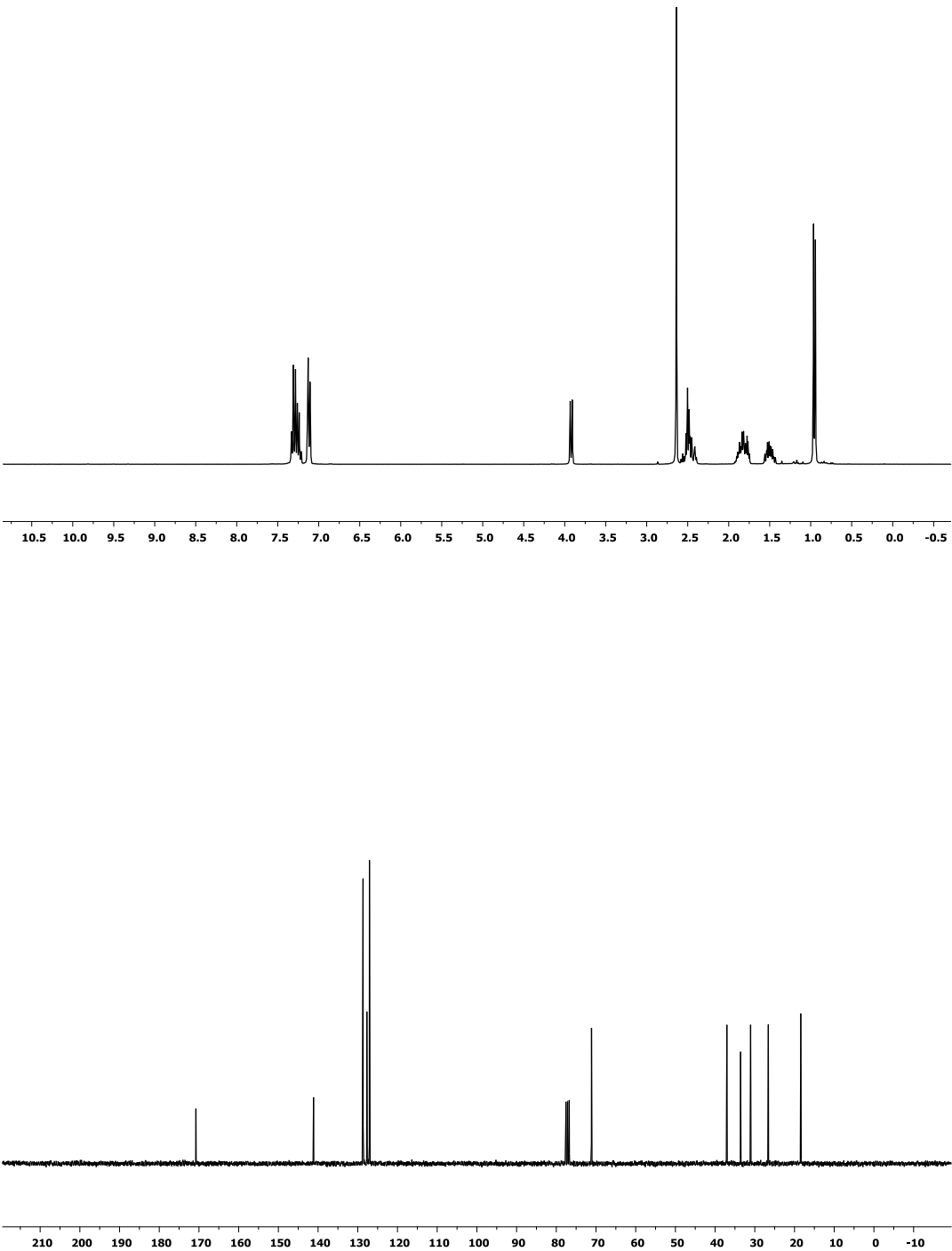


Figure 7. NMR spectra of compound 10

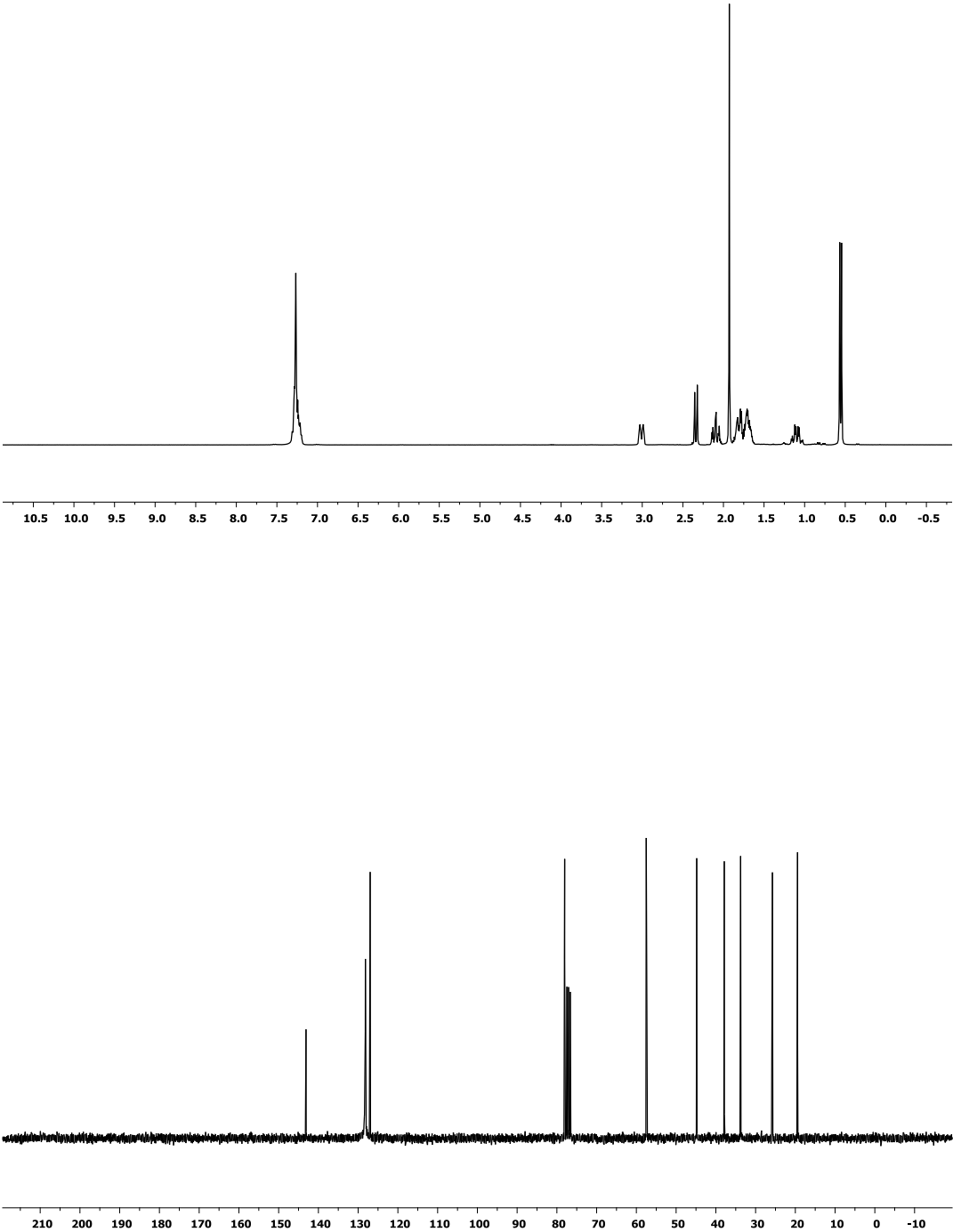


Figure 8. NMR spectra of compound 11

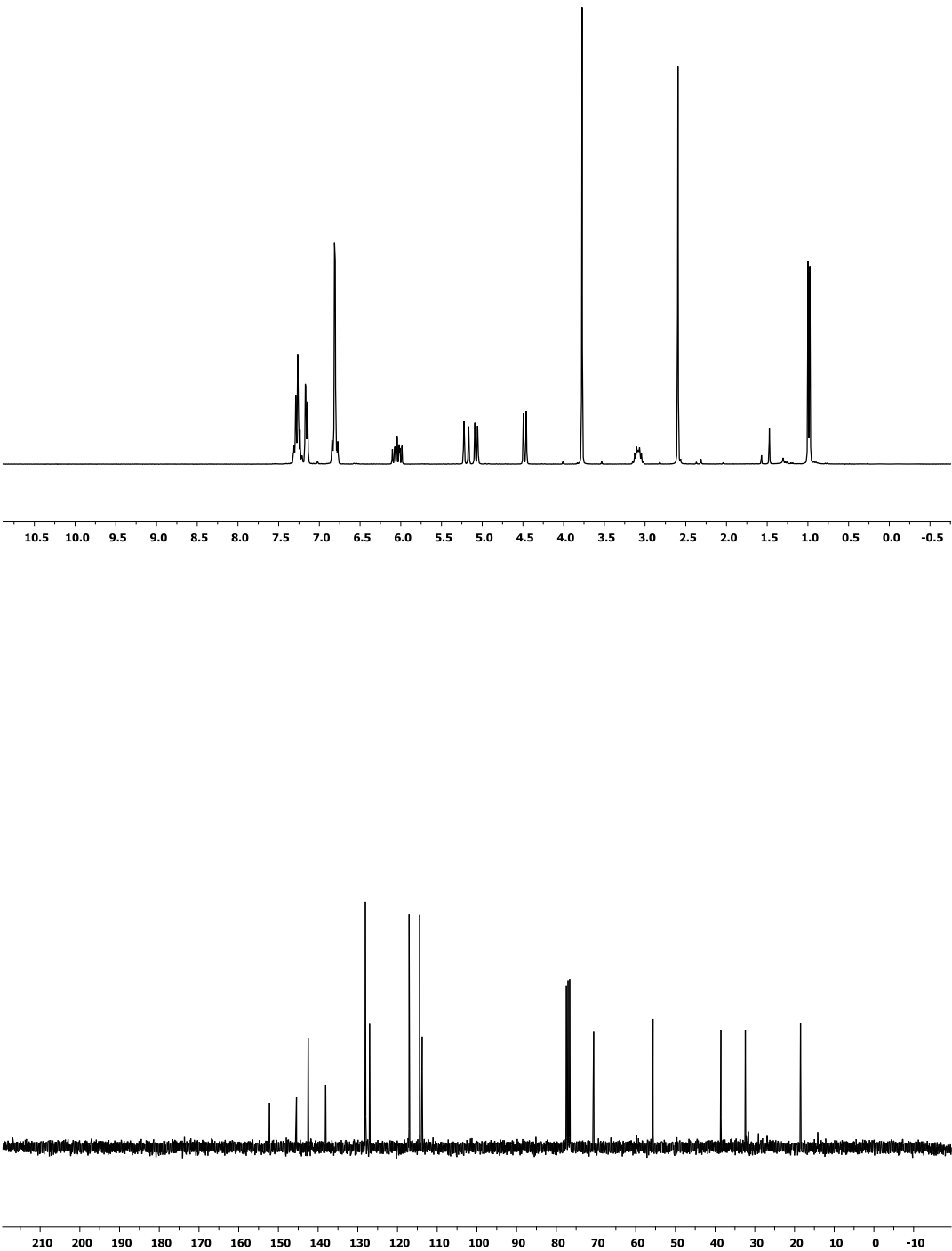


Figure 9. NMR spectra of compound 12

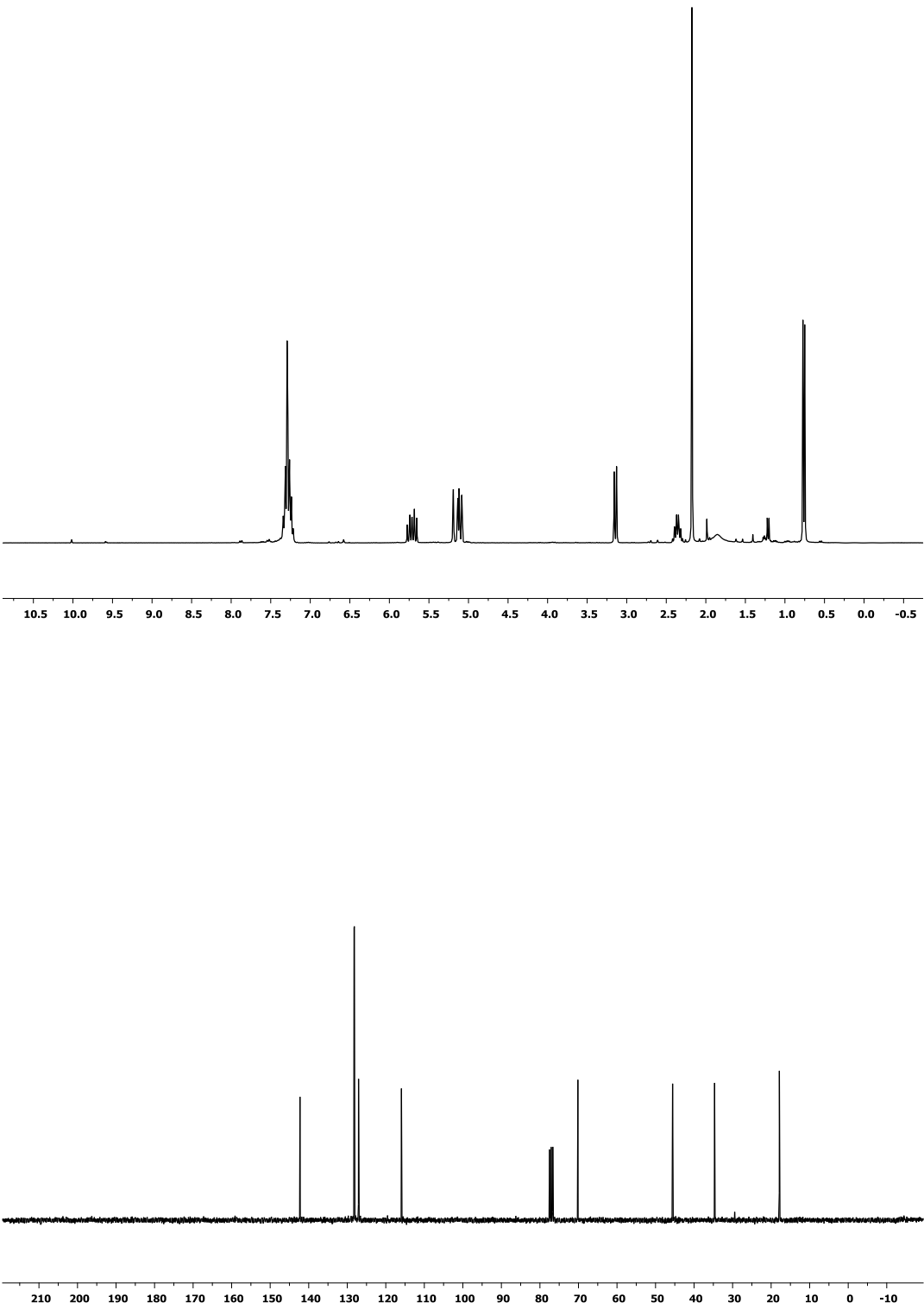


Figure 10. NMR spectra of compound 13

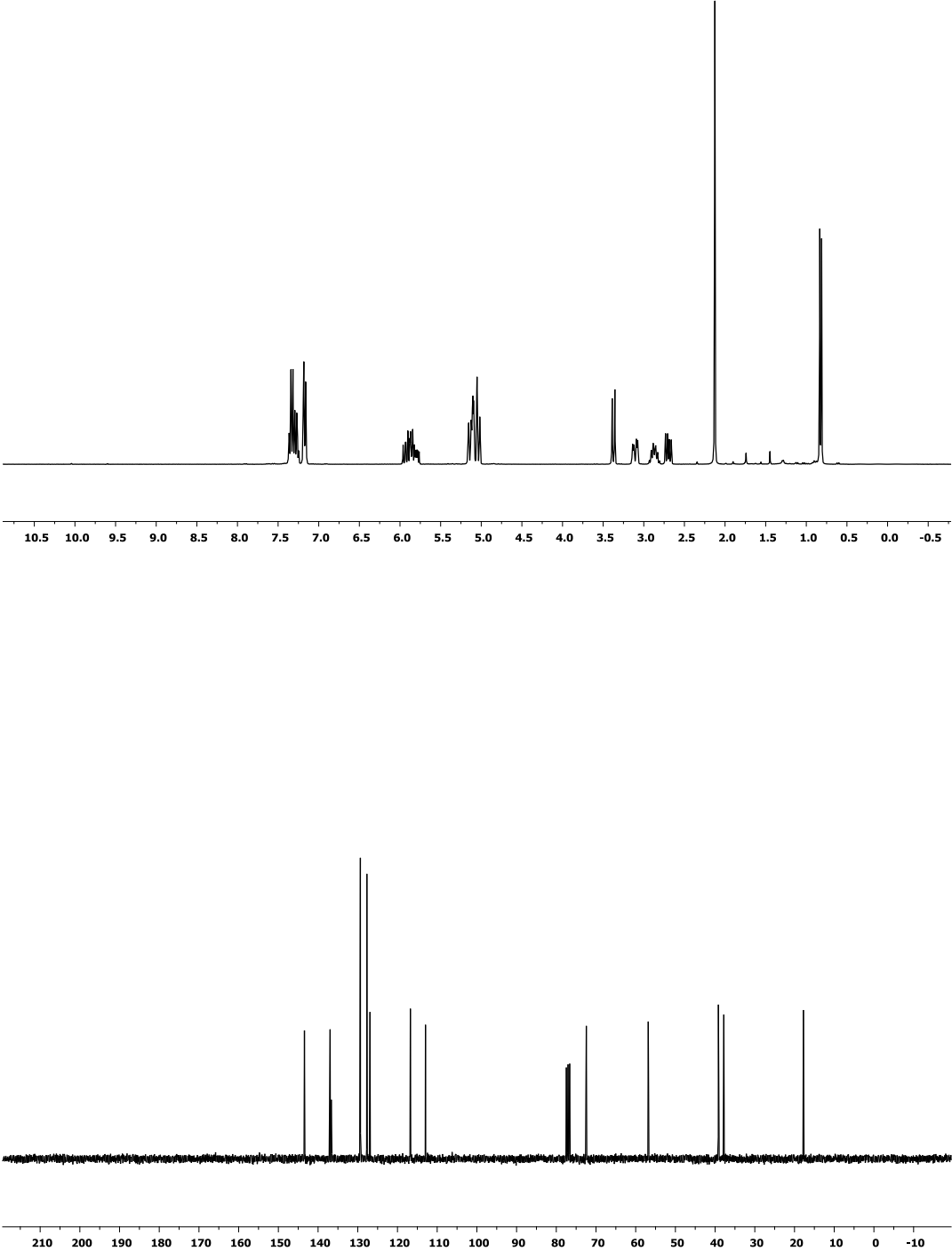


Figure 11. NMR spectra of compound 14

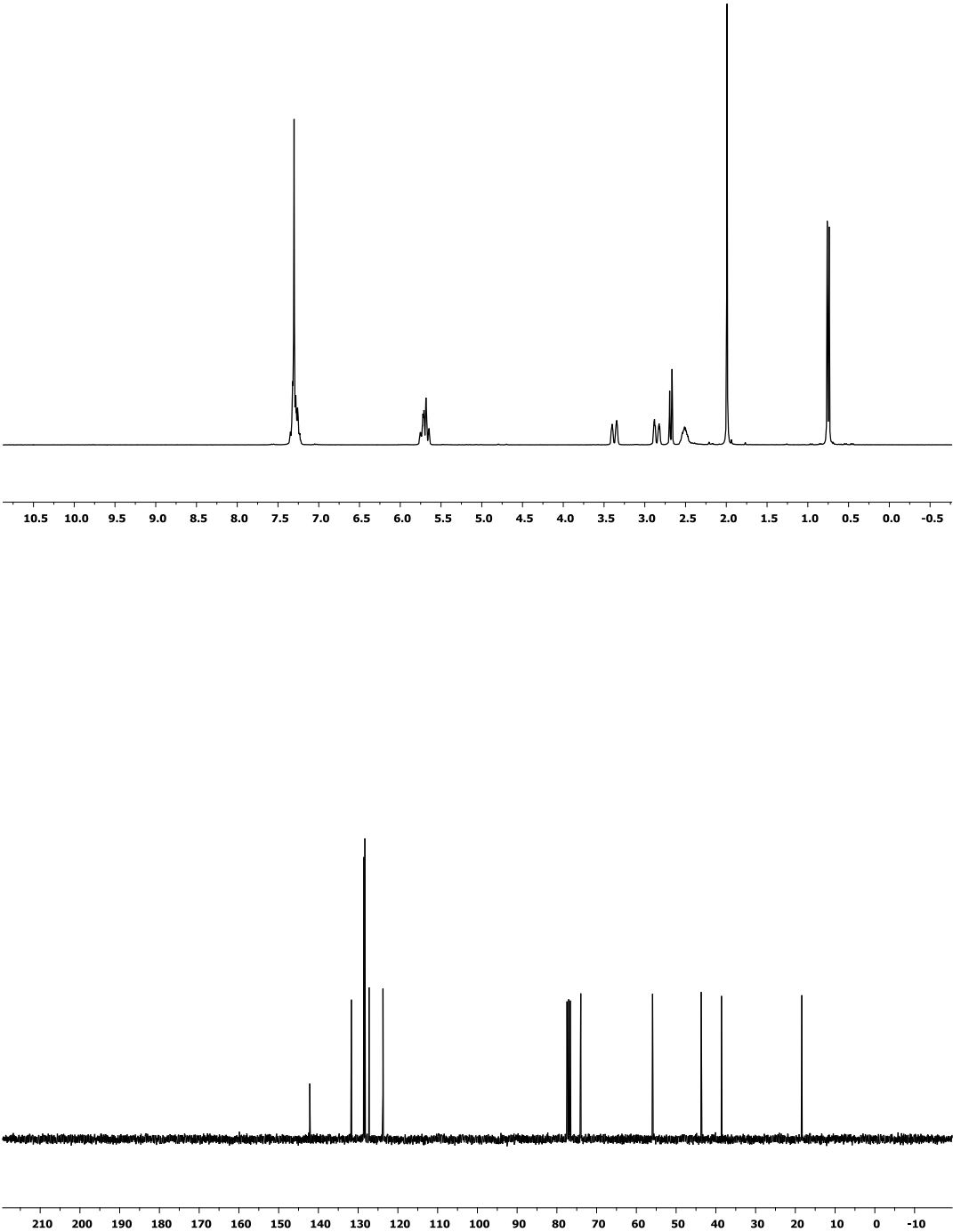


Figure 12. NMR spectra of compound 15

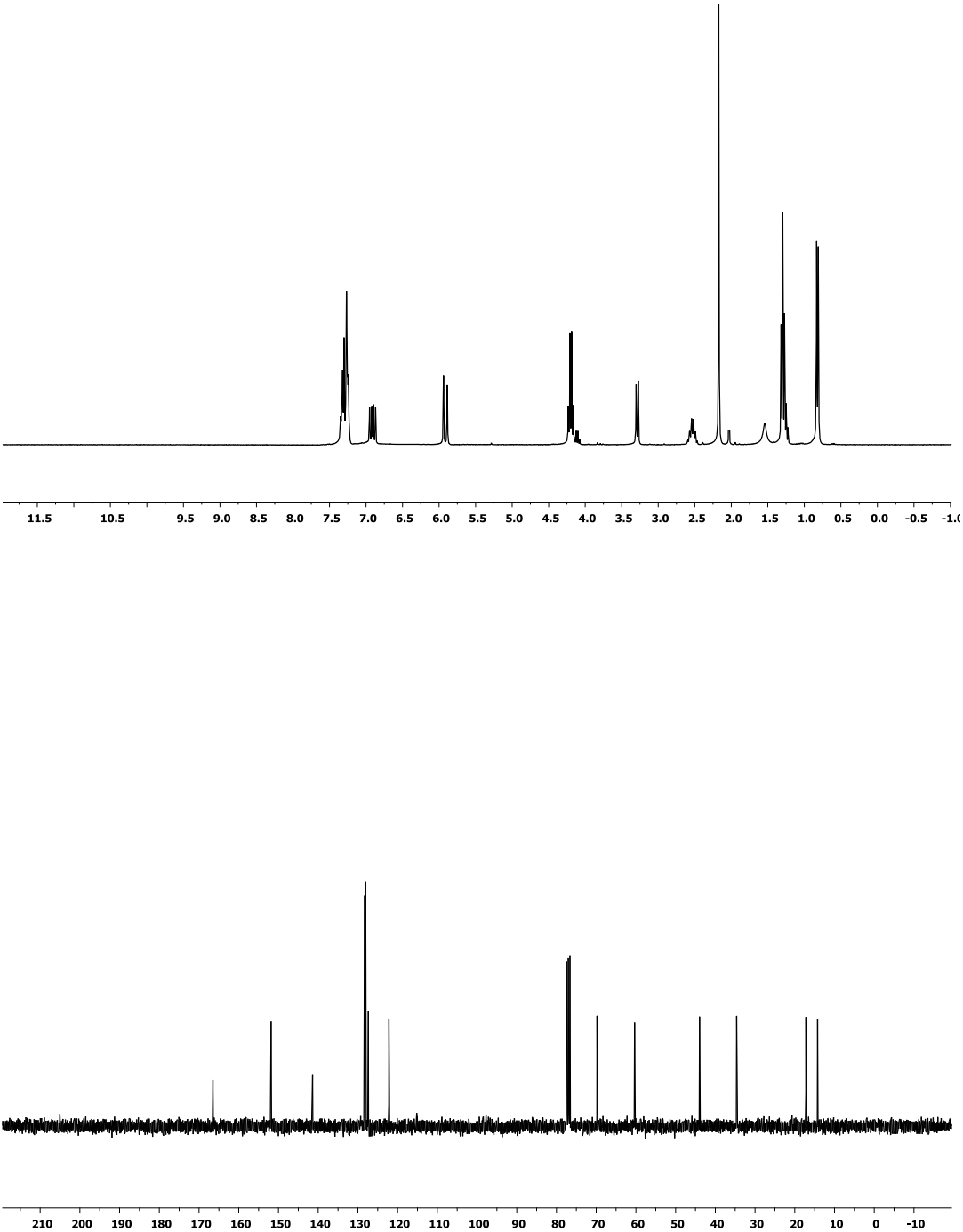


Figure 13. NMR spectra of compound 16

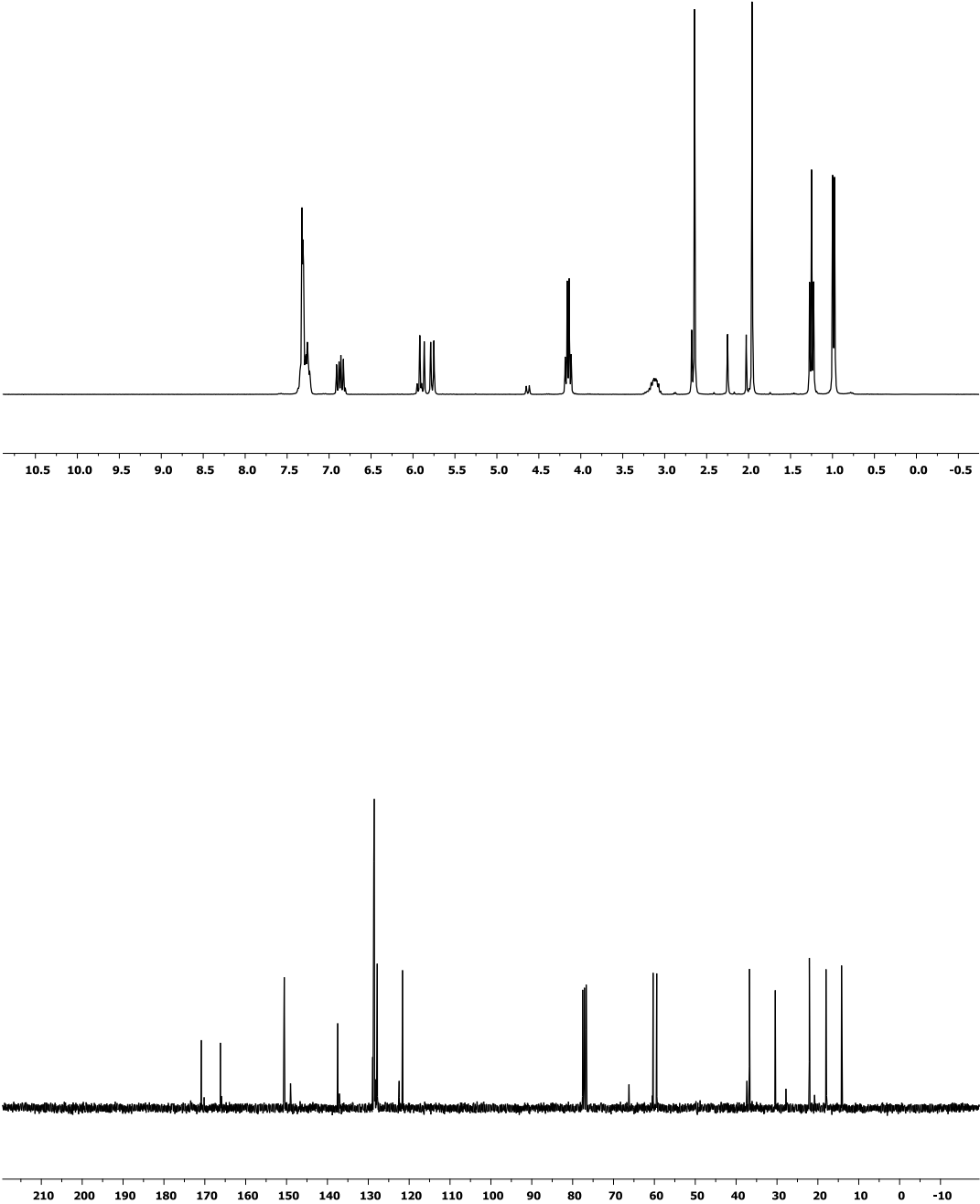


Figure 14. NMR spectra of compound 17b

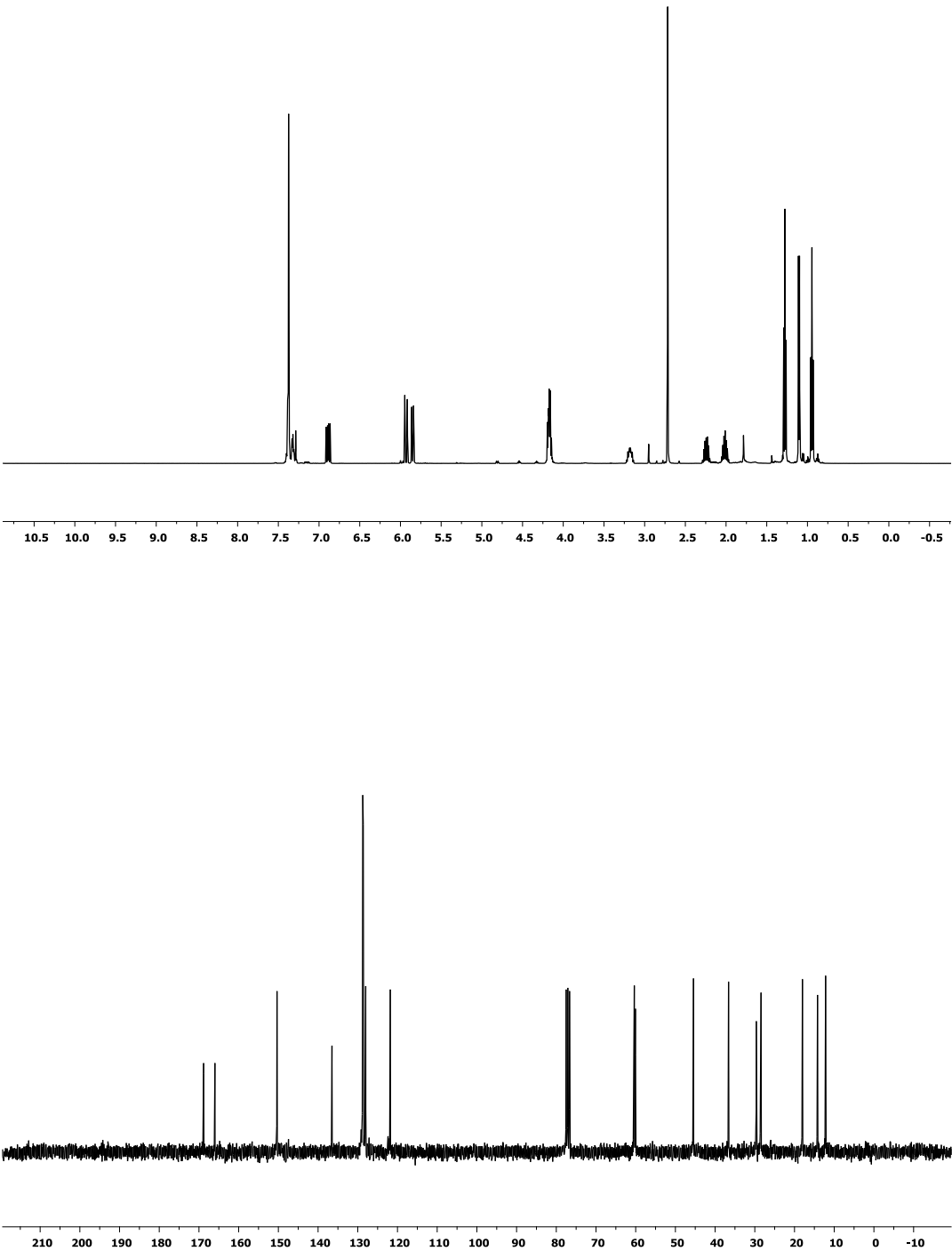


Figure 15. NMR spectra of compound 18a

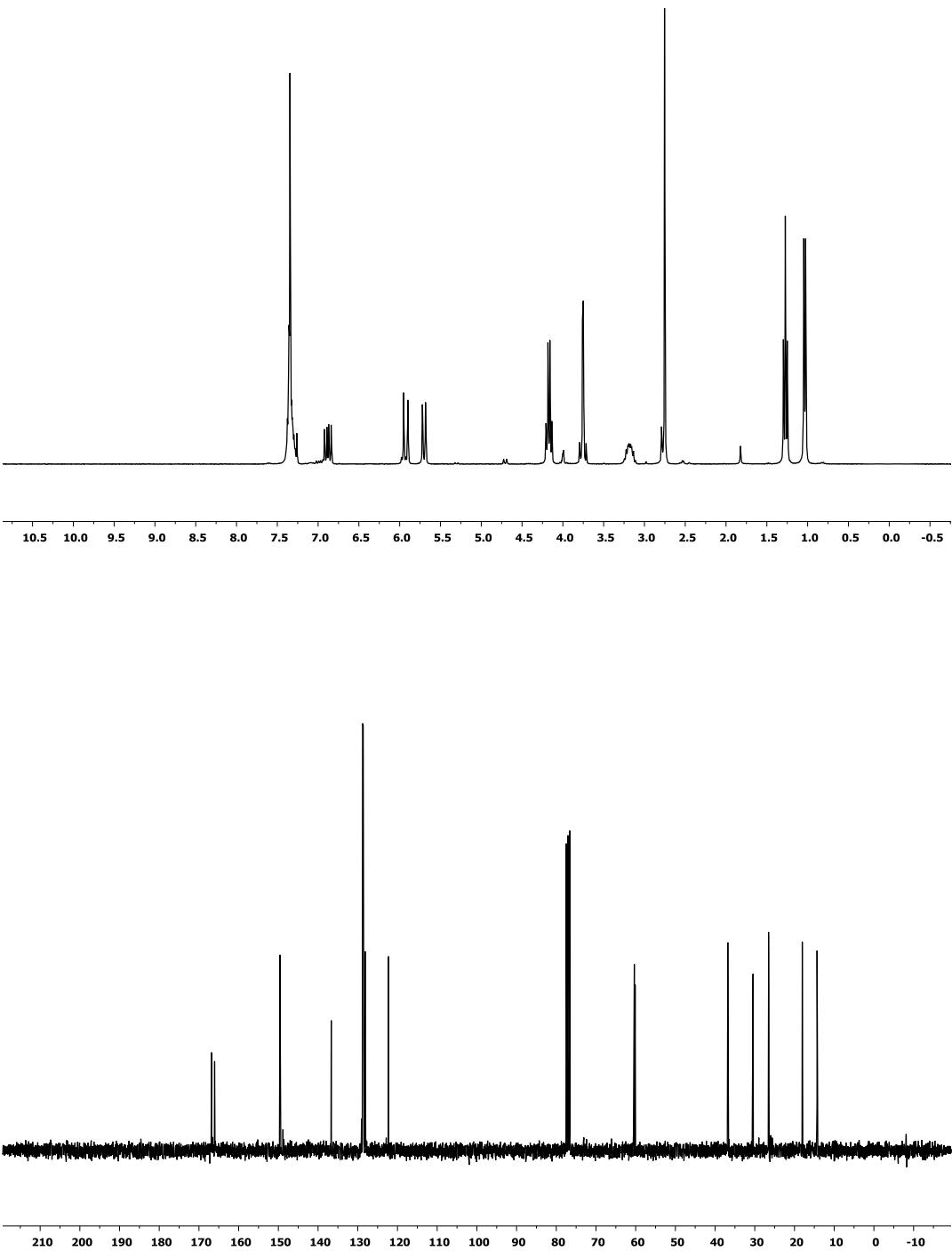


Figure 16. NMR spectra of compound 18b

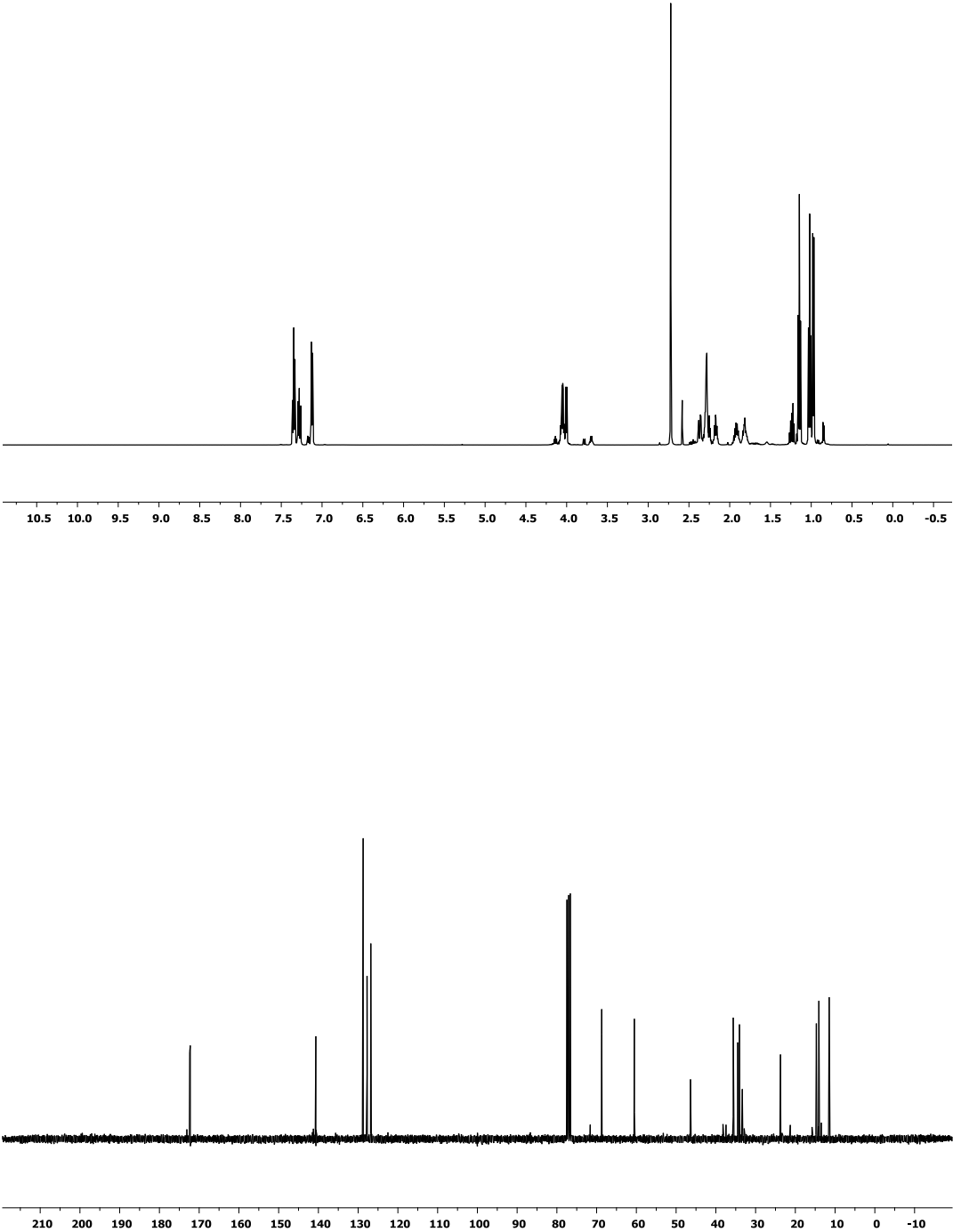


Figure 17. NMR spectra of compound 19/19'

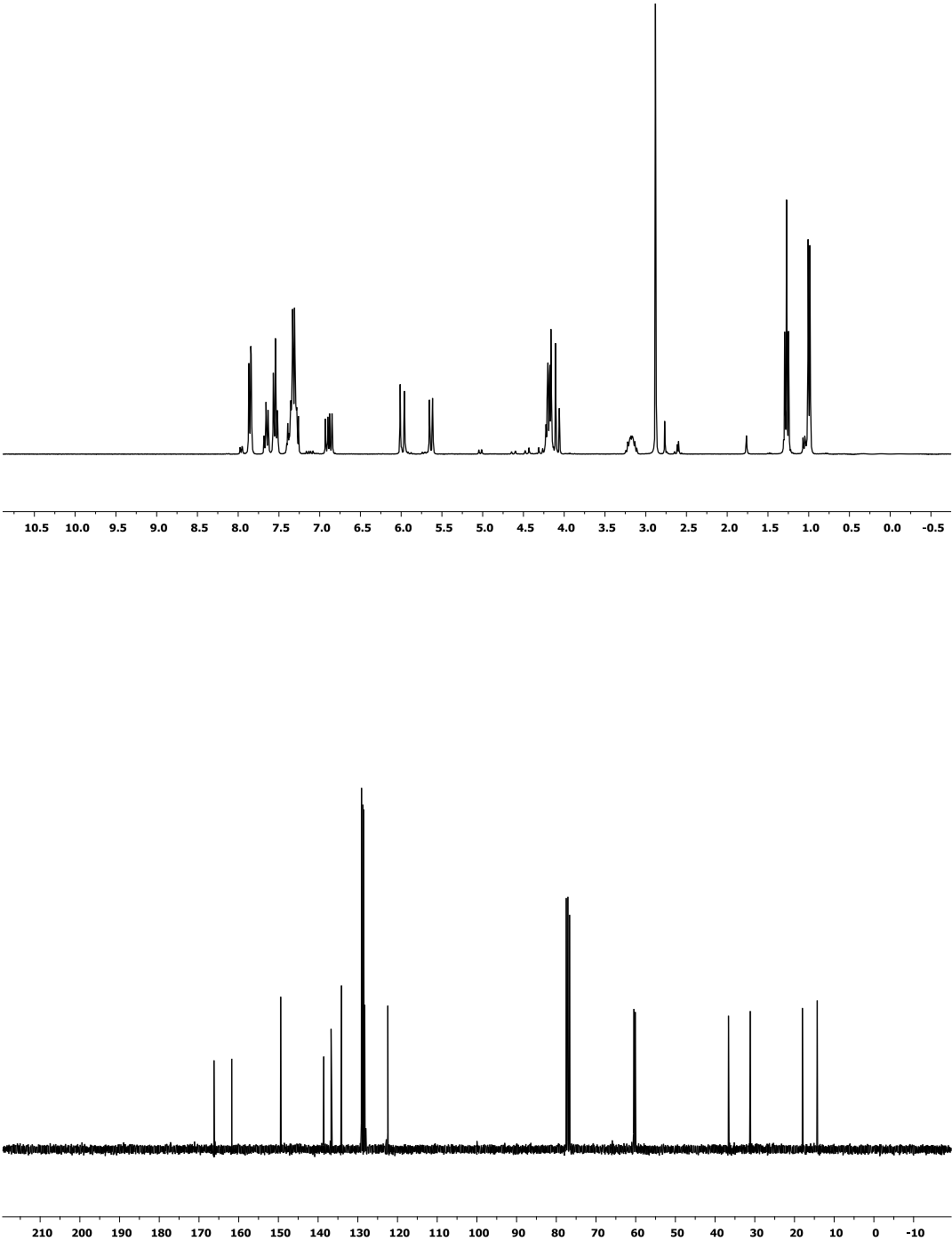


Figure 18. NMR spectra of compound 20

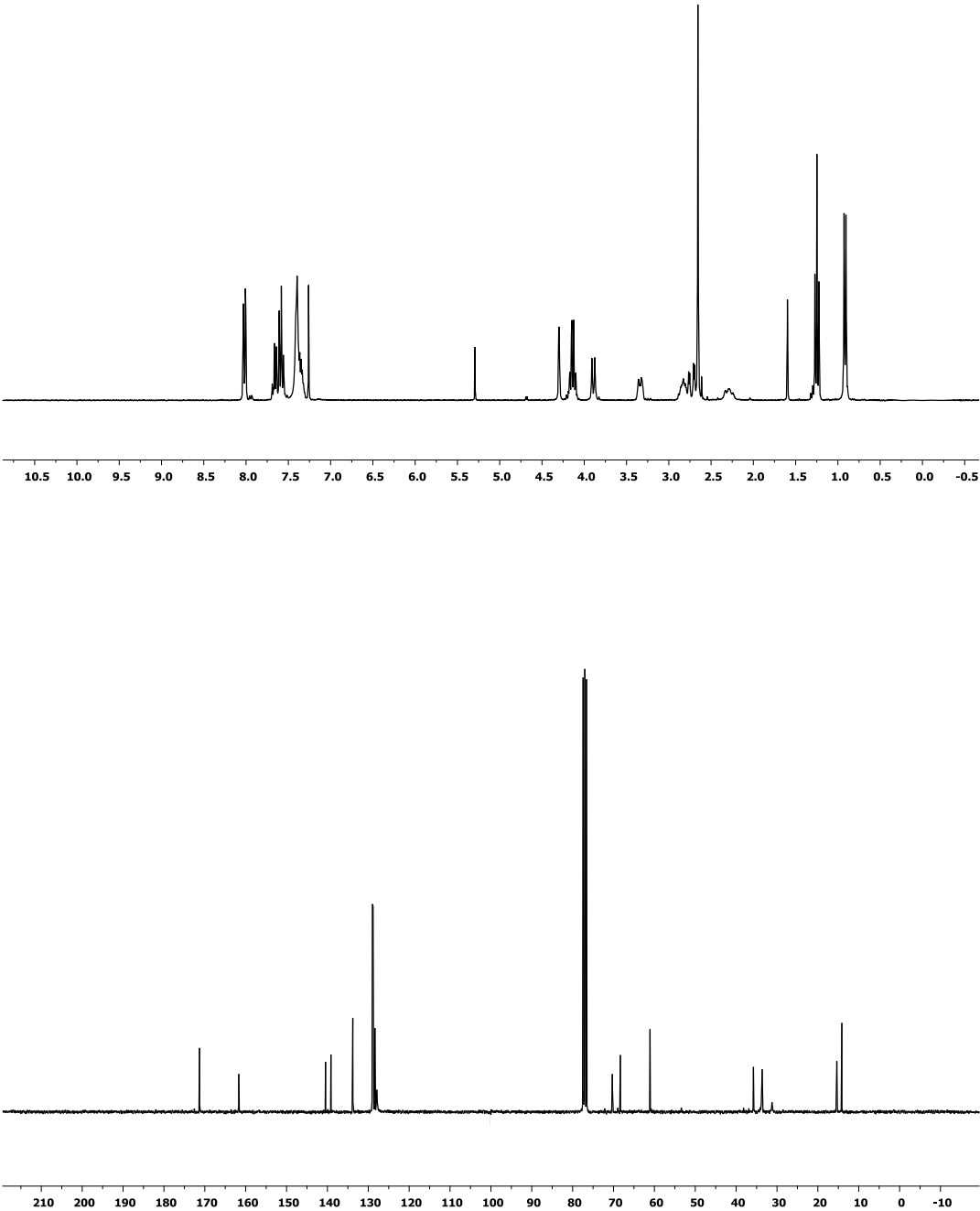


Figure 19. NMR spectra of compound 21

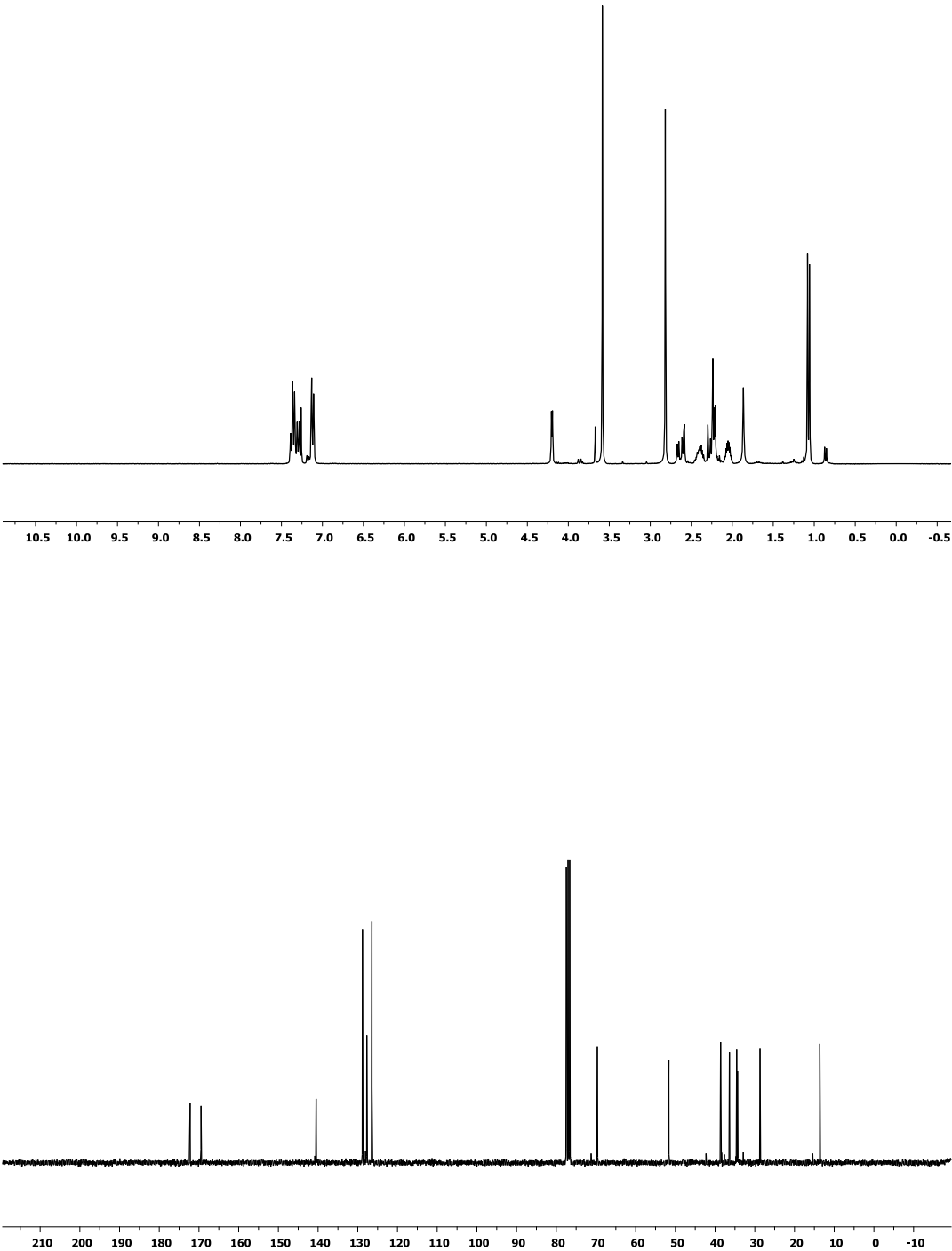


Figure 20. NMR spectra of compound 22