

**Diversity-Oriented, one step Synthesis of Chromeno[2,3-*b*]indoles
and Thiochromeno[2,3-*b*]indoles under Microwave-Assisted
Conditions**

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Supporting Information

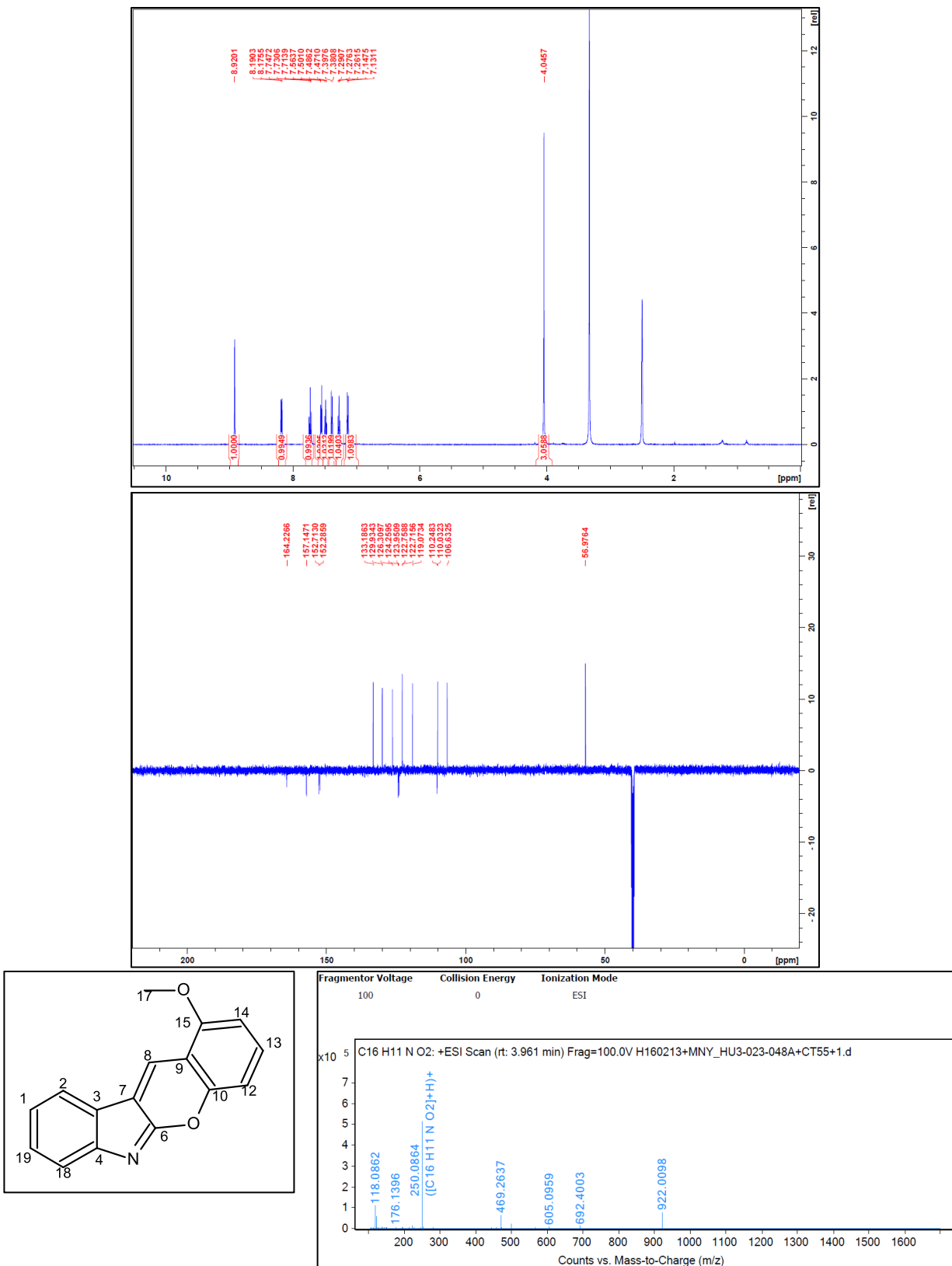


Figure S1. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **7b 1-methoxy[1]benzopyrano[2,3-*b*]indole**

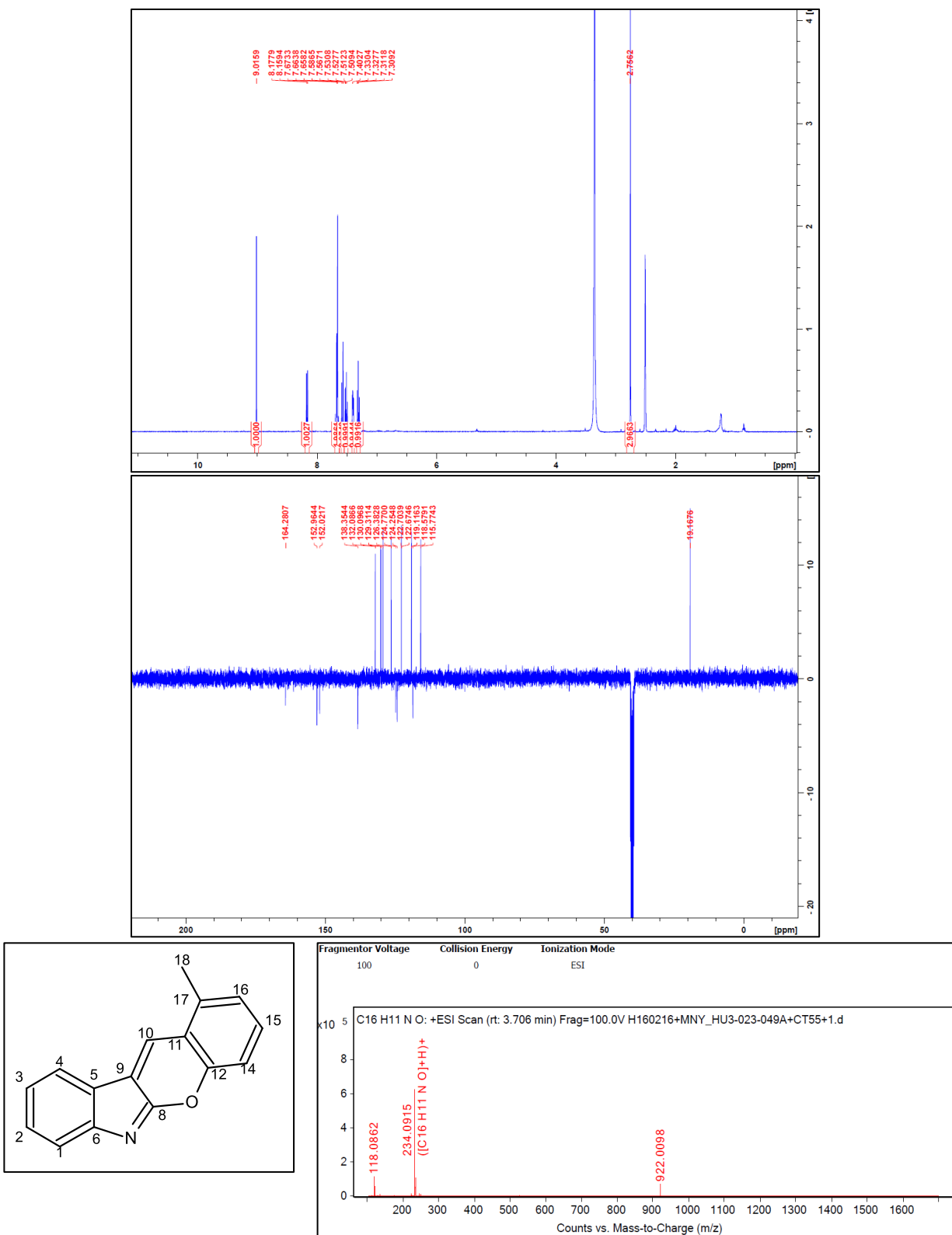


Figure S2. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **7c** 1-methyl[1]benzopyrano[2,3-*b*]indole

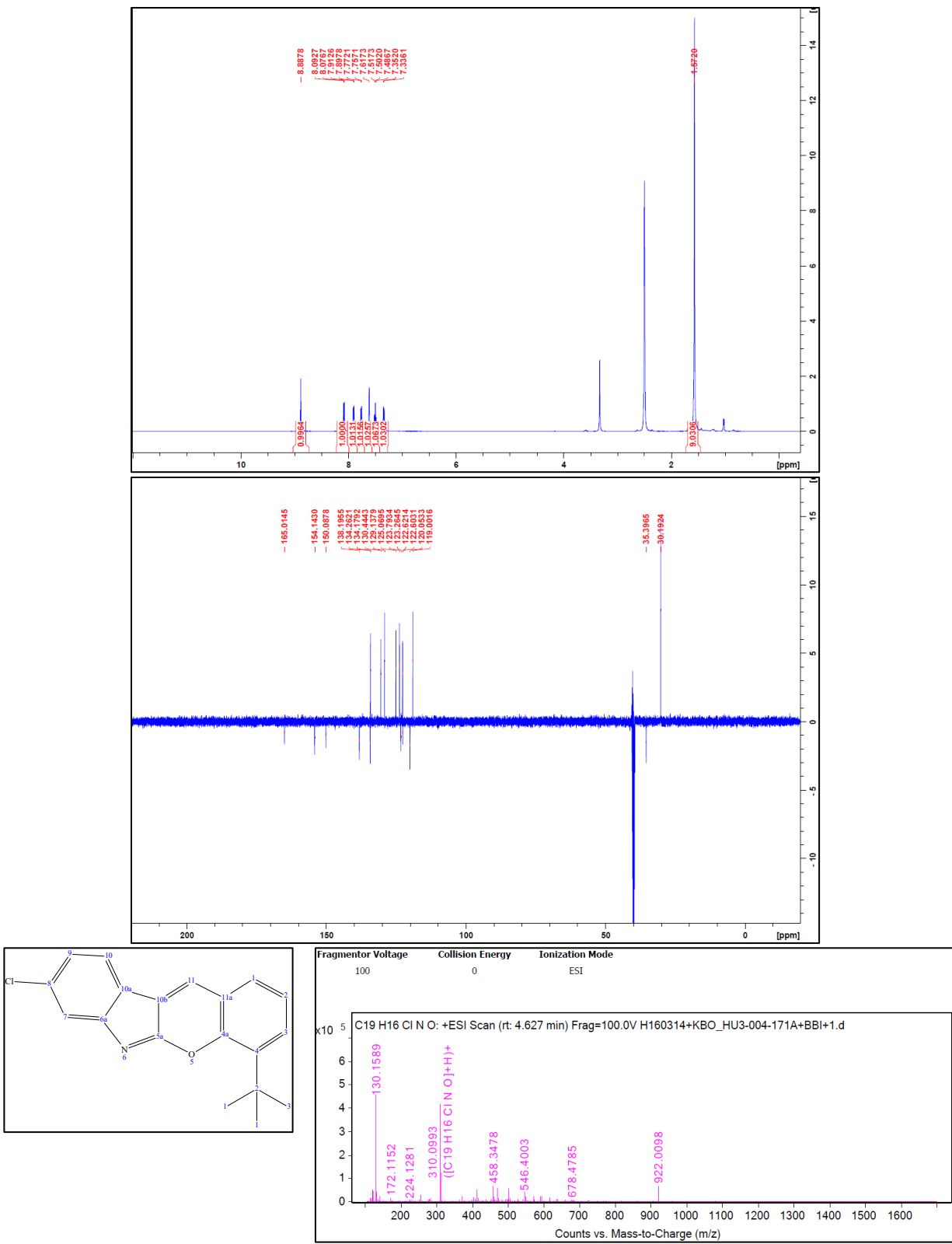


Figure S3. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **7d** 4-*tert*-butyl-8-chloro[1]benzopyrano[2,3-*b*]indole

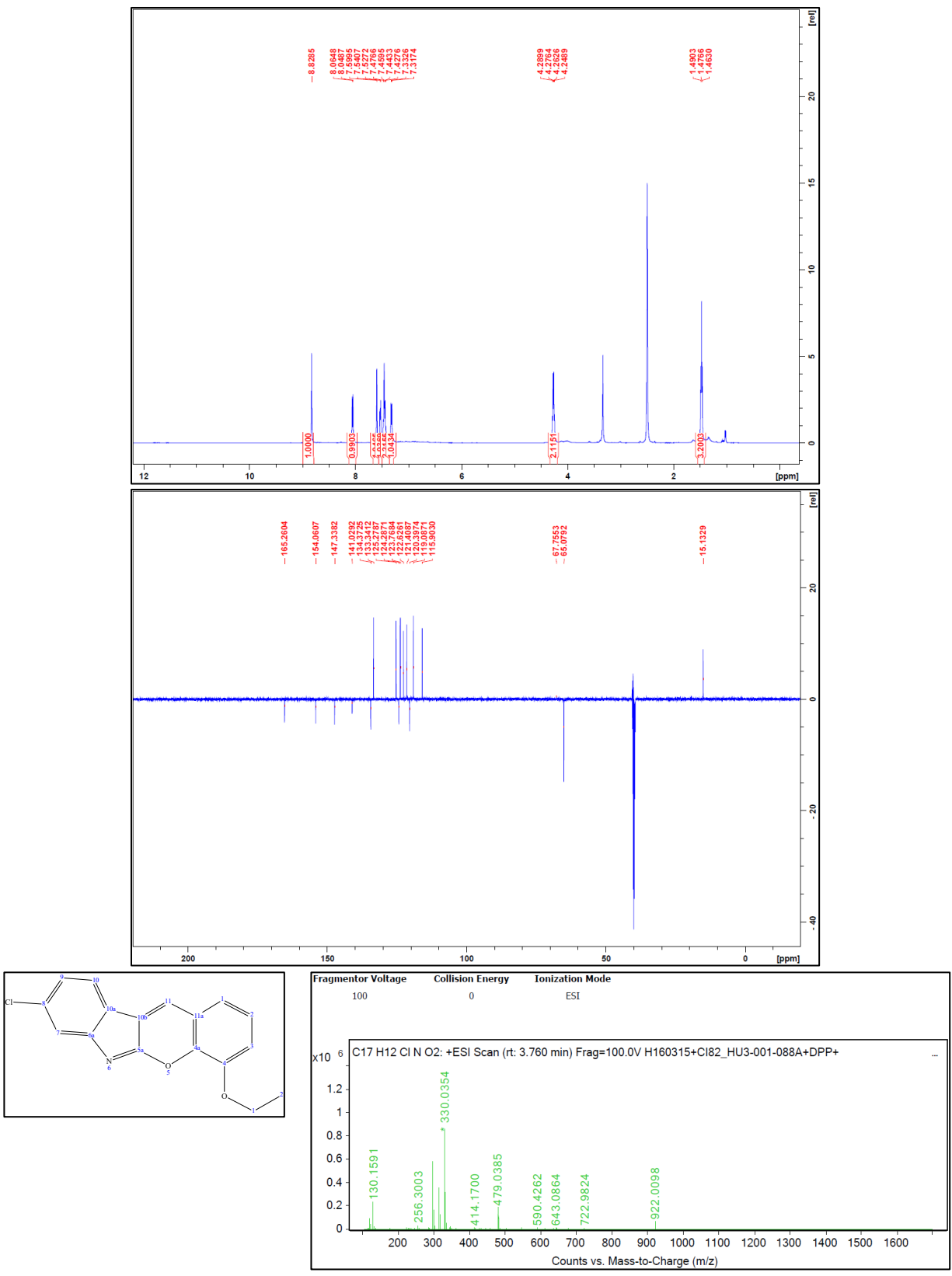


Figure S4. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **7e** 8-chloro-4-ethoxy[1]benzopyrano[2,3-*b*]indole

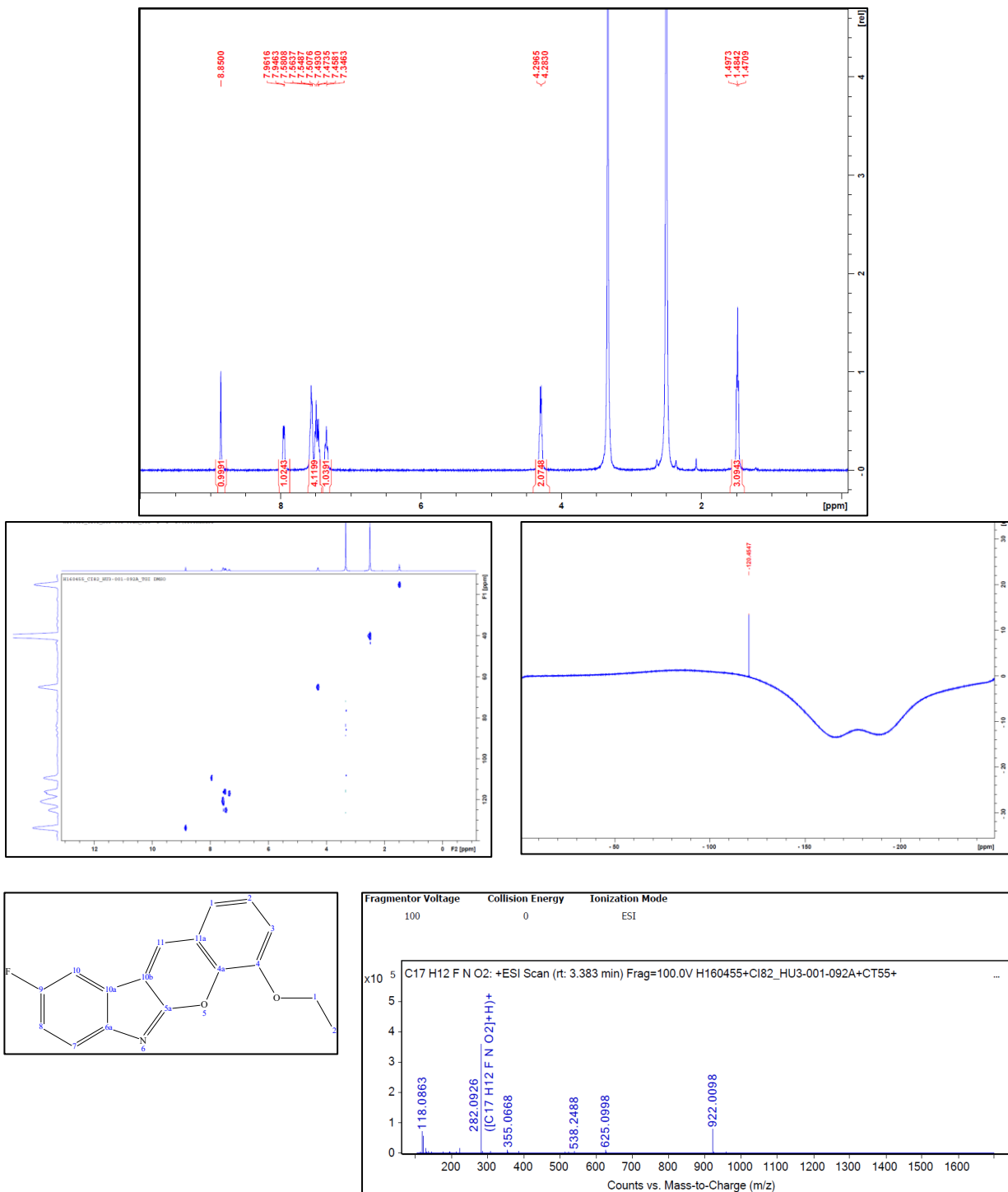


Figure S7. ¹H-NMR, ¹⁹F-NMR and HSQC and HRMS spectrum of **7h** 4-ethoxy-9-fluoro[1]benzopyrano[2,3-*b*]indole

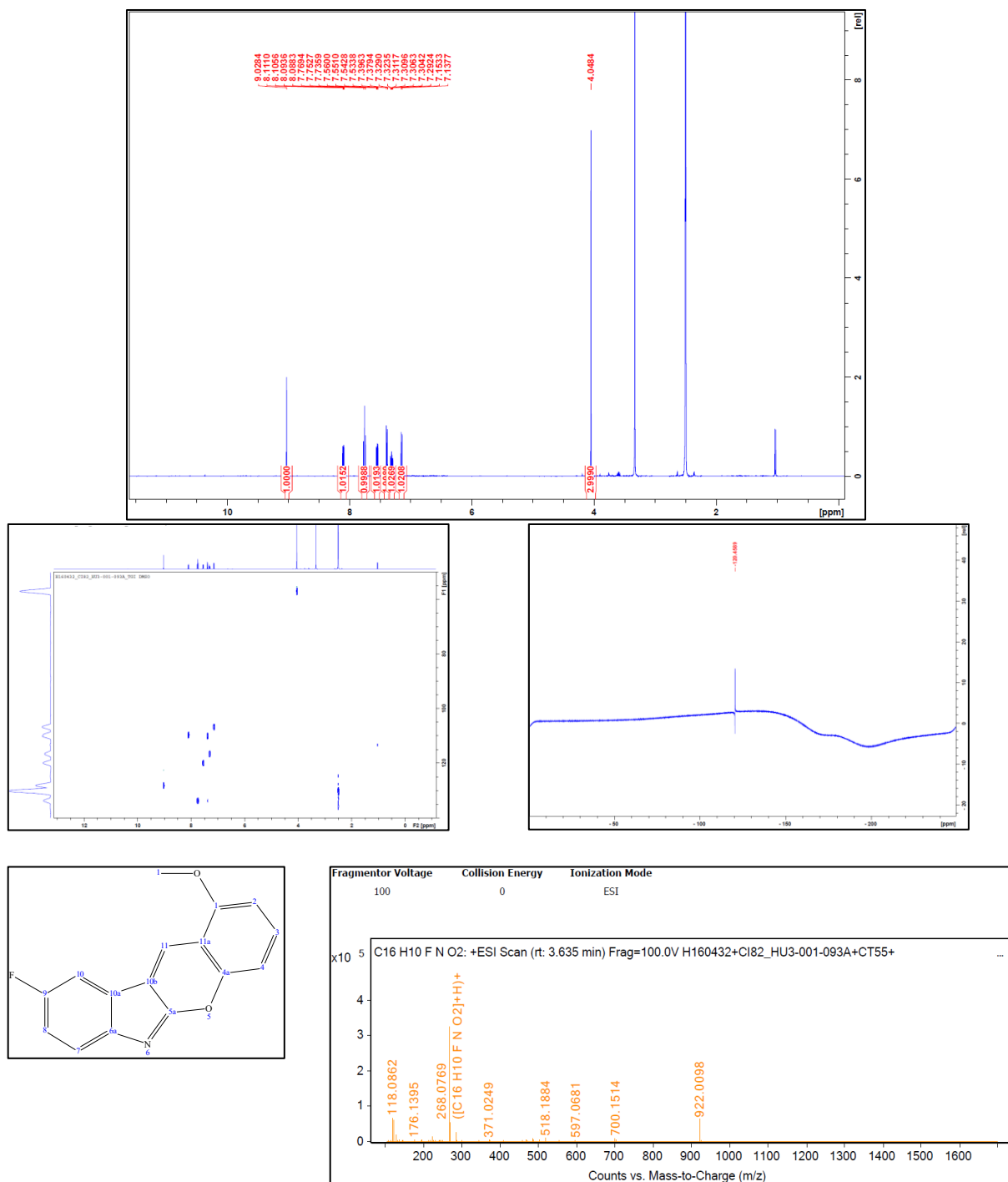


Figure S8. ¹H-NMR and HSQC and HRMS spectrum of **7i** 9-fluoro-1-methoxy[1]benzopyrano[2,3-*b*]indole

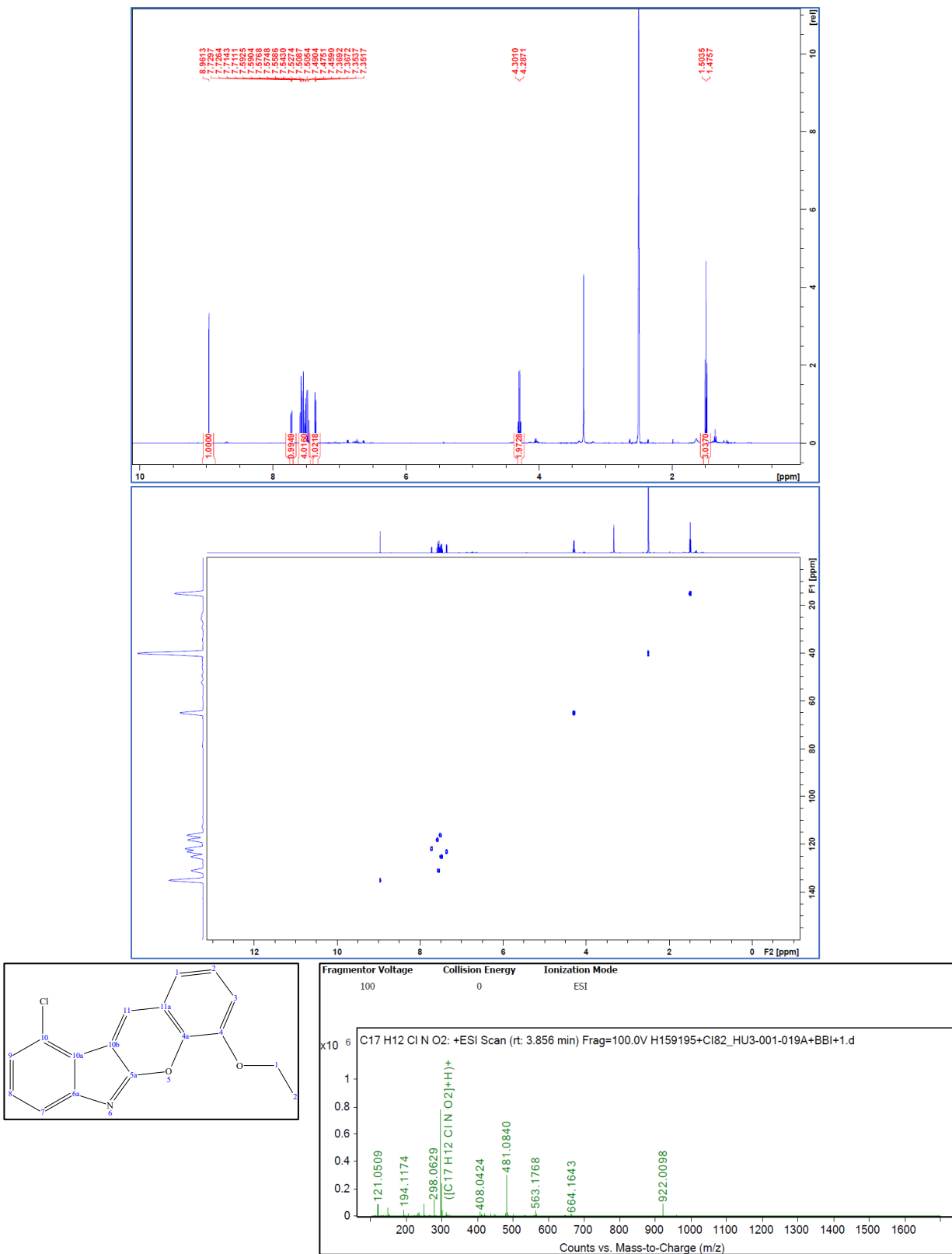


Figure S9. ¹H-NMR and HSQC and HRMS spectrum of **7j** 10-chloro-4-ethoxy[1]benzopyrano[2,3-*b*]indole

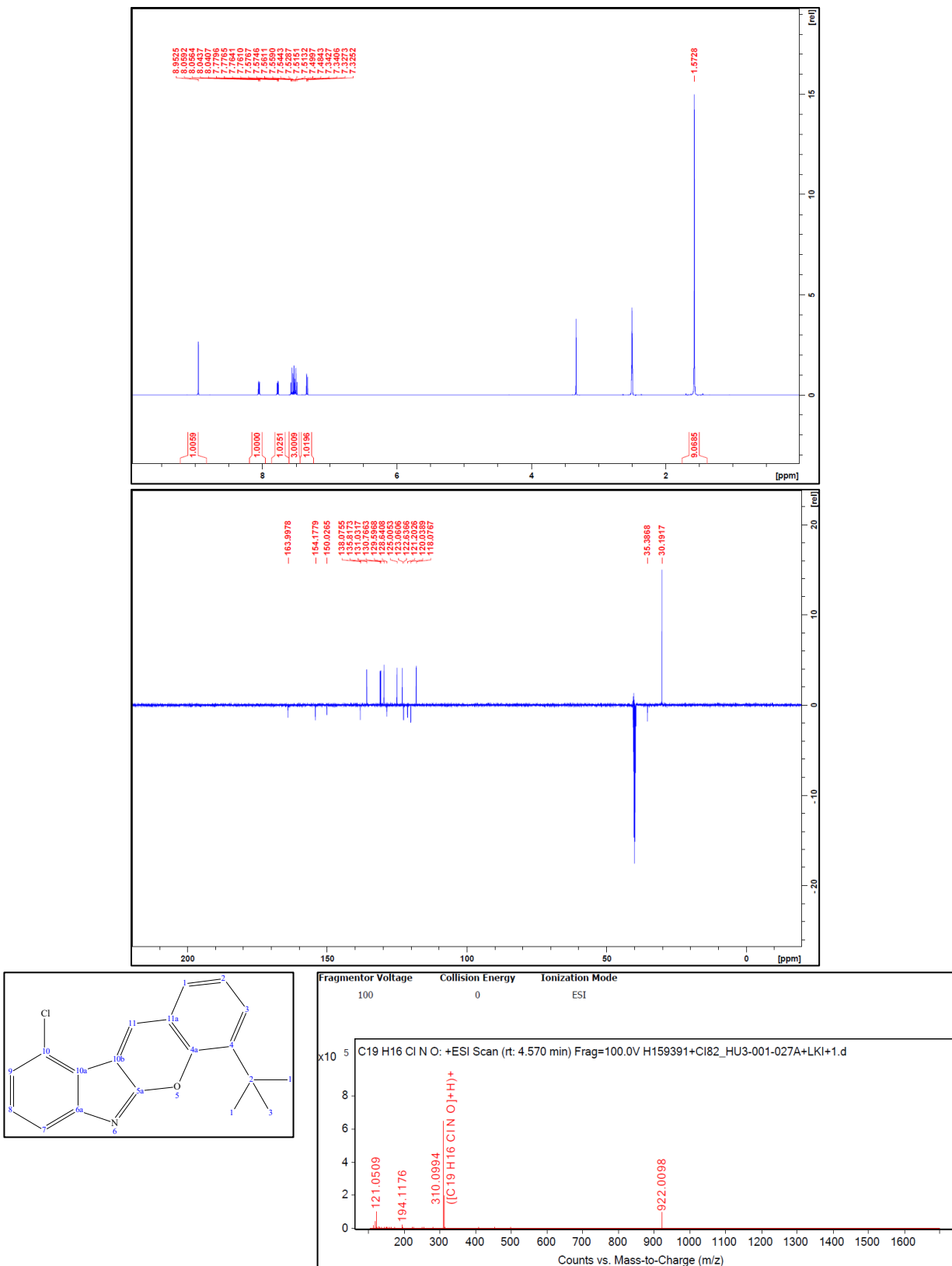


Figure S10. ¹H-NMR and HSQC and HRMS spectrum of **7k** 4-*tert*-butyl-10-chloro[1]benzopyrano[2,3-*b*]indole

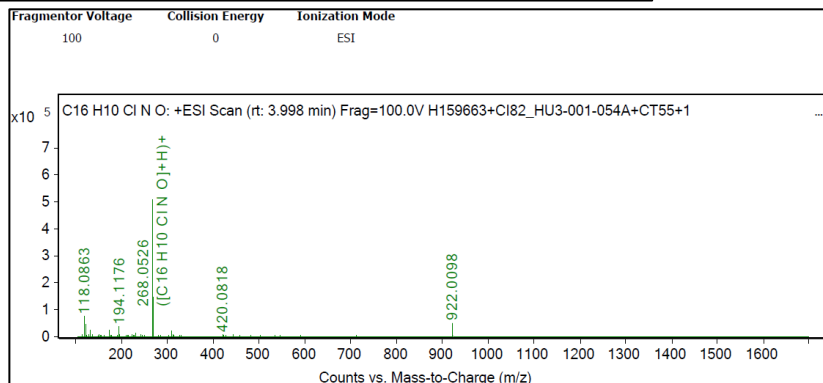
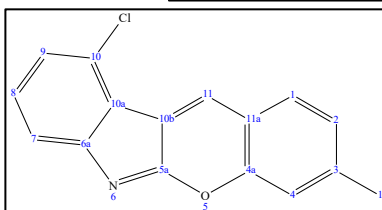
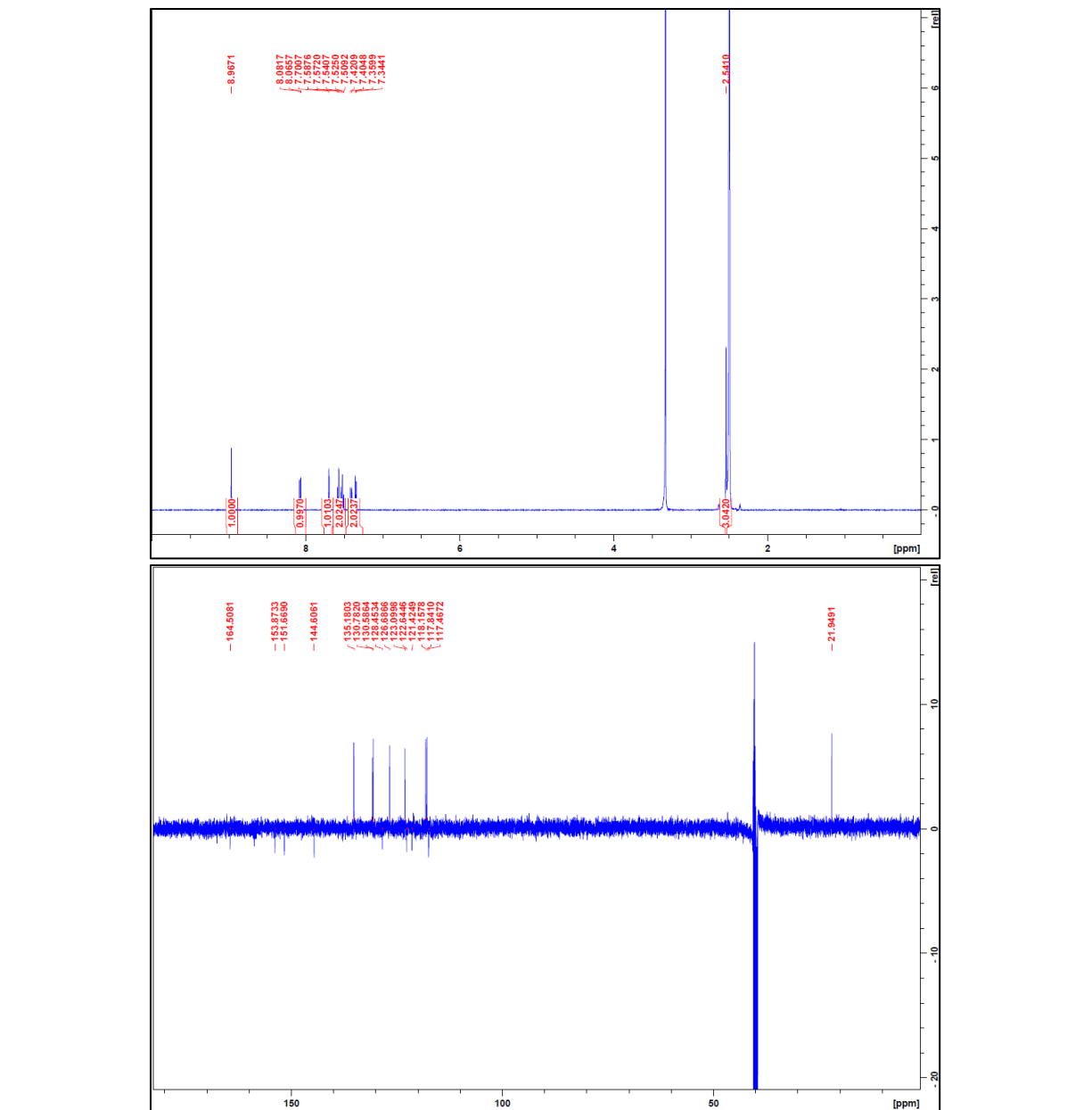


Figure S12. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **7m** 10-chloro-3-methyl[1]benzopyrano[2,3-*b*]indole

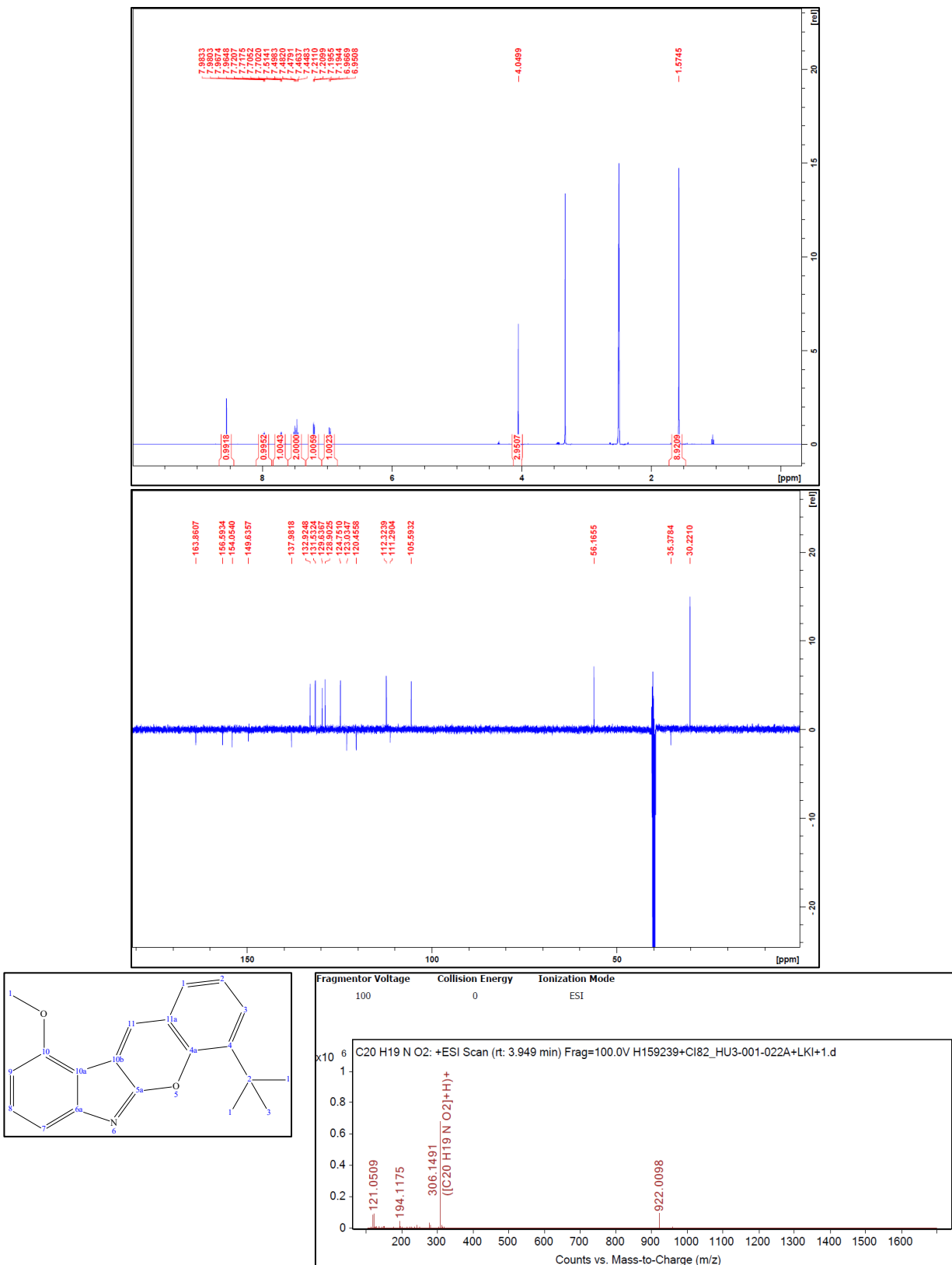


Figure S13. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **7n** 4-*tert*-butyl-10-methoxy[1]benzopyrano[2,3-*b*]indole

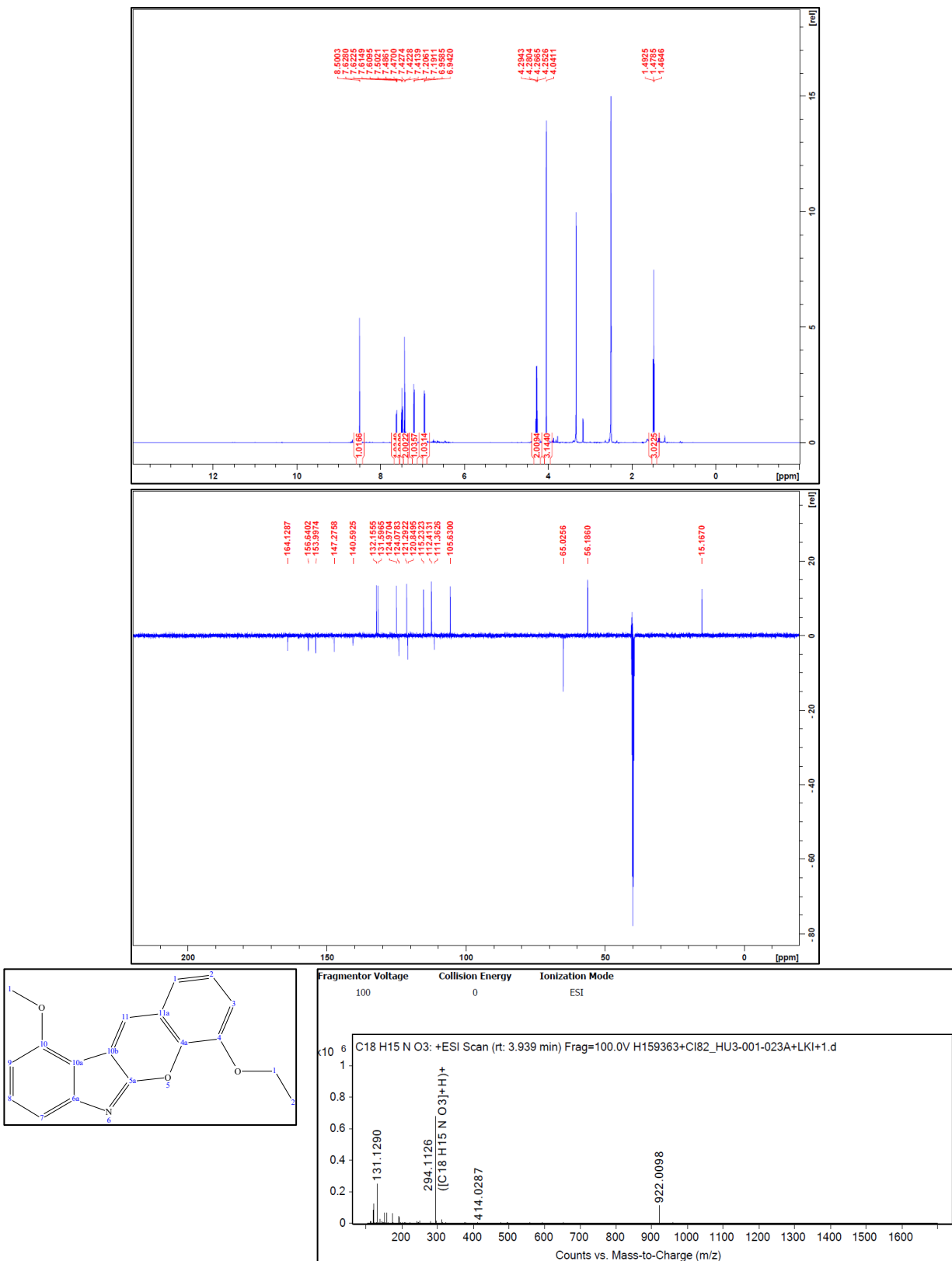


Figure S14. ¹H-NMR and HSQC and HRMS spectrum of **7o** 4-ethoxy-10-methoxy[1]benzopyrano[2,3-*b*]indole

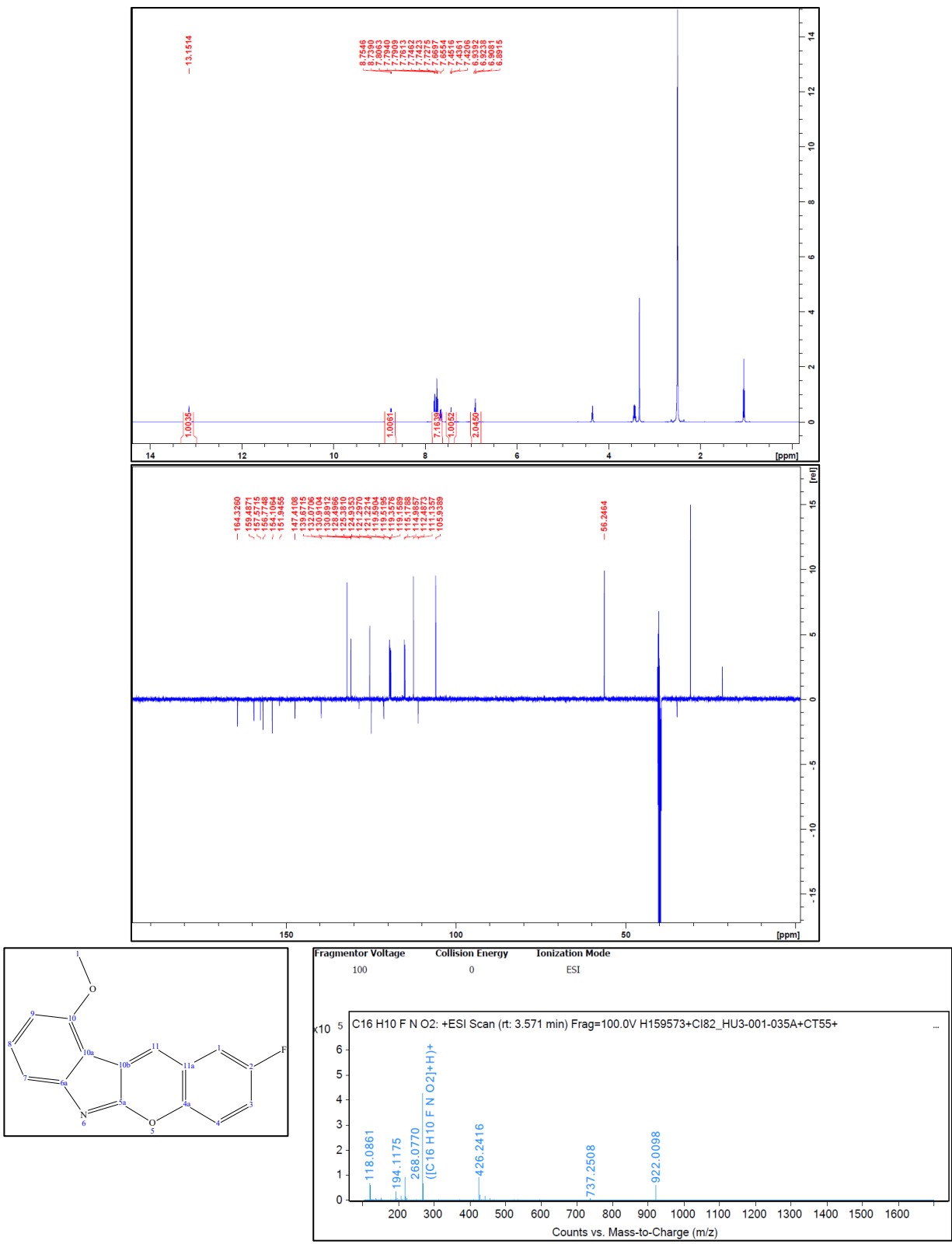


Figure S15. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **7p** 2-fluoro-10-methoxy[1]benzopyrano[2,3-*b*]indole

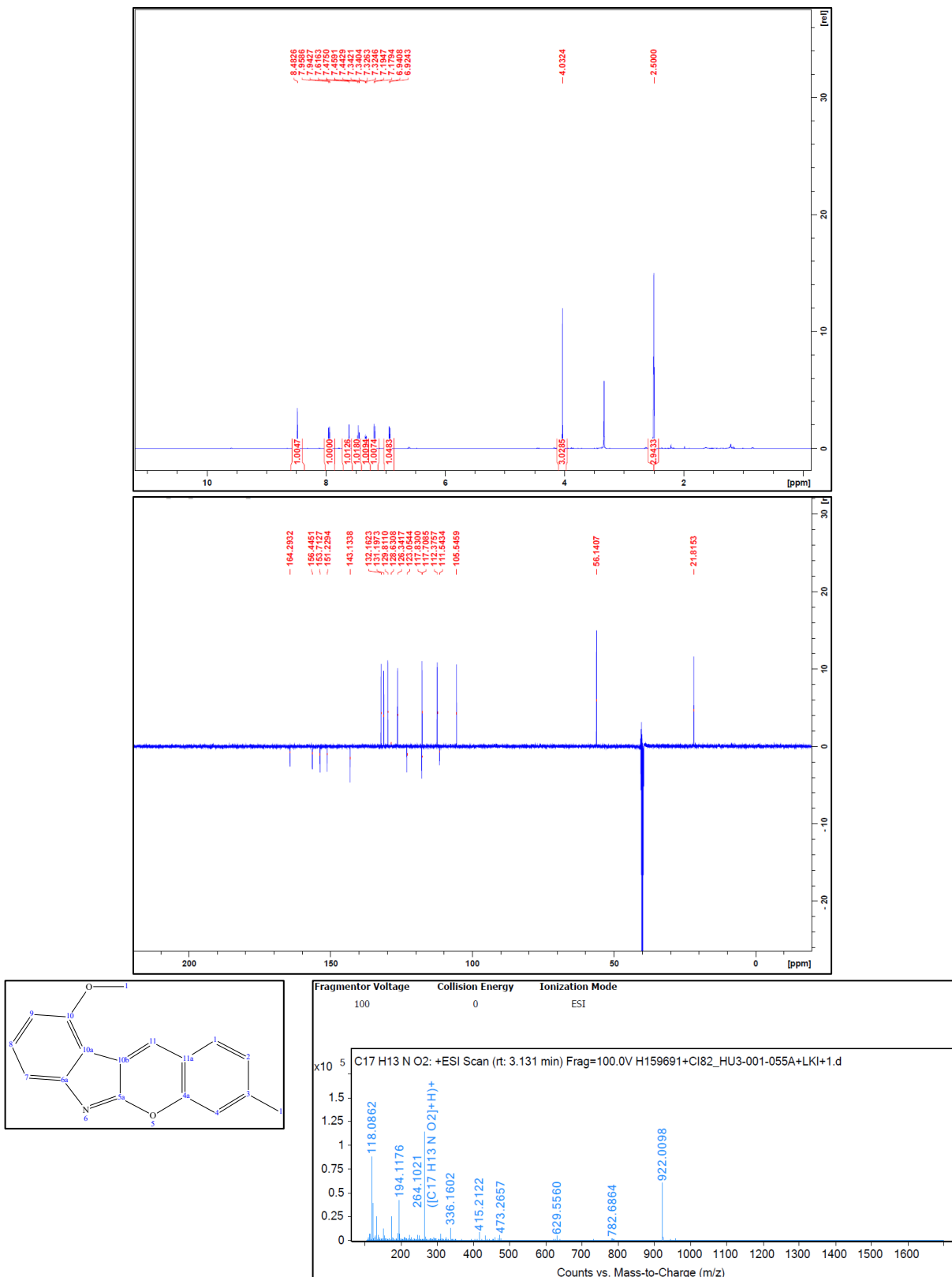


Figure S16. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **7q** 10-methoxy-3-methyl[1]benzopyrano[2,3-*b*]indole

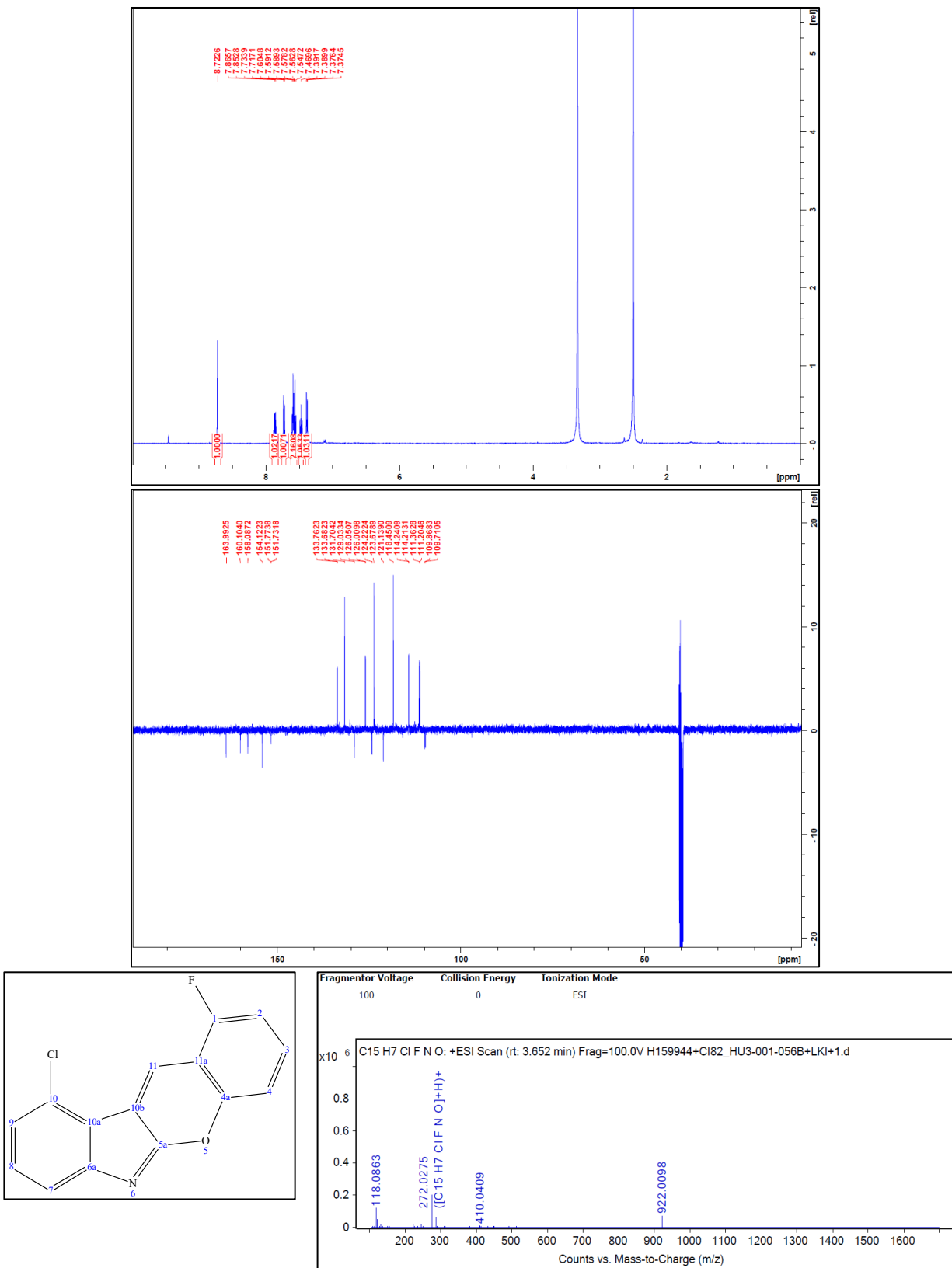


Figure S17. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **7r** 10-chloro-1-fluoro[1]benzopyrano[2,3-*b*]indole

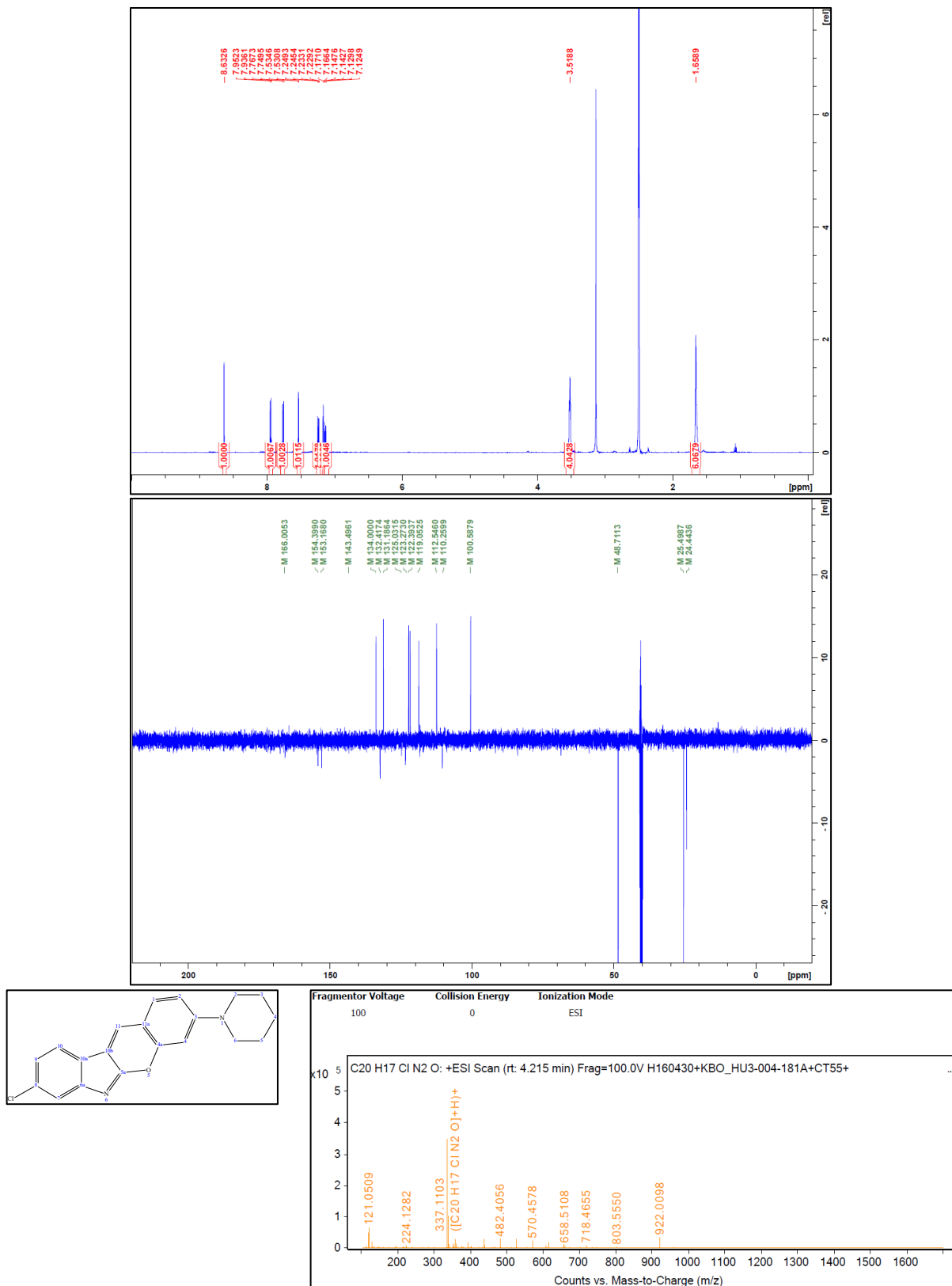


Figure S18. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **8a** 8-chloro-3-(piperidin-1-yl)[1]benzopyrano[2,3-b]indole

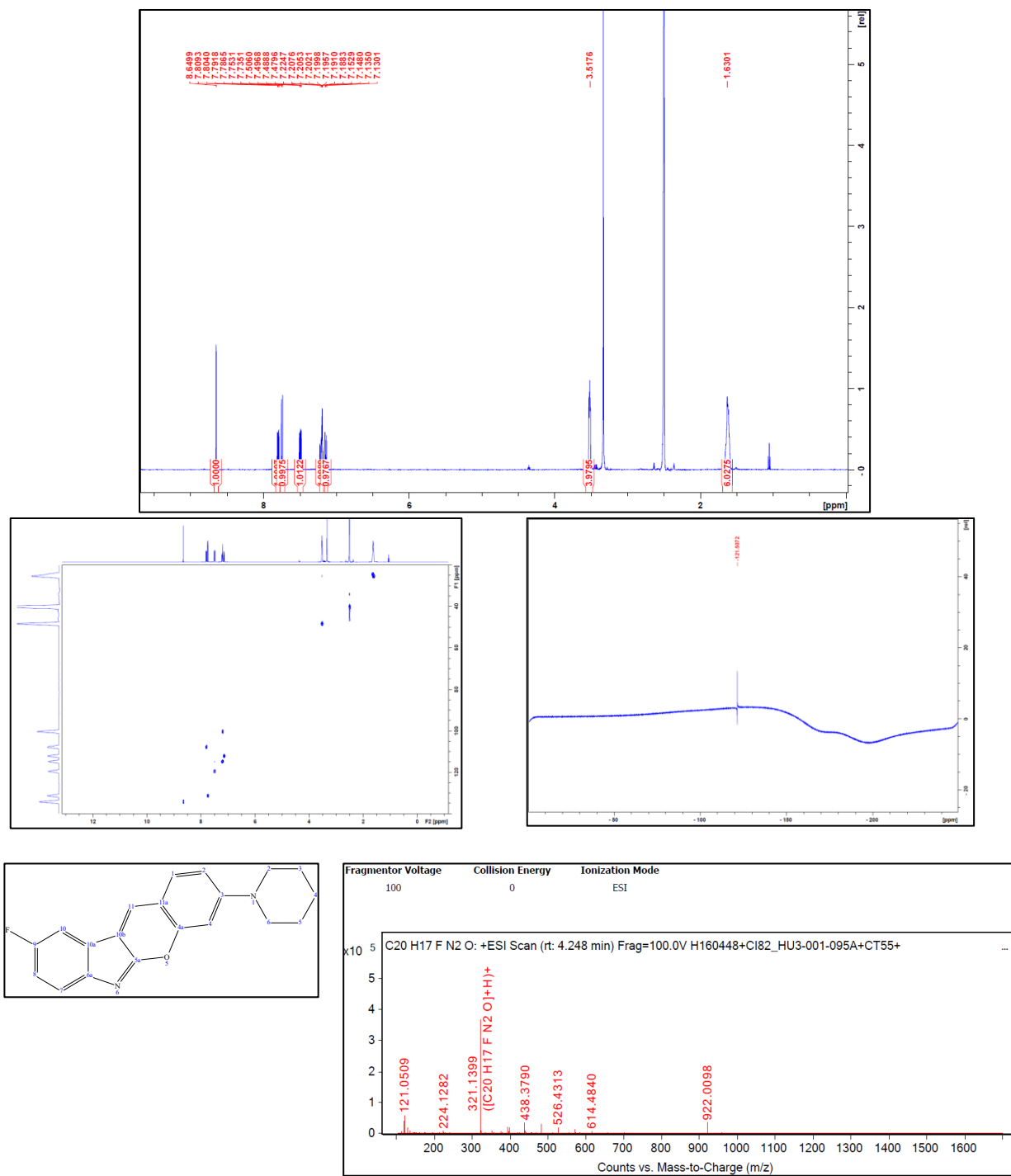


Figure S19. ¹H-NMR, ¹⁹F-NMR and HSQC and HRMS spectrum of **8b** 9-Fluoro-3-(piperidin-1-yl)[1]benzopyrano[2,3-*b*]indole

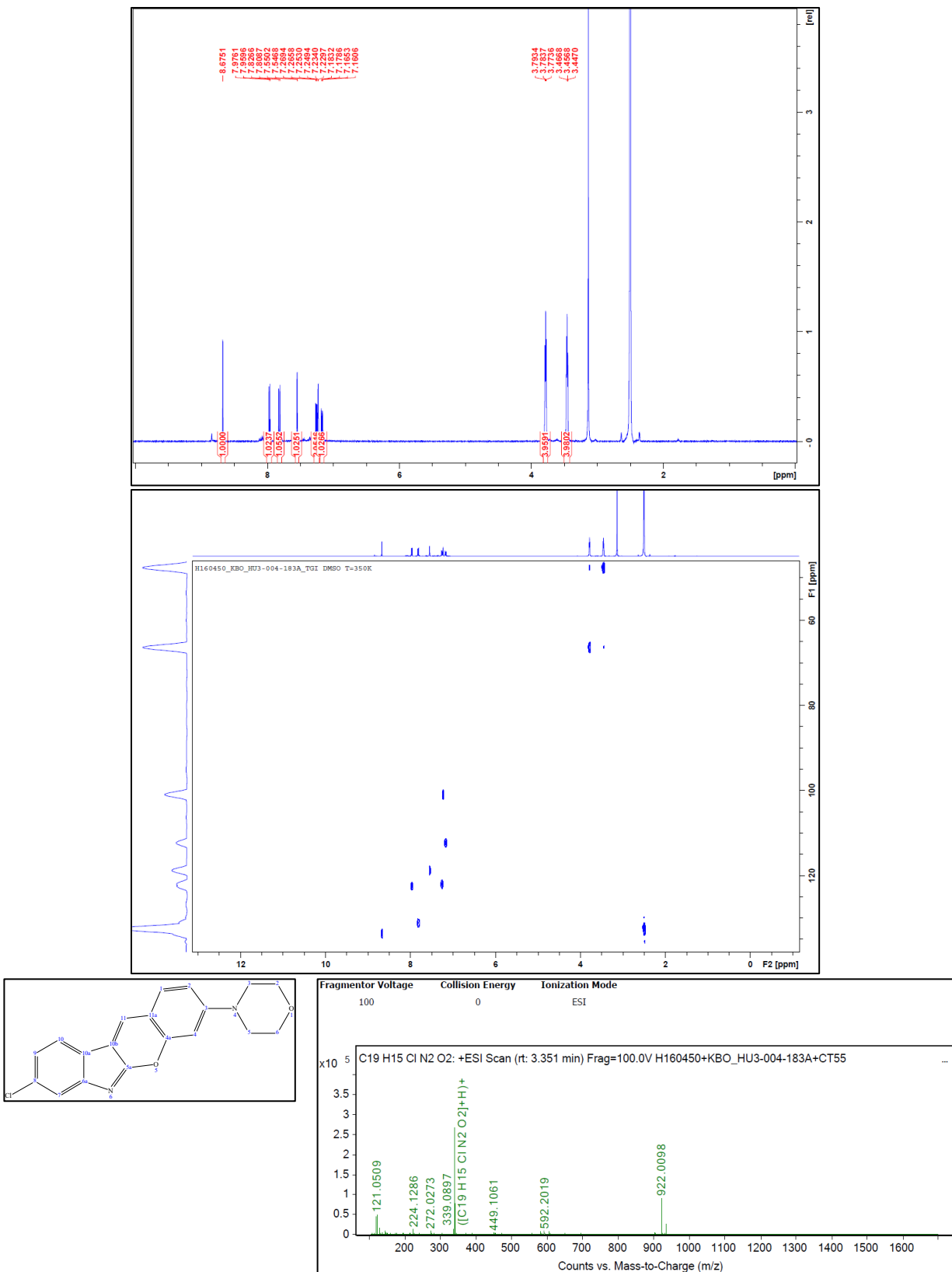
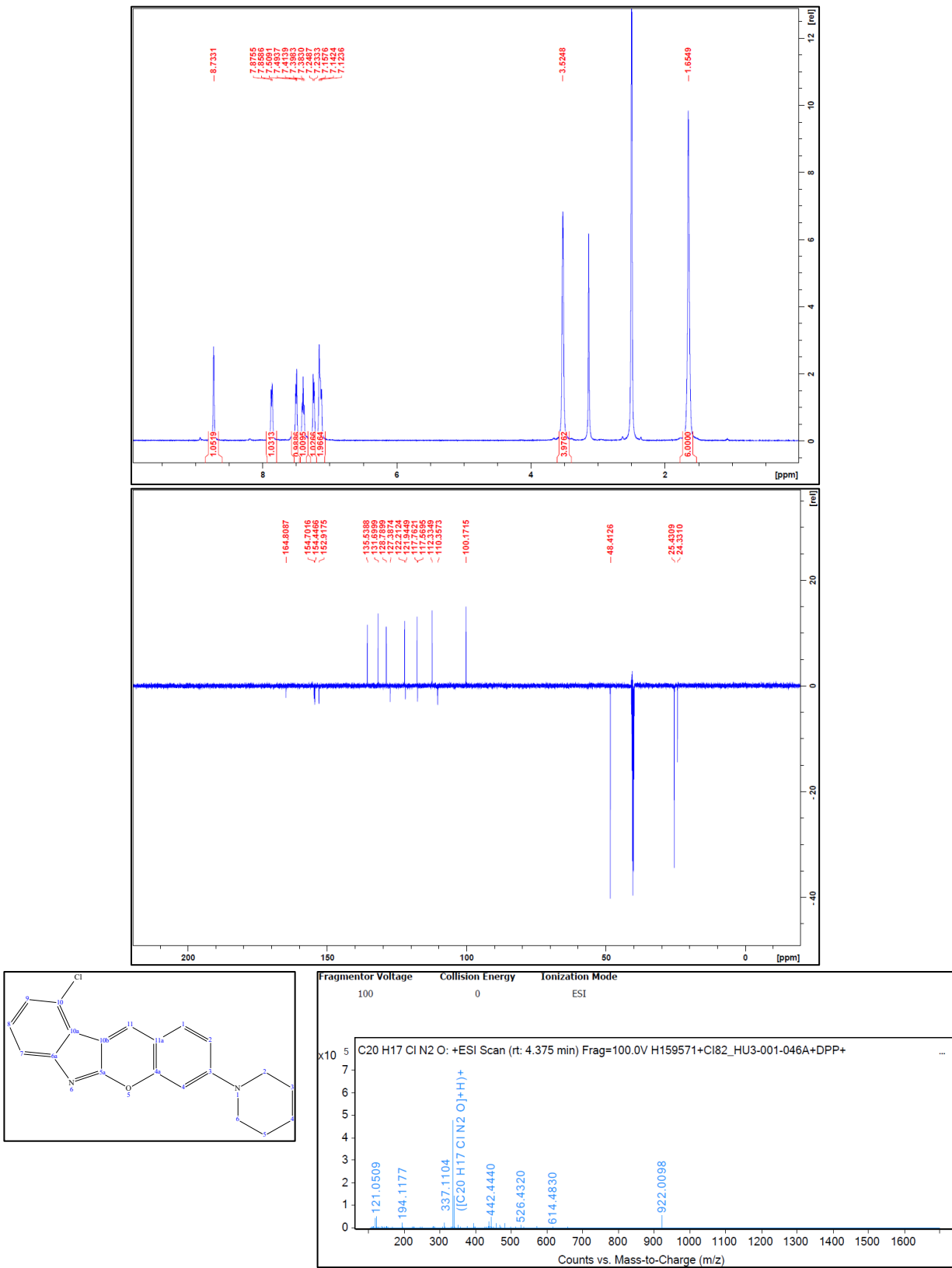


Figure S20. ¹H-NMR and HSQC and HRMS spectrum of **8c** 8-chloro-3-(morpholin-4-yl)[1]benzopyrano[2,3-*b*]indole



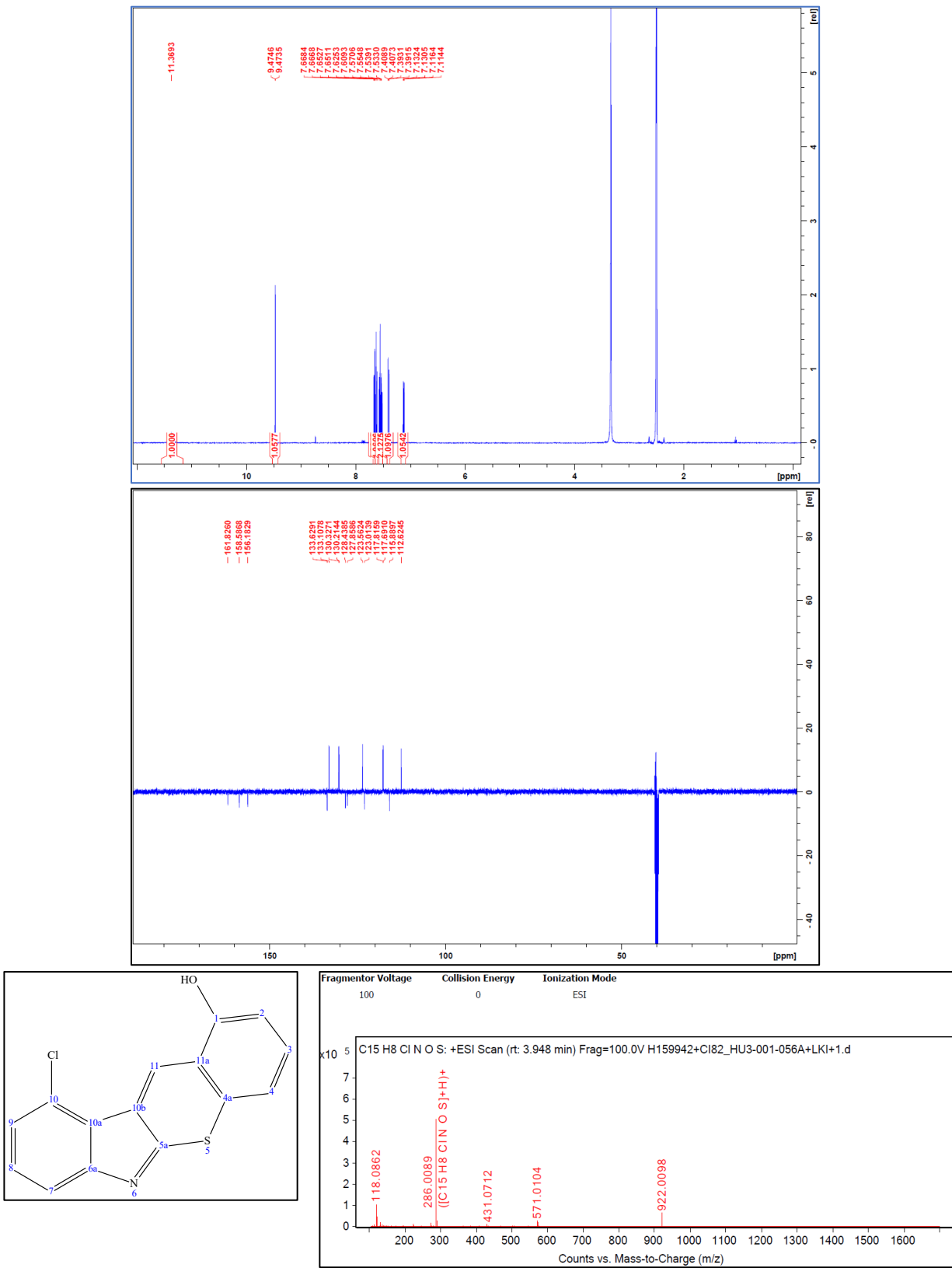
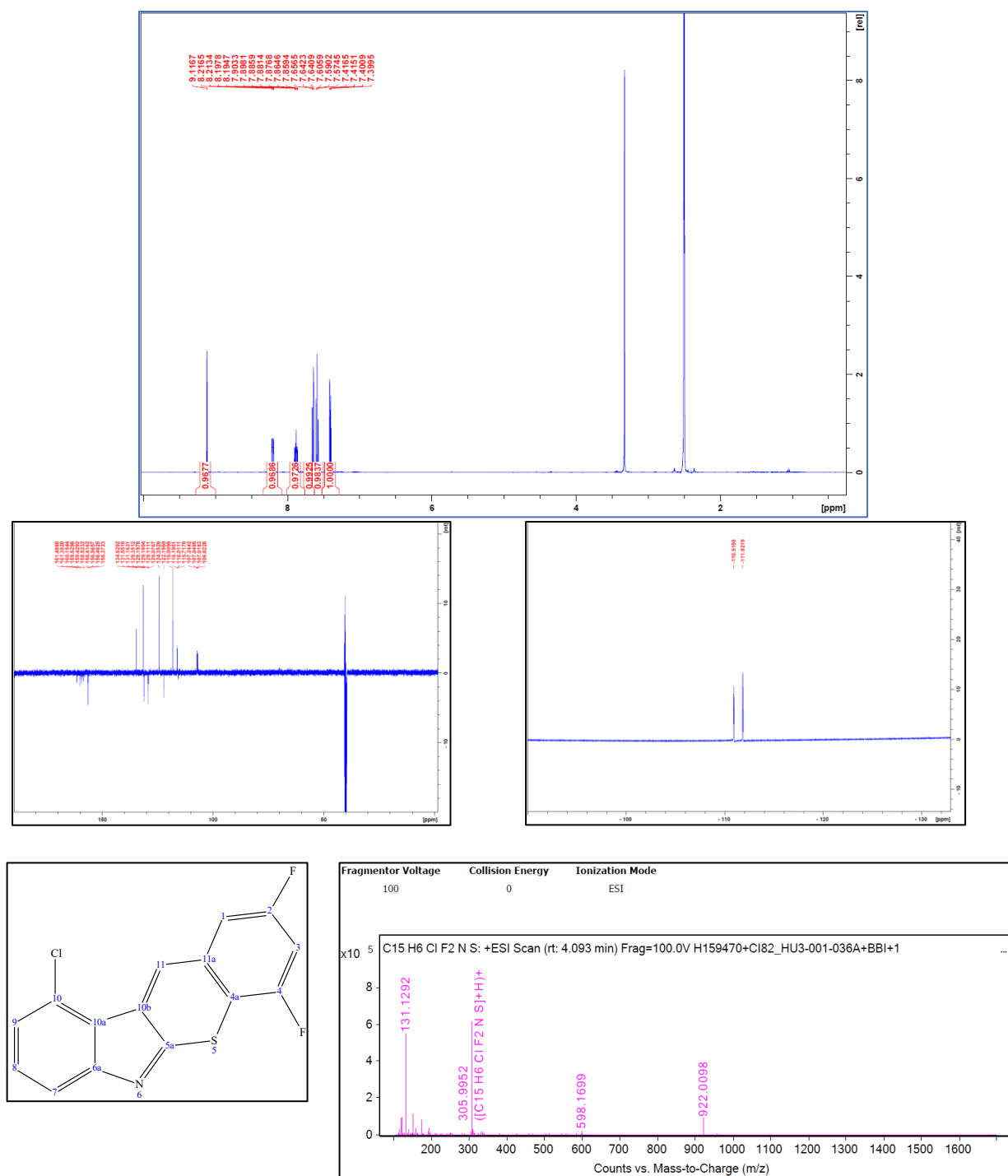


Figure S22. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **9a** 10-chloro[1]benzothiopyrano[2,3-b]indol-1-ol



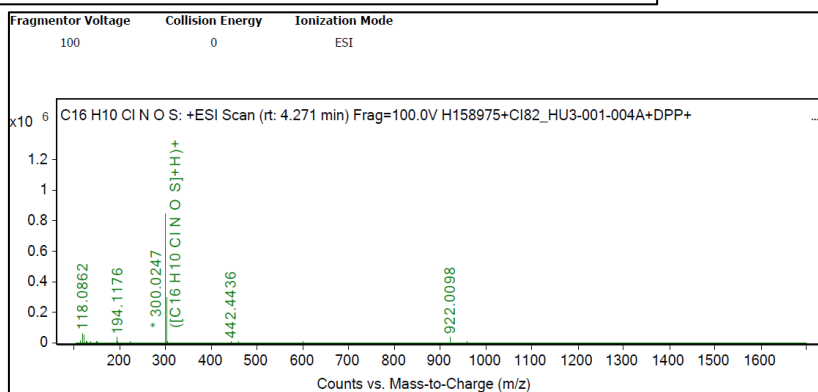
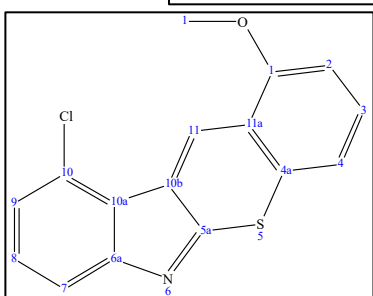
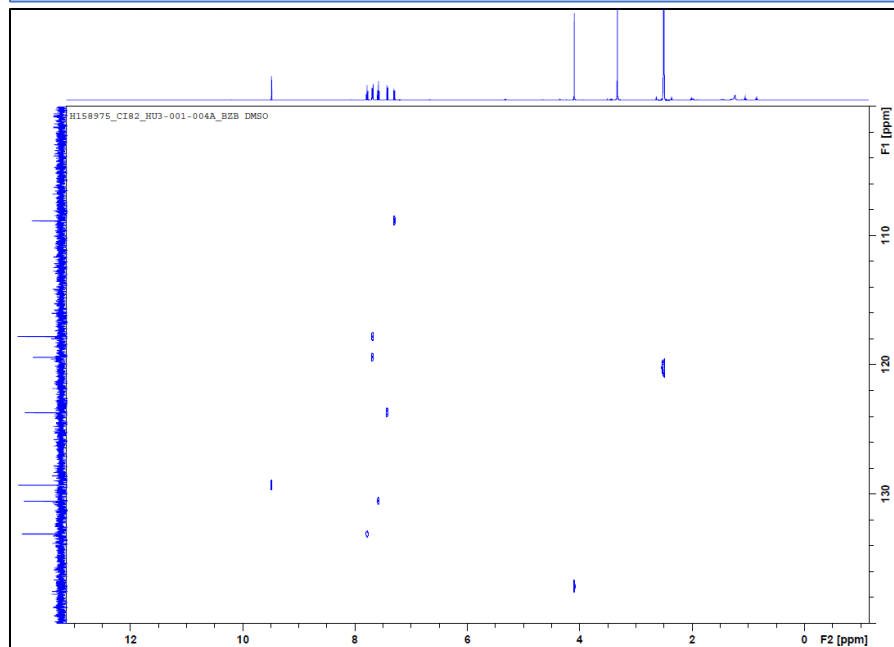
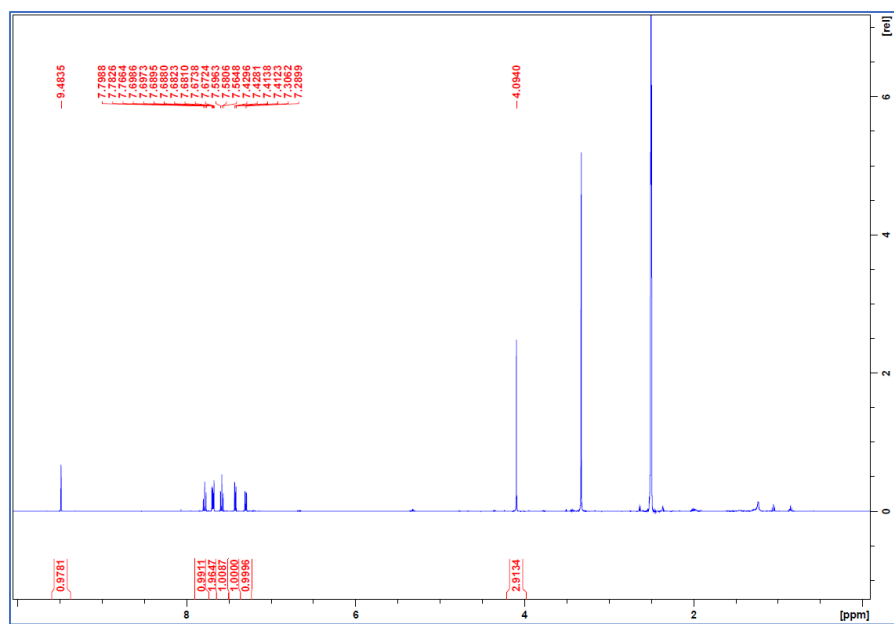


Figure S24. ¹H-NMR and HSQC and HRMS spectrum of **9d** 10-chloro-1-methoxy[1]benzothiopyrano[2,3-*b*]indole

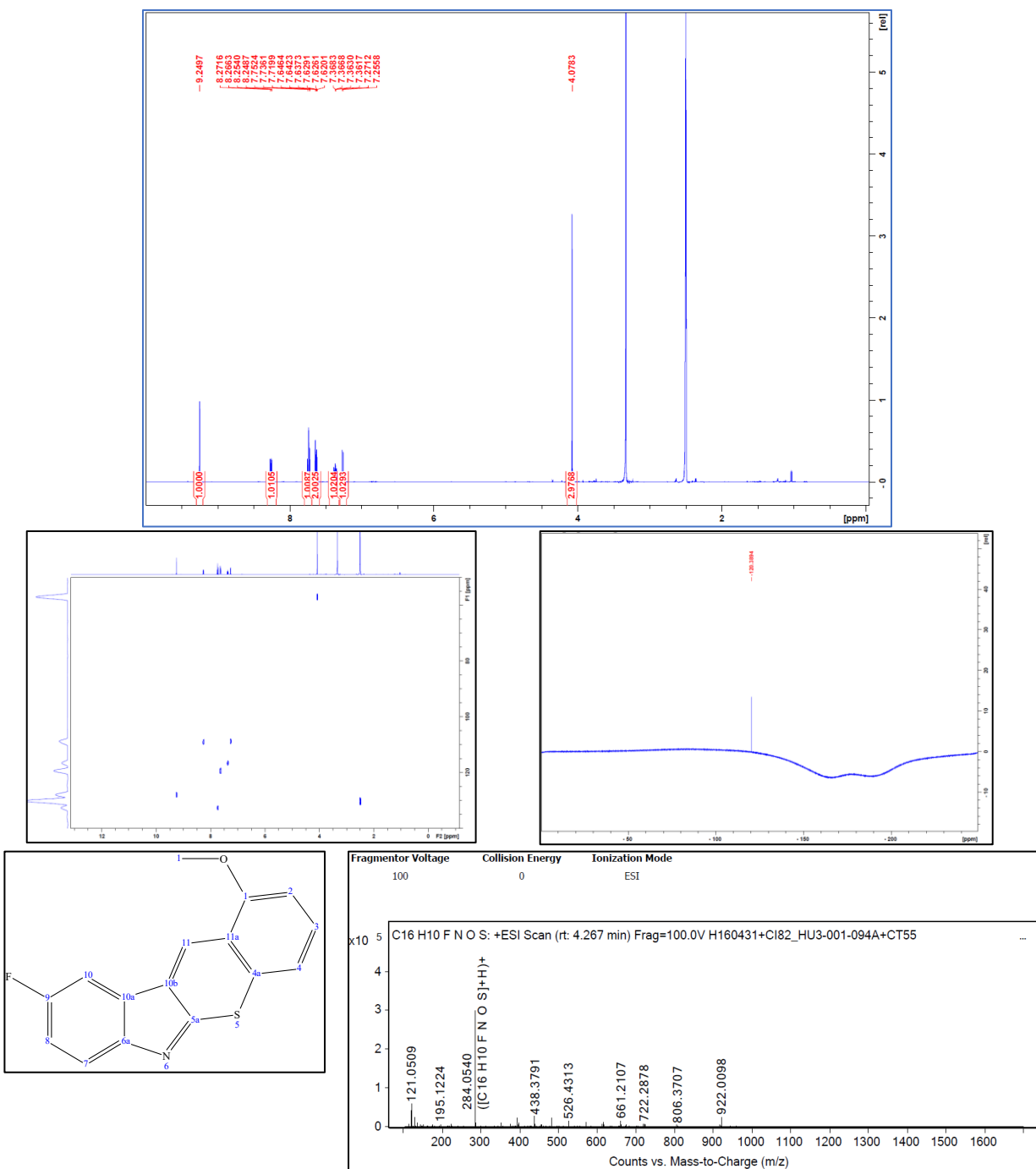


Figure S25. ¹H-NMR, ¹⁹F-NMR and HSQC and HRMS spectrum of **9e** 9-fluoro-1-methoxy[1]benzothiopyrano[2,3-b]indole

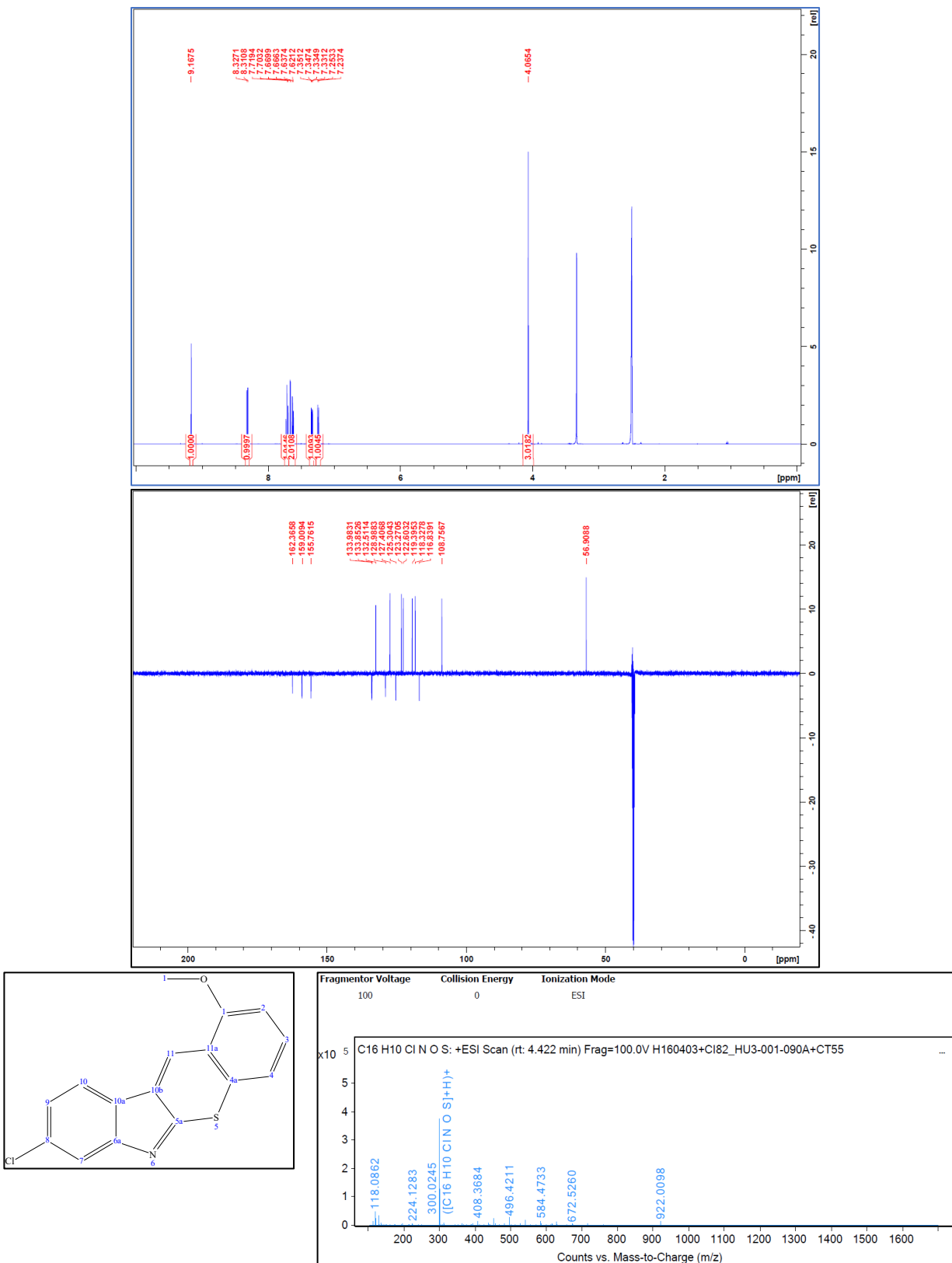


Figure S26. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **9f** 8-chloro-1-methoxy[1]benzothiopyrano[2,3-b]indole

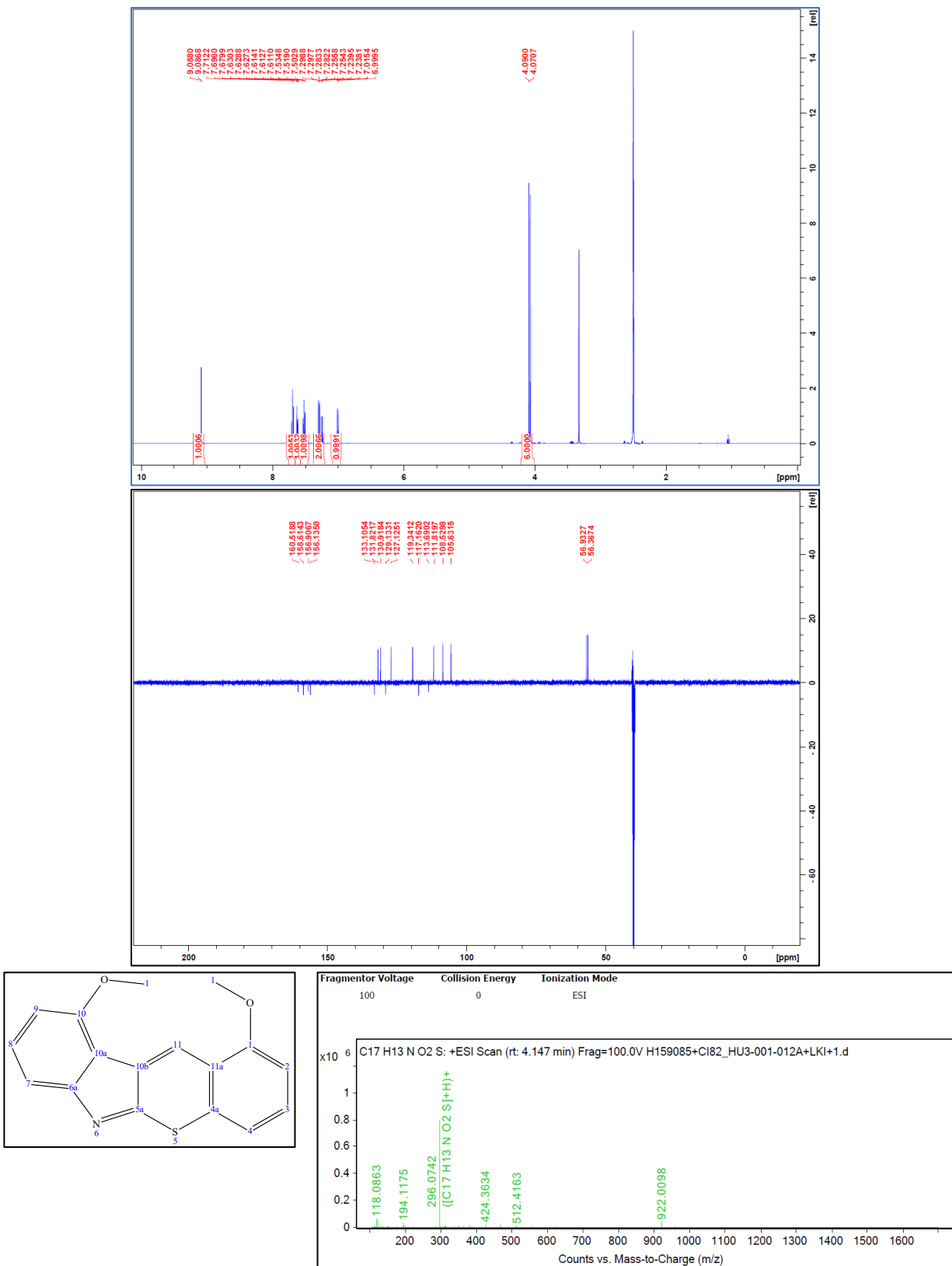


Figure S27. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **9g 1,10-dimethoxy[1]benzothiopyrano[2,3-*b*]indole**

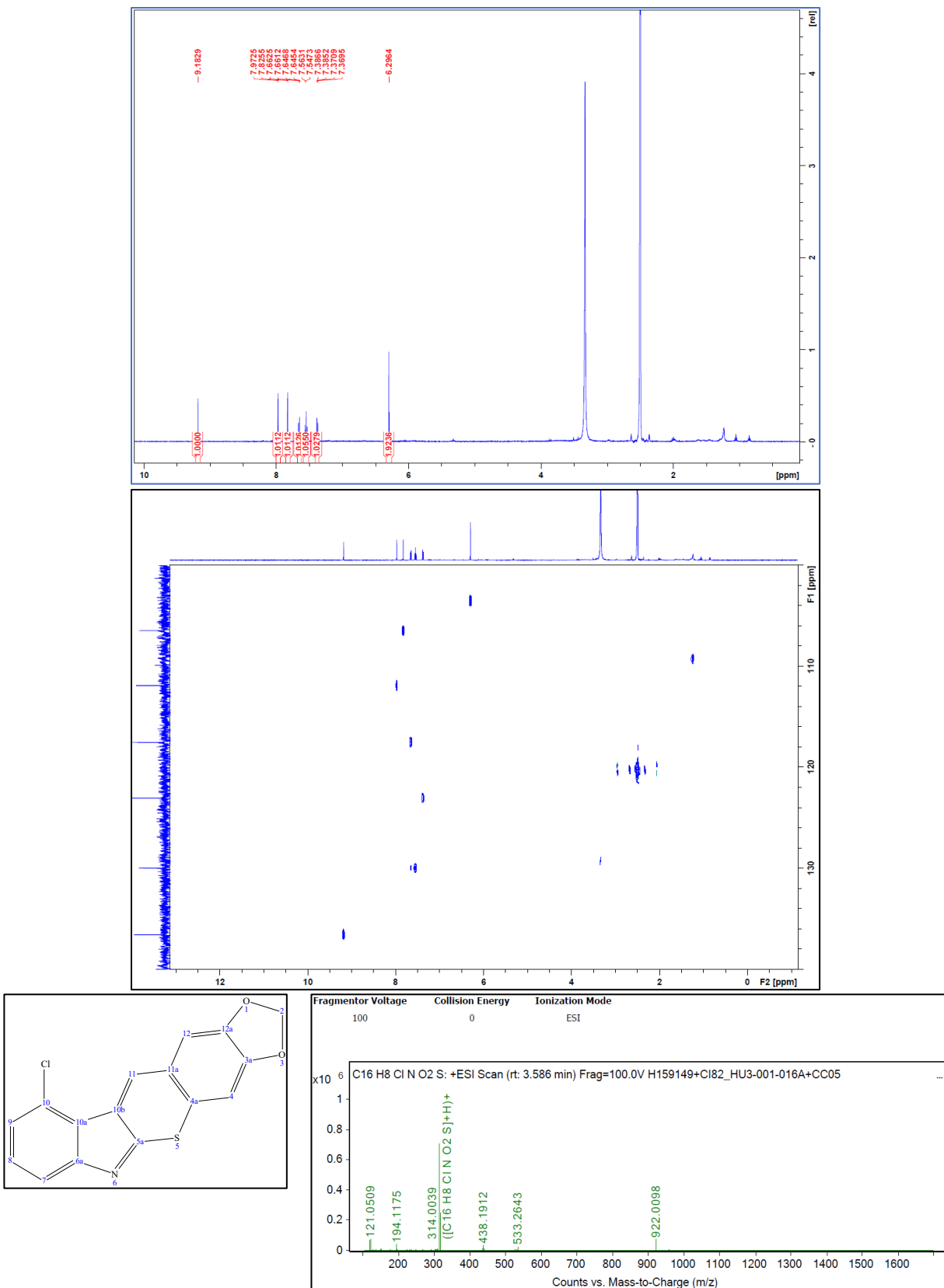


Figure S28. ¹H-NMR and HSQC and HRMS spectrum of **9h** 10-chloro-2H-[1,3]dioxolo[6,7][1]benzothiopyrano[2,3-b]indole

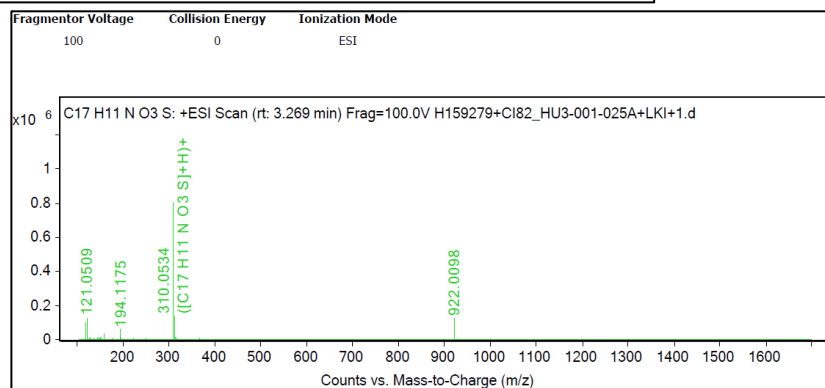
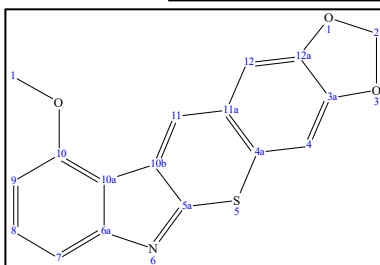
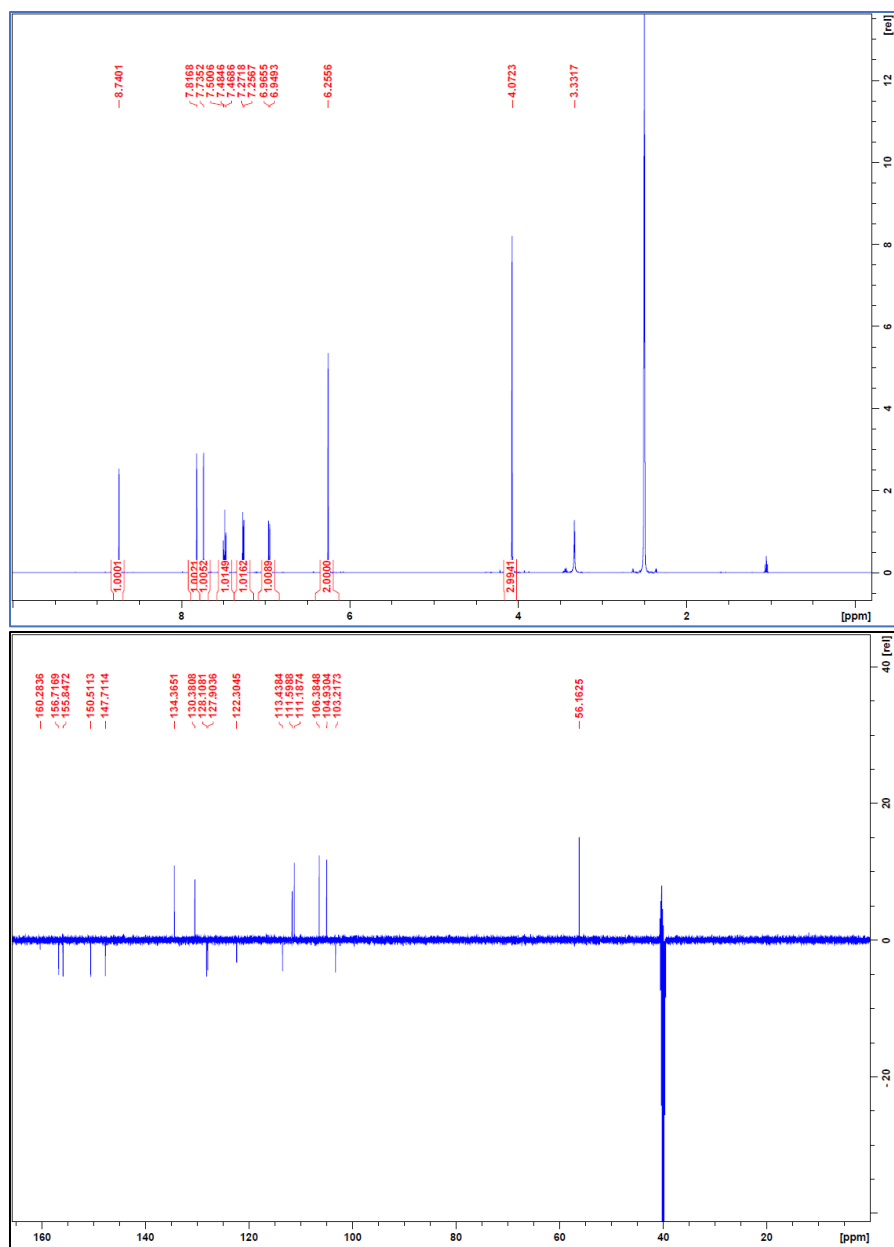


Figure S29. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **9i** 10-methoxy-2*H*-[1,3]dioxolo[6,7][1]benzothiopyrano[2,3-*b*]indole

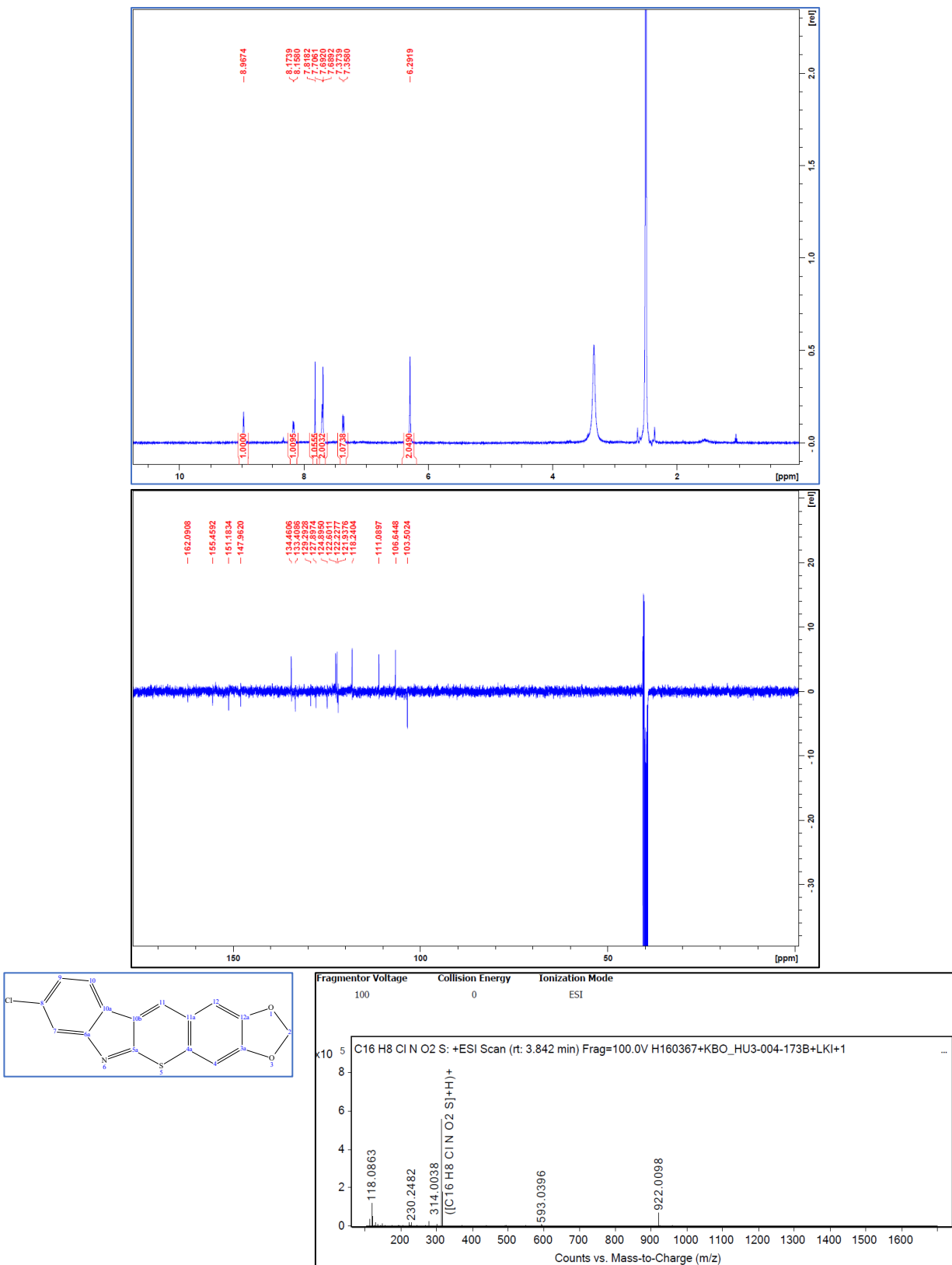


Figure S30. $^1\text{H-NMR}$ and $^{13}\text{C-NMR}$ and HRMS spectrum of **9j** 8-chloro-2H-[1,3]dioxolo[6,7][1]benzothiopyrano[2,3-b]indole

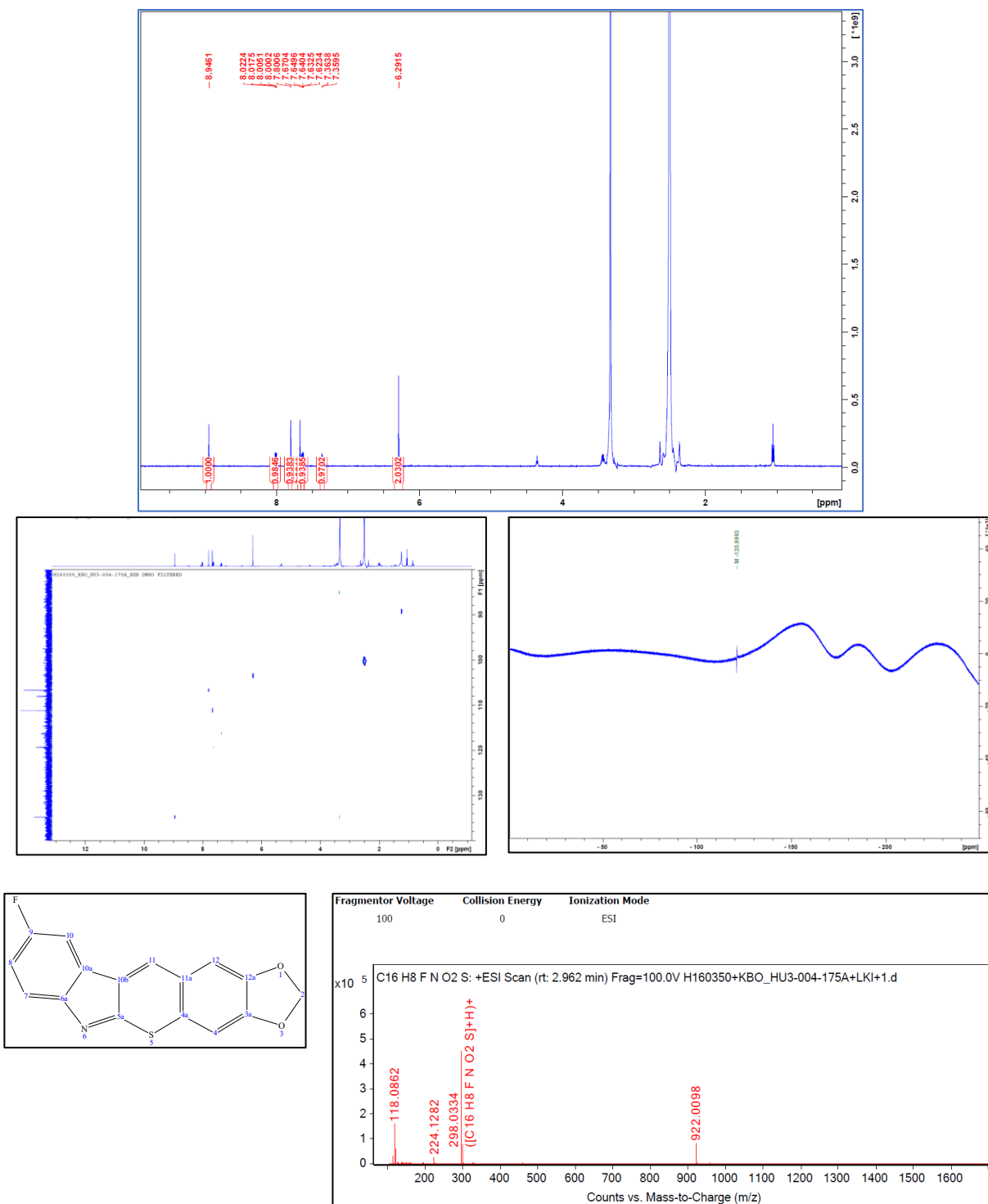


Figure S31. ^1H -NMR, ^{19}F -NMR and HSQC and HRMS spectrum of **9k** 9-fluoro-2H-[1,3]dioxolo[6,7][1]benzothiopyrano[2,3-b]indole

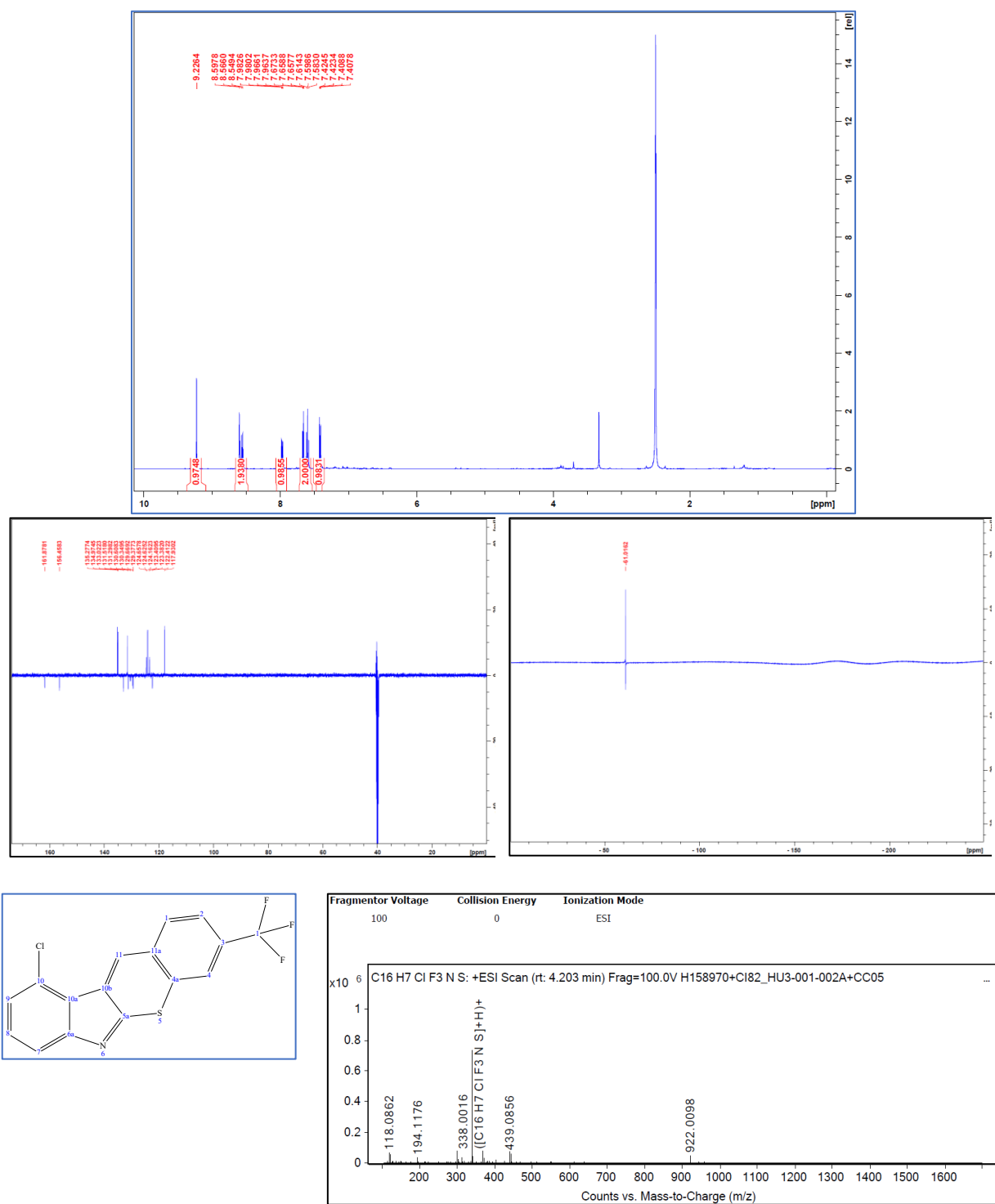


Figure S32. ¹H-NMR, ¹⁹F-NMR and ¹³C-NMR and HRMS spectrum of **91** 10-chloro-3-(trifluoromethyl)[1]benzothiopyrano[2,3-*b*]indole

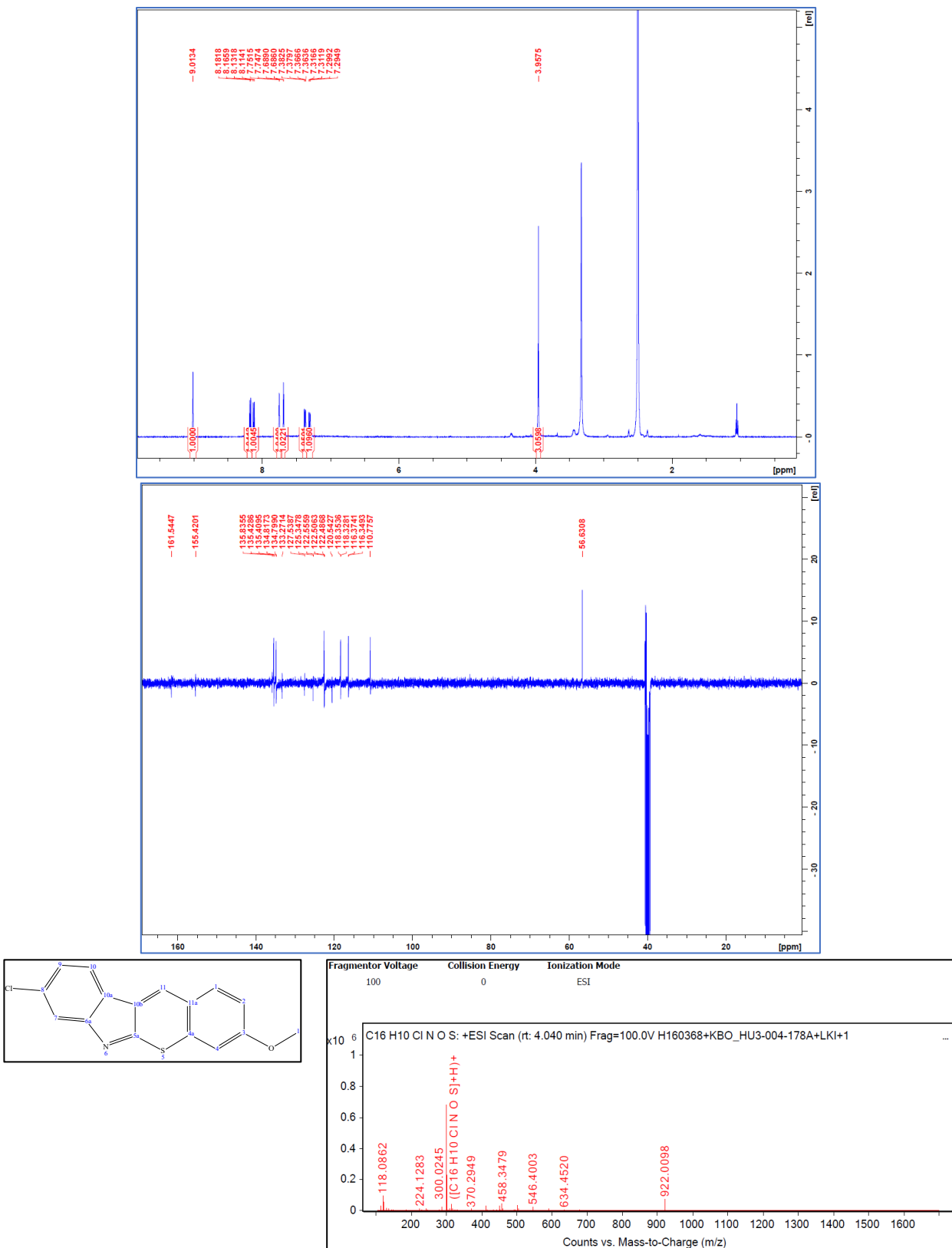


Figure S33. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **9m** 8-chloro-3-methoxy[1]benzothiopyrano[2,3-b]indole

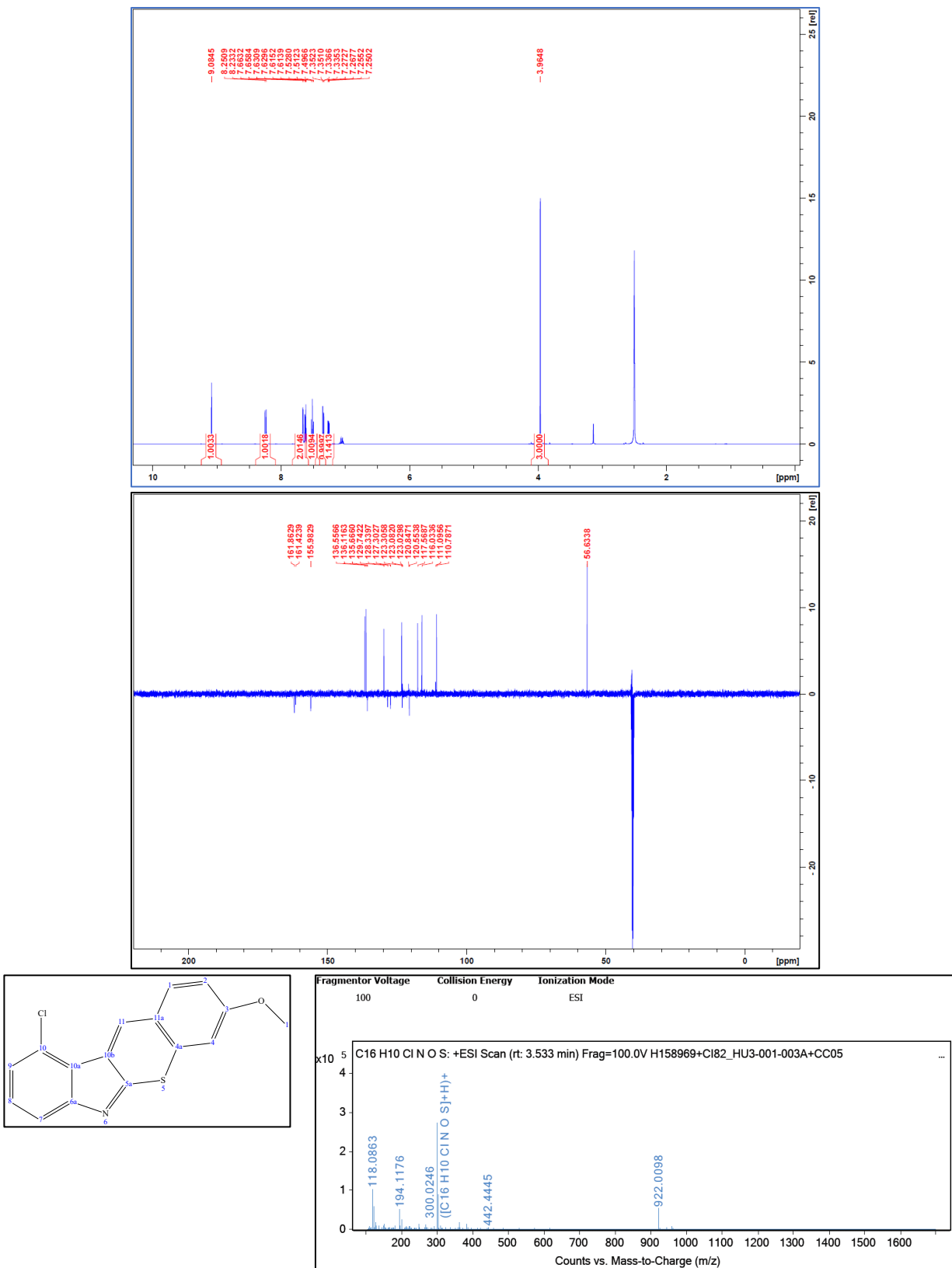


Figure S35. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **9o** 10-chloro-3-methoxy[1]benzothiopyrano[2,3-b]indole

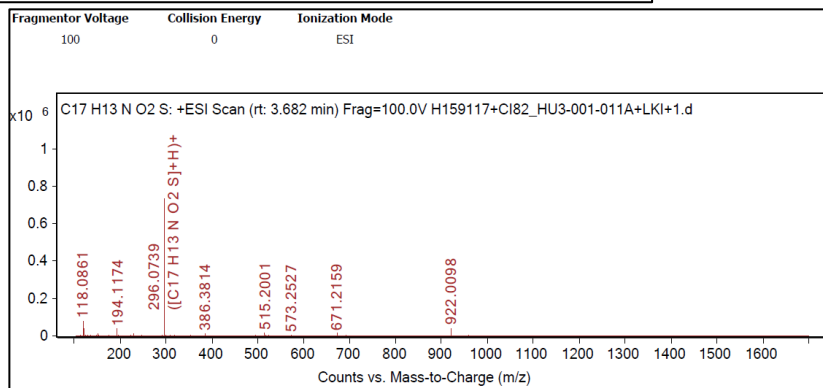
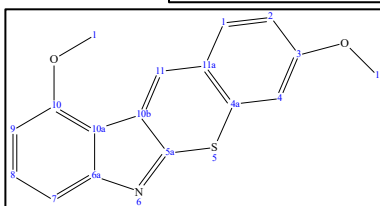
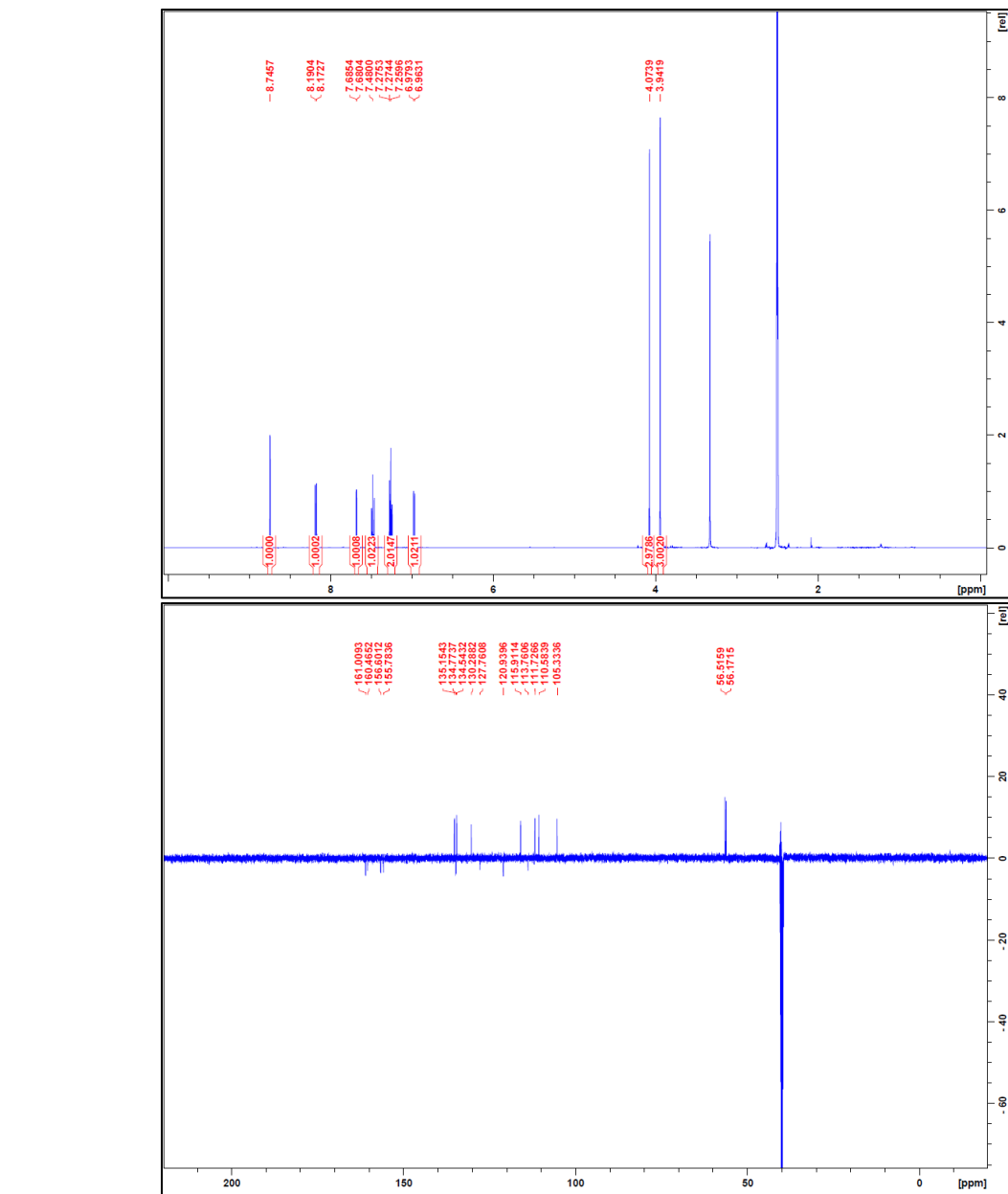


Figure S36. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **9p** 3,10-dimethoxy[1]benzothiopyrano[2,3-*b*]indole

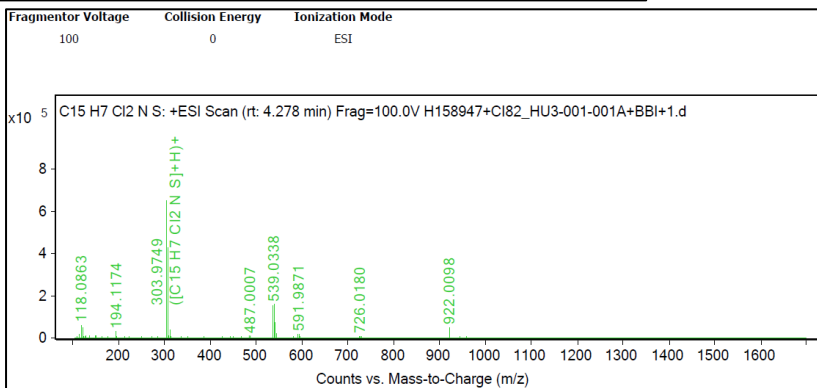
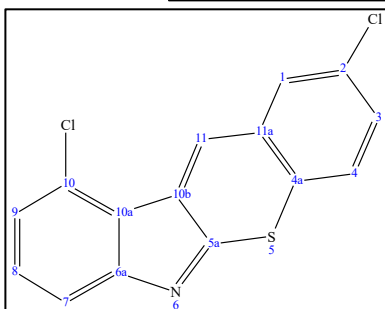
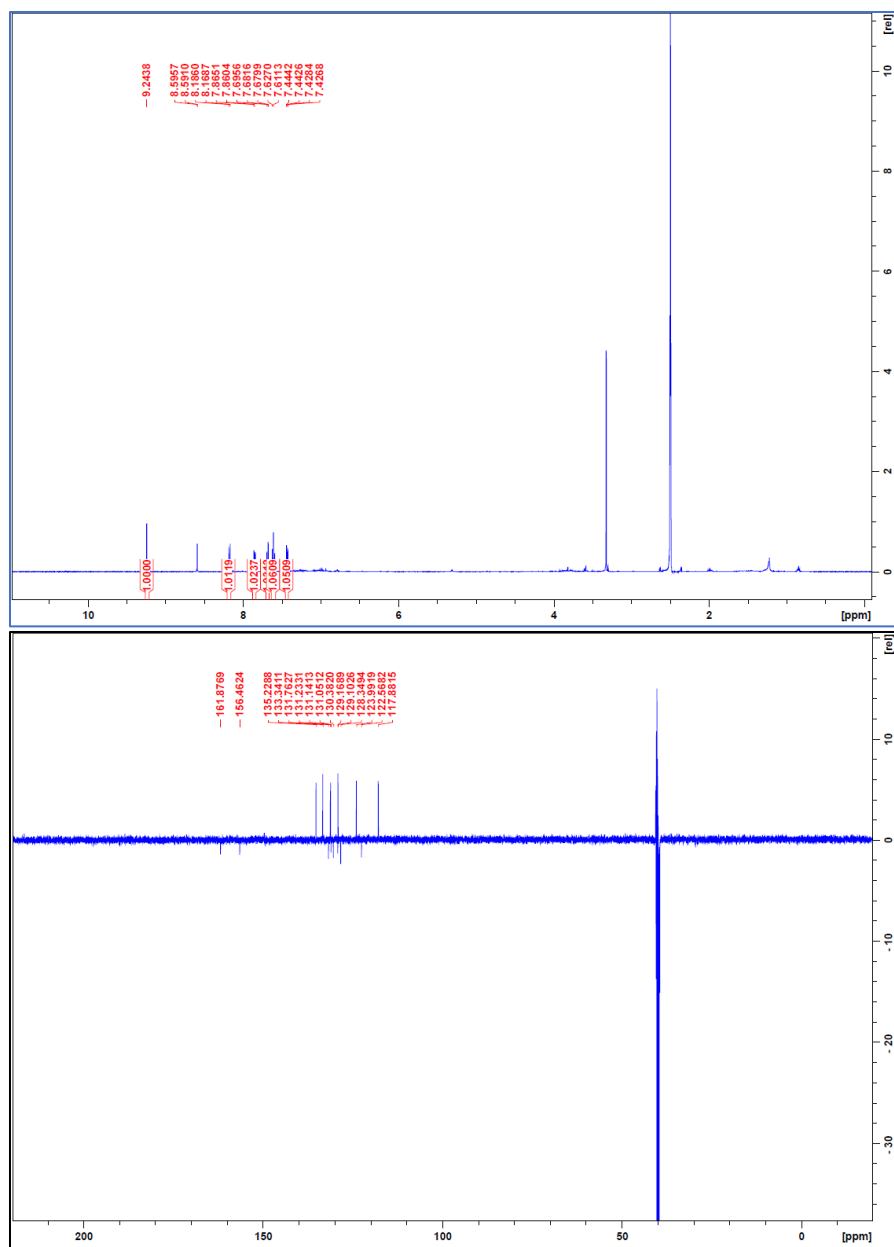


Figure S37. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **9q** 2,10-dichloro[1]benzothiopyrano[2,3-b]indole

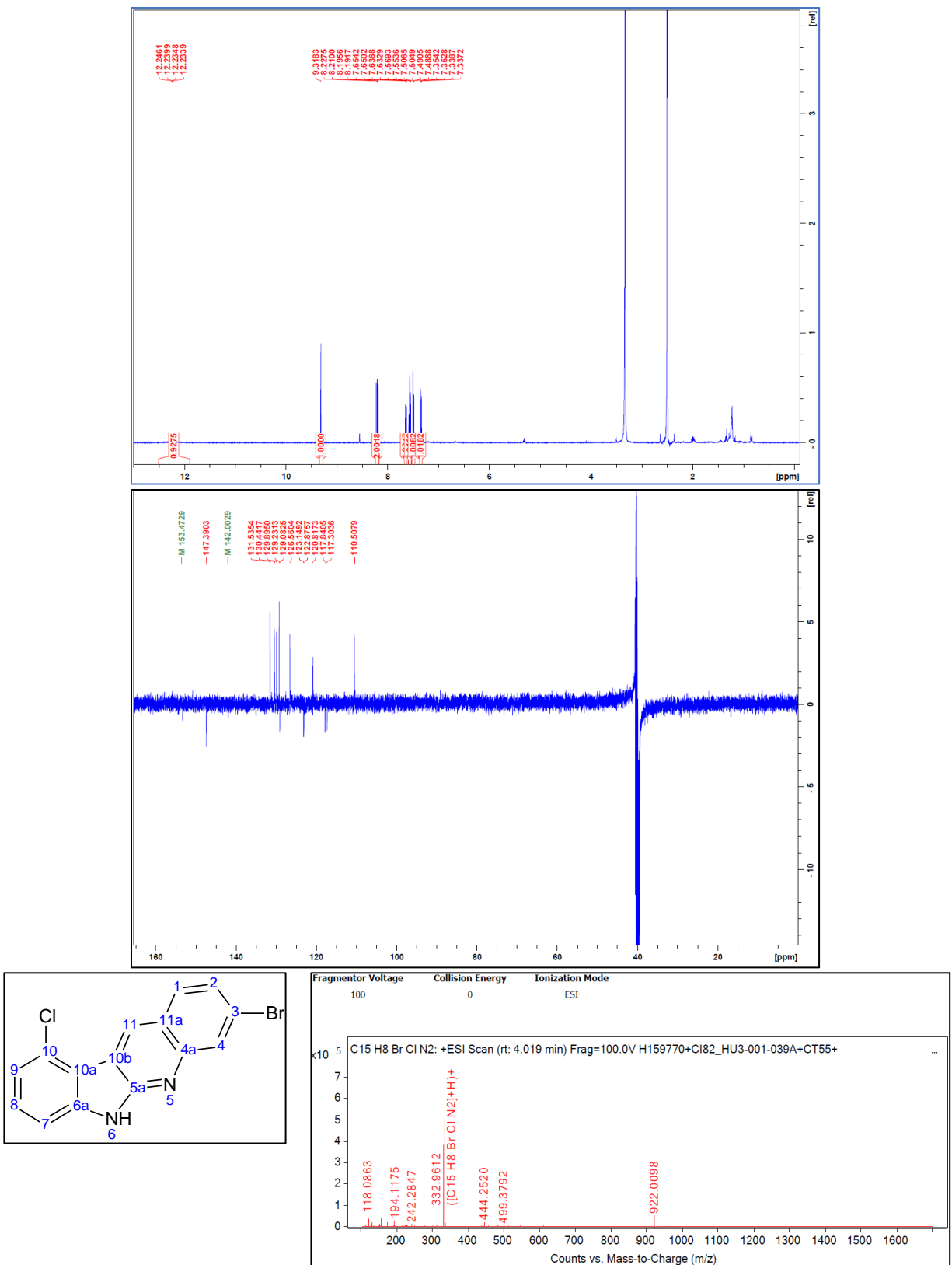


Figure S38. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **10b** 3-bromo-10-chloro-6H-indolo[2,3-b]quinoline

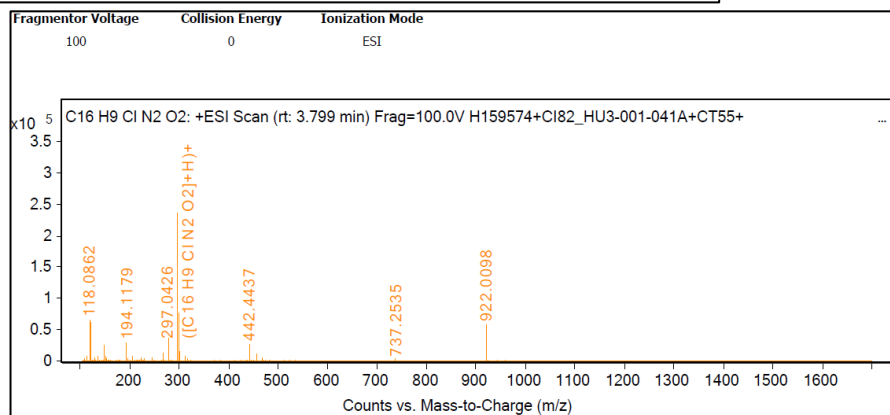
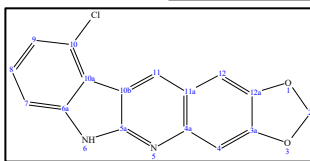
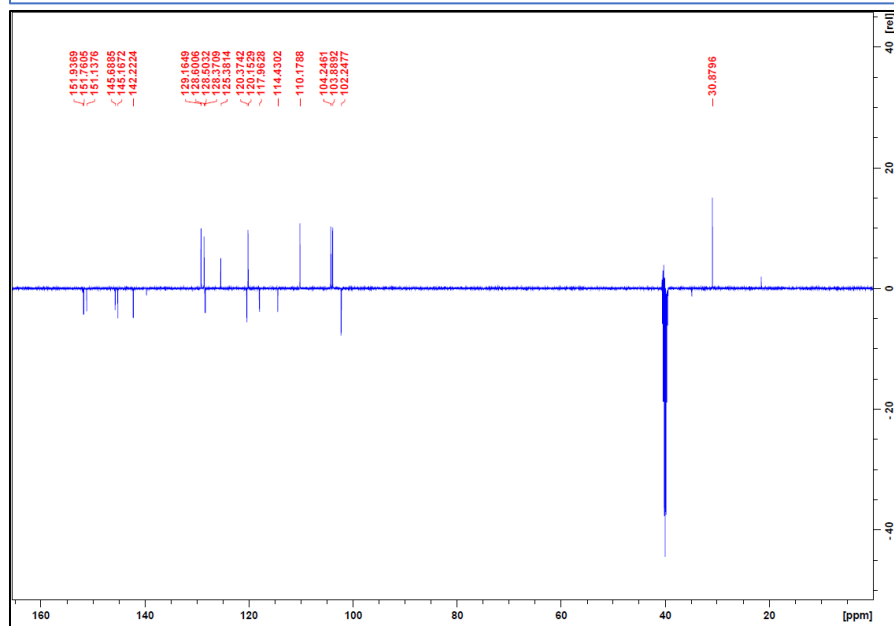
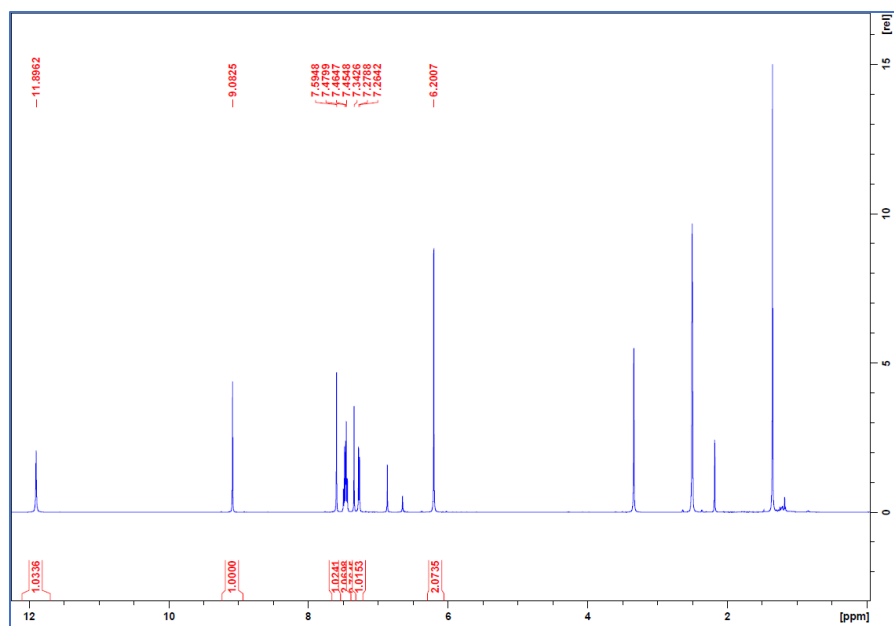


Figure S39. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **10c** 10-chloro-2H,6H-[1,3]dioxolo[4,5-g]indolo[2,3-b]quinoline

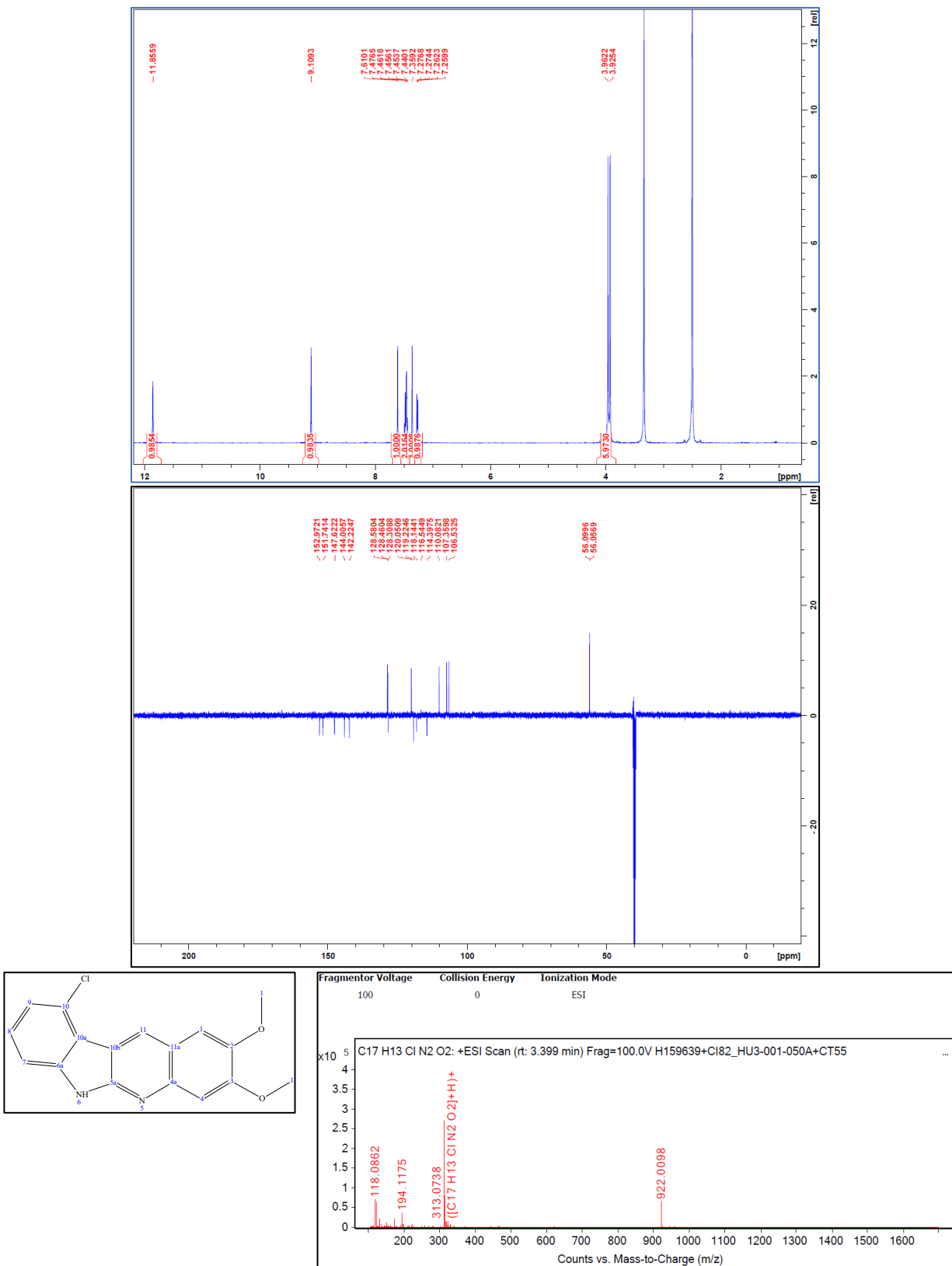


Figure S40. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **10d** 10-chloro-2,3-dimethoxy-6H-indolo[2,3-b]quinoline

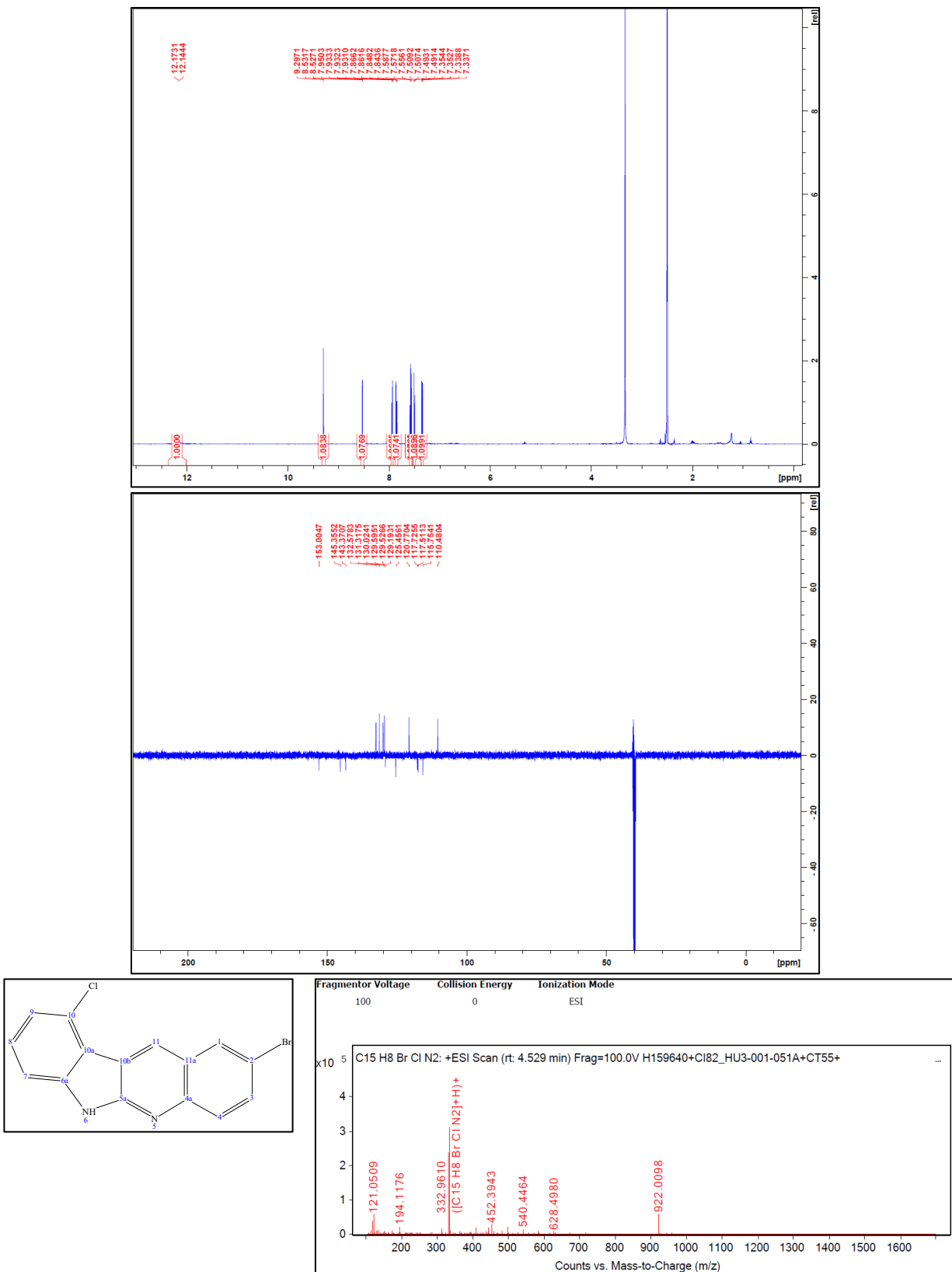


Figure S41. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **10e** 2-Bromo-10-chloro-6H-indolo[2,3-b]quinoline

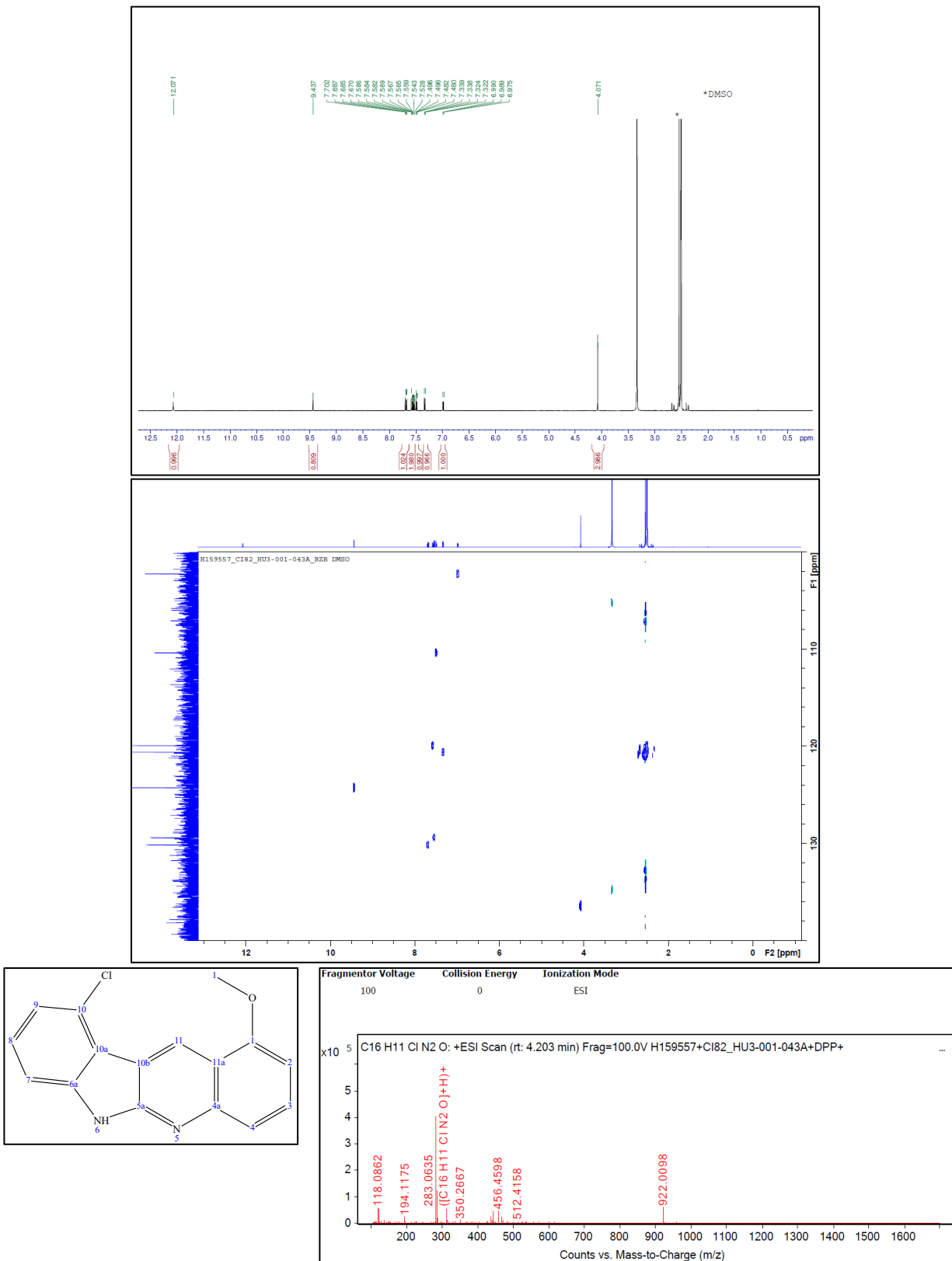


Figure S42. ¹H-NMR and HSQC and HRMS spectrum of **10f** 10-chloro-1-methoxy-6H-indolo[2,3-b]quinoline

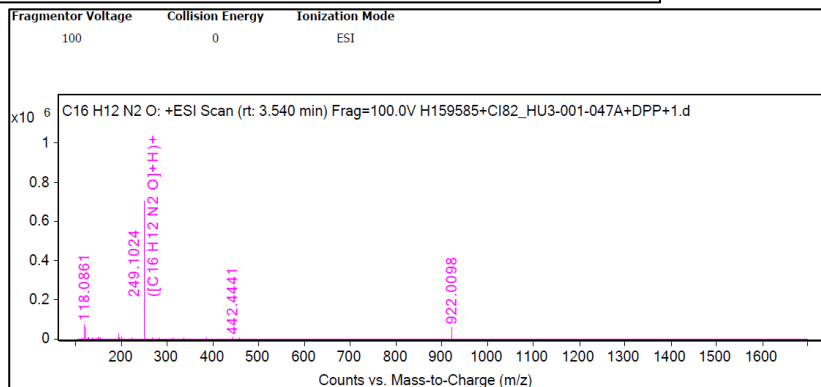
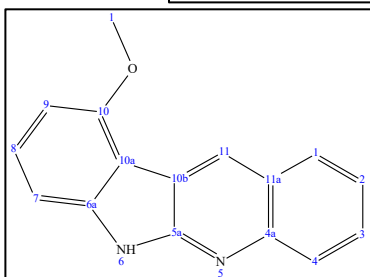
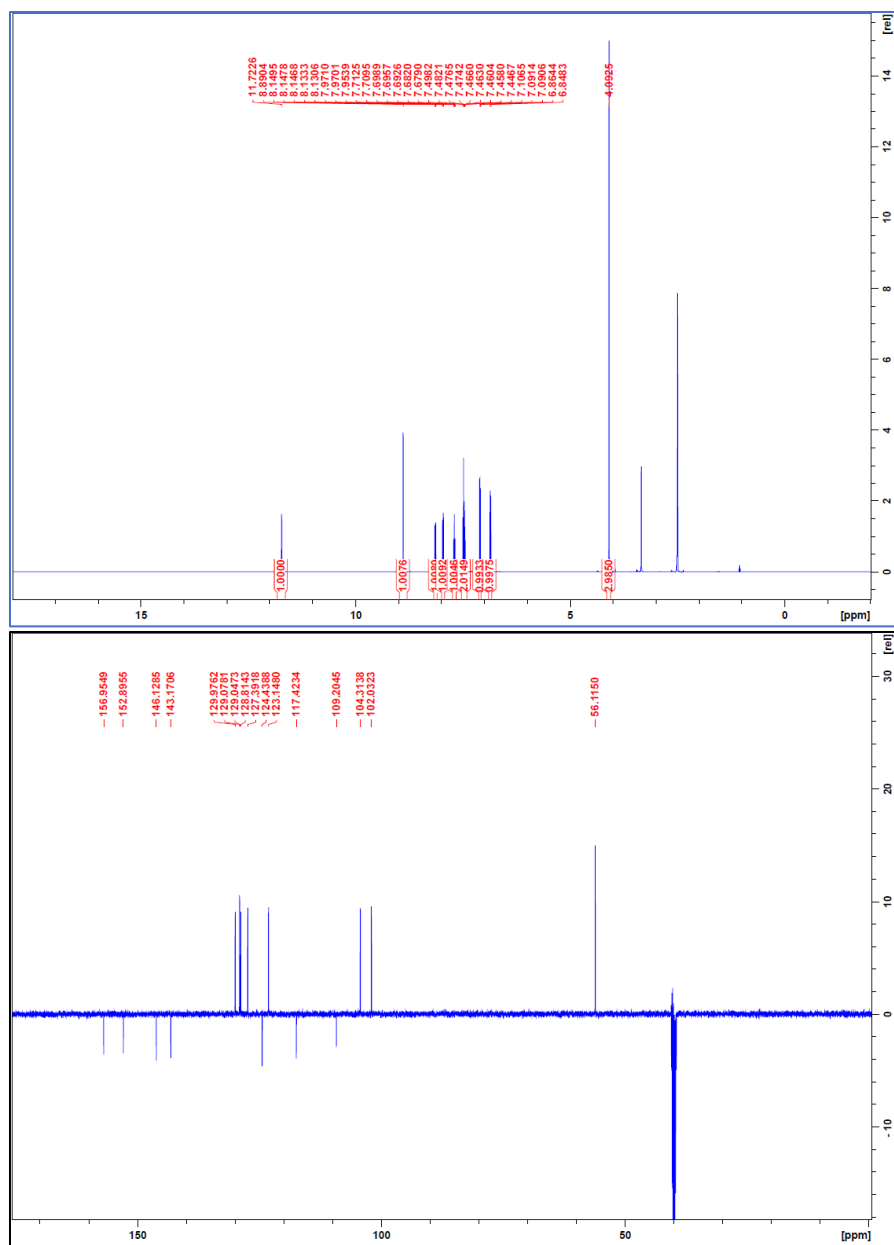


Figure S43. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **10g** 10-methoxy-6H-indolo[2,3-b]quinoline

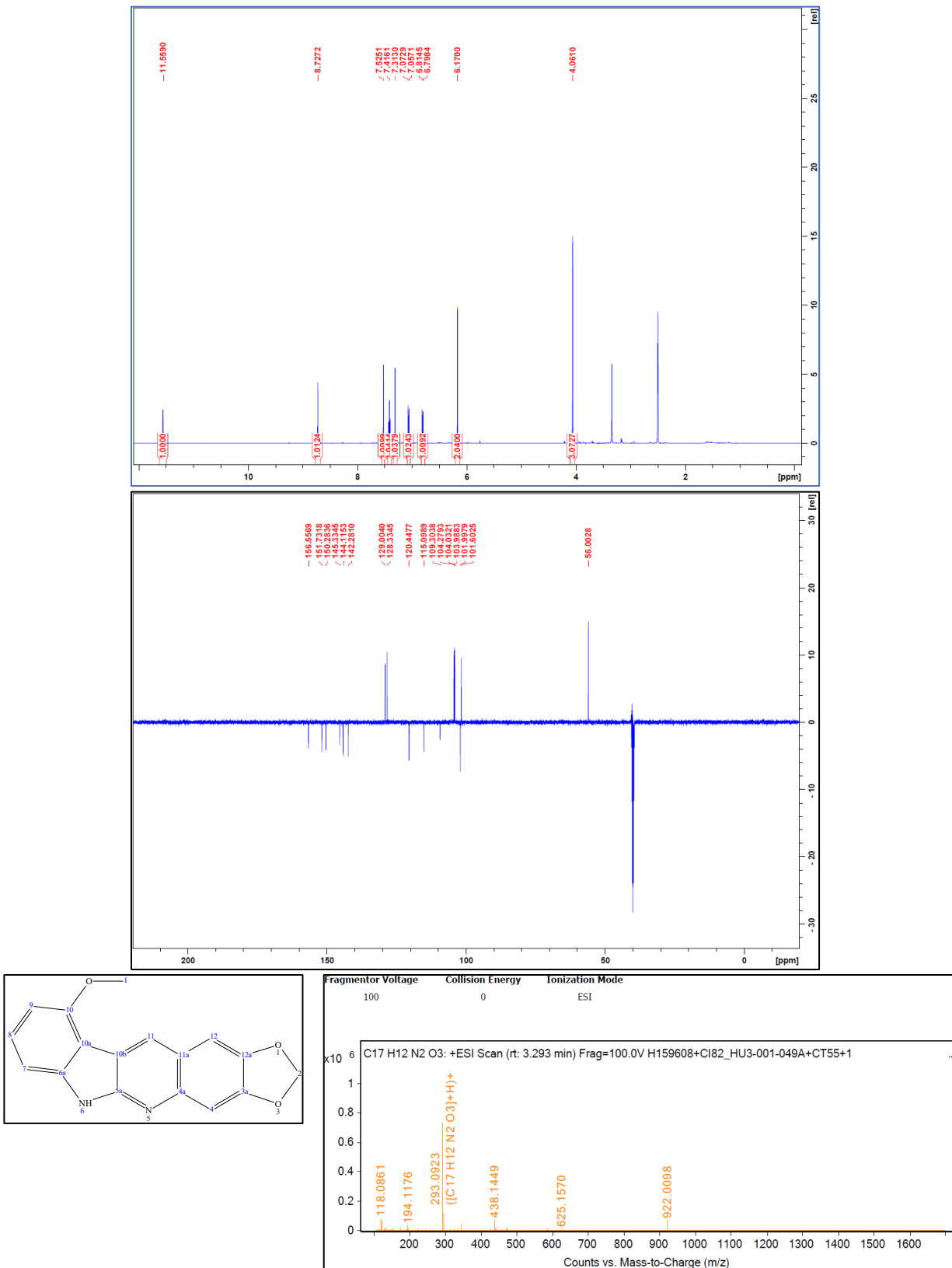


Figure S44. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **10h** 10-methoxy-2H,6H-[1,3]dioxolo[4,5-g]indolo[2,3-b]quinoline

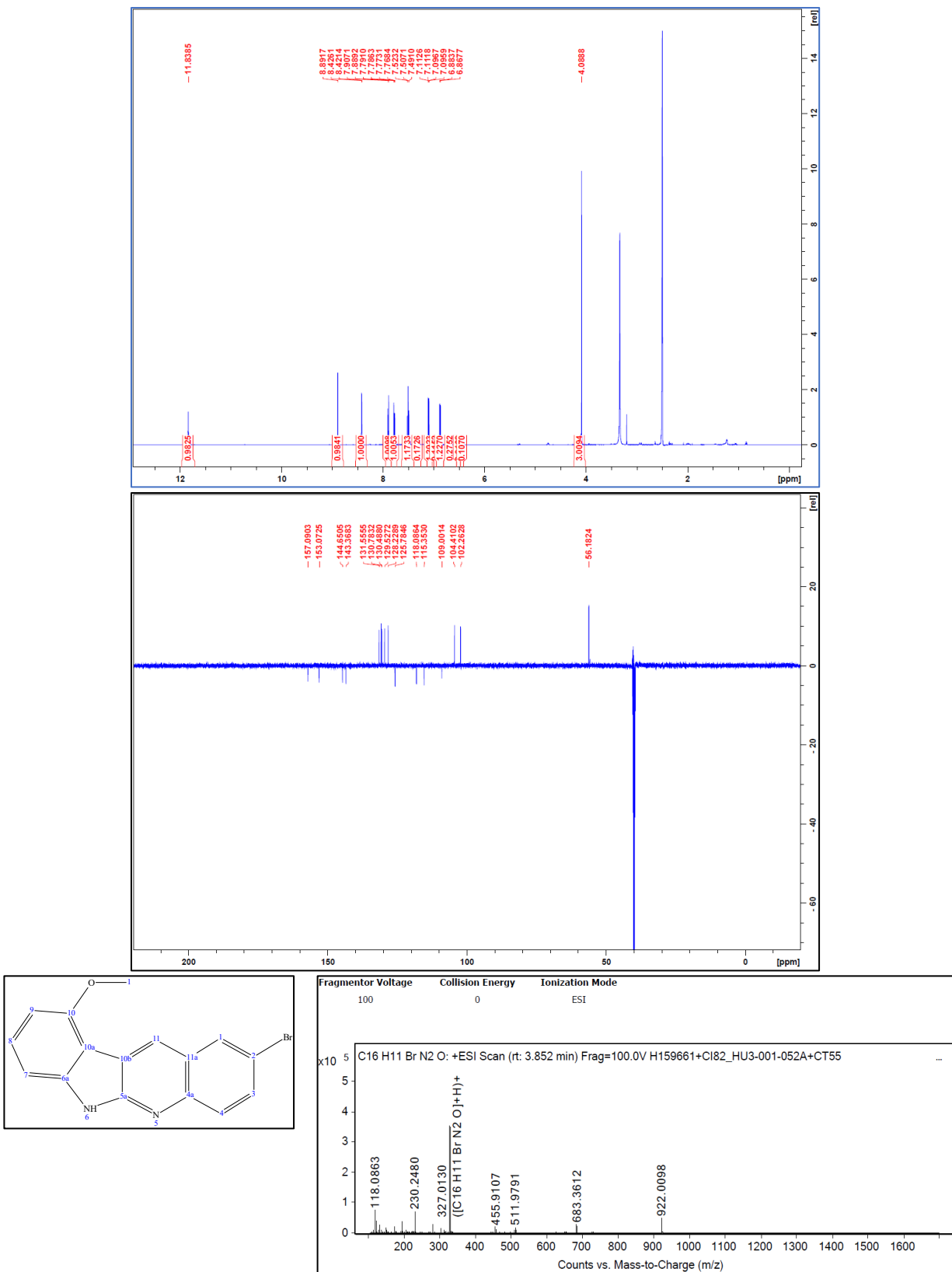


Figure S45. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **10i** 2-bromo-10-methoxy-6H-indolo[2,3-b]quinoline

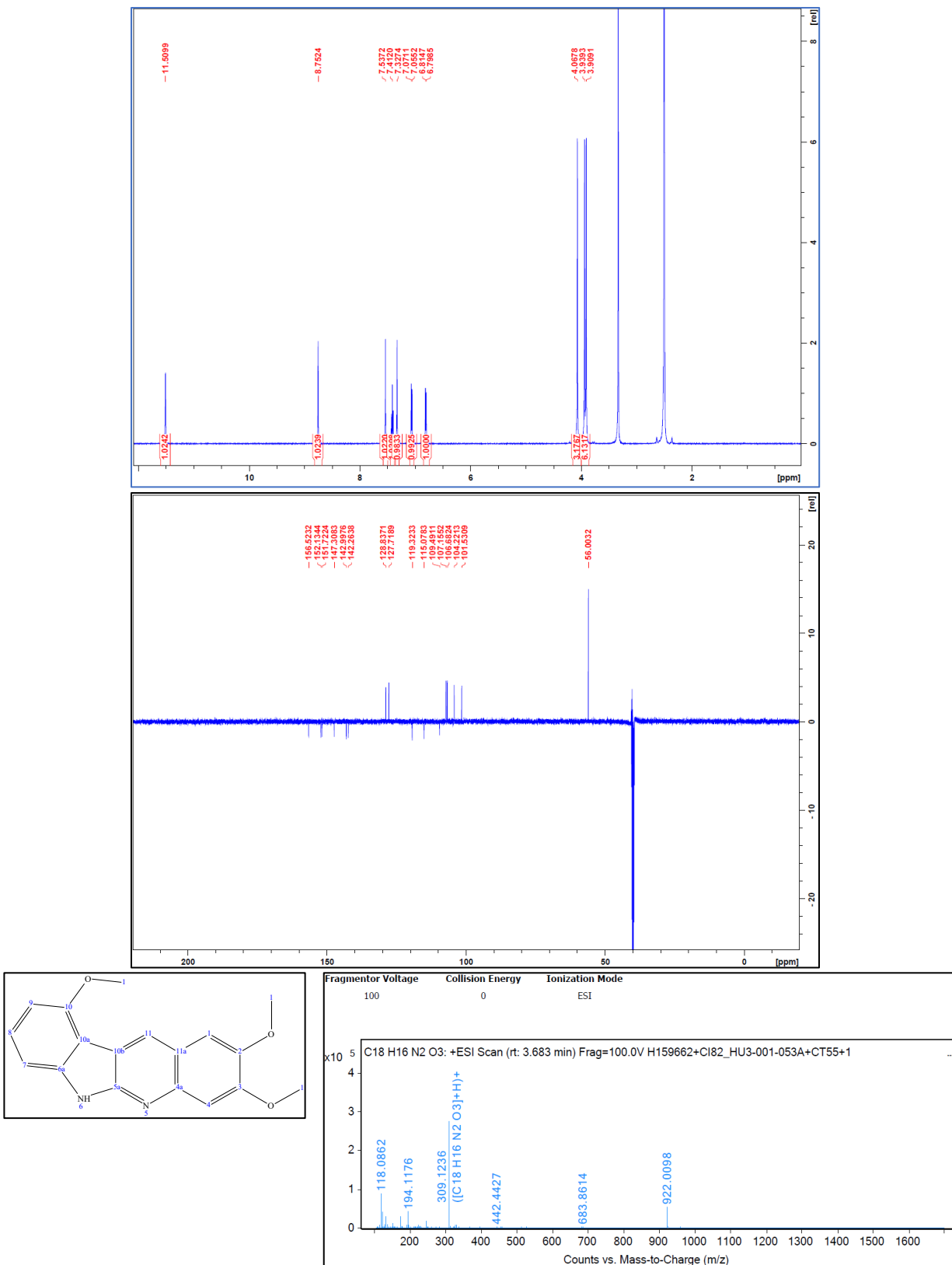


Figure S46. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **10j** 2,3,10-trimethoxy-6*H*-indolo[2,3-*b*]quinoline

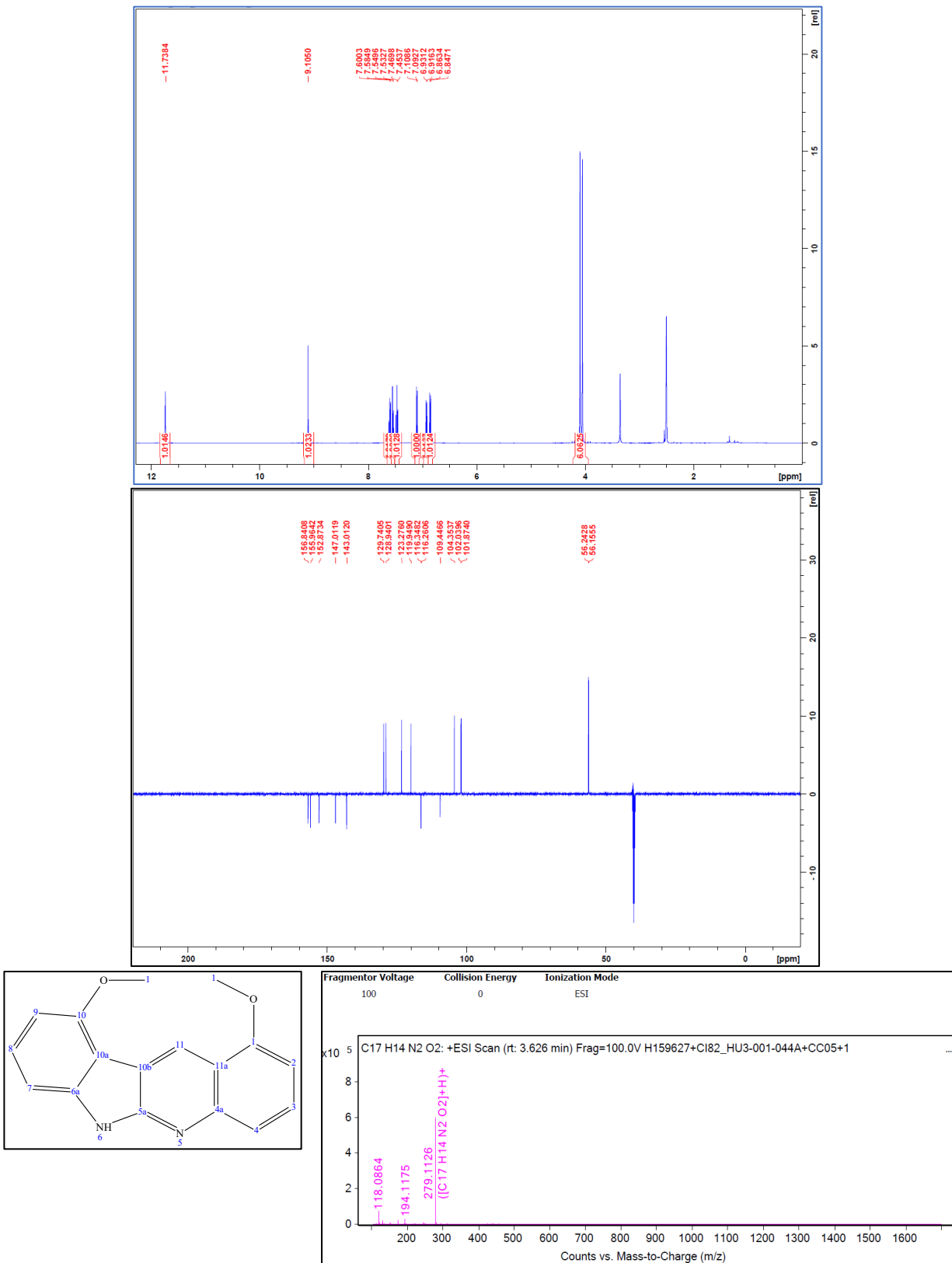


Figure S47. ¹H-NMR and ¹³C-NMR and HRMS spectrum of **10k** 1,10-dimethoxy-6H-indolo[2,3-b]quinoline

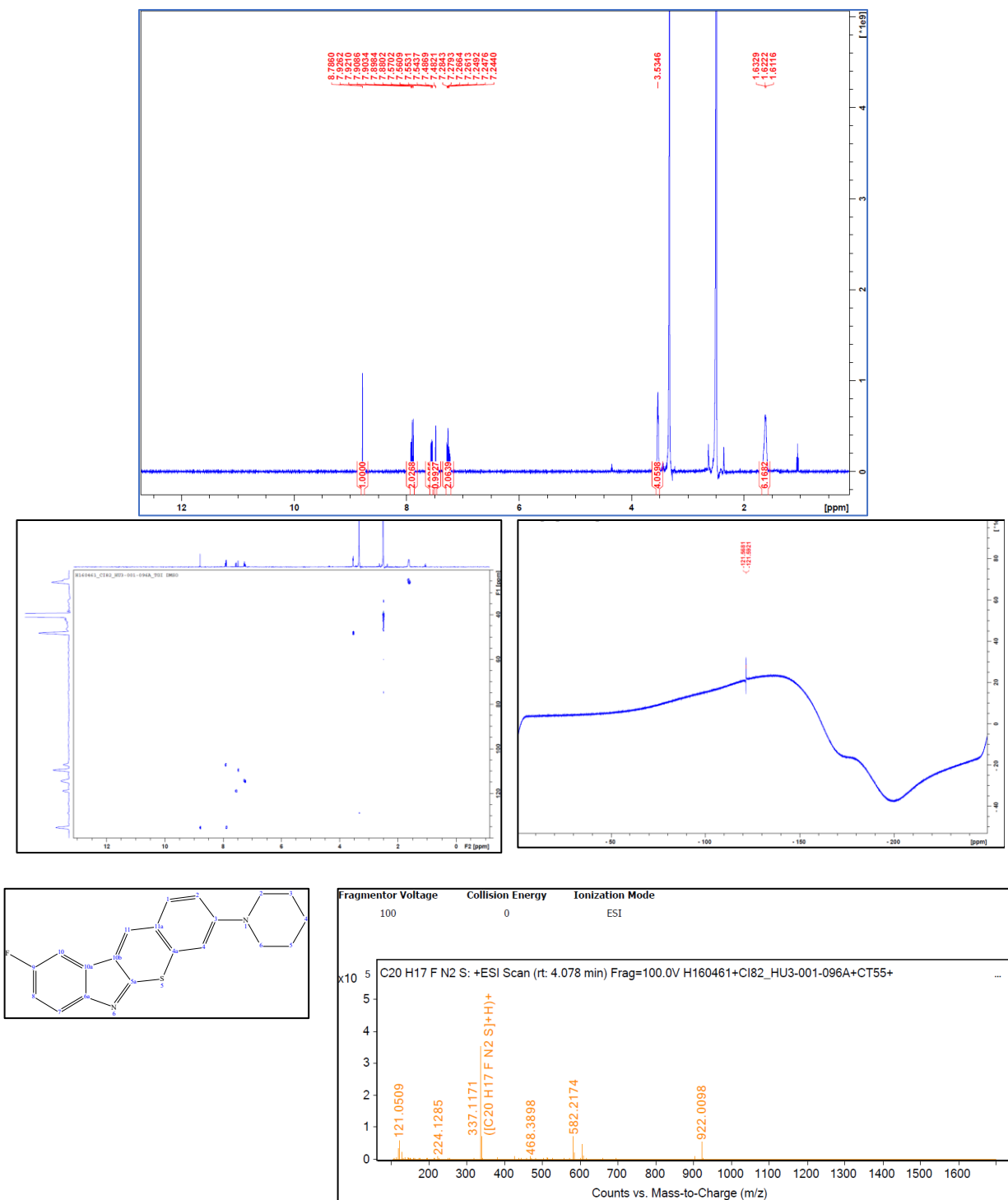


Figure S48. ¹H-NMR, ¹⁹F-NMR and HSQC and HRMS spectrum of **11a** 9-fluoro-3-(piperidin-1-yl)[1]benzothiopyrano[2,3-*b*]indole

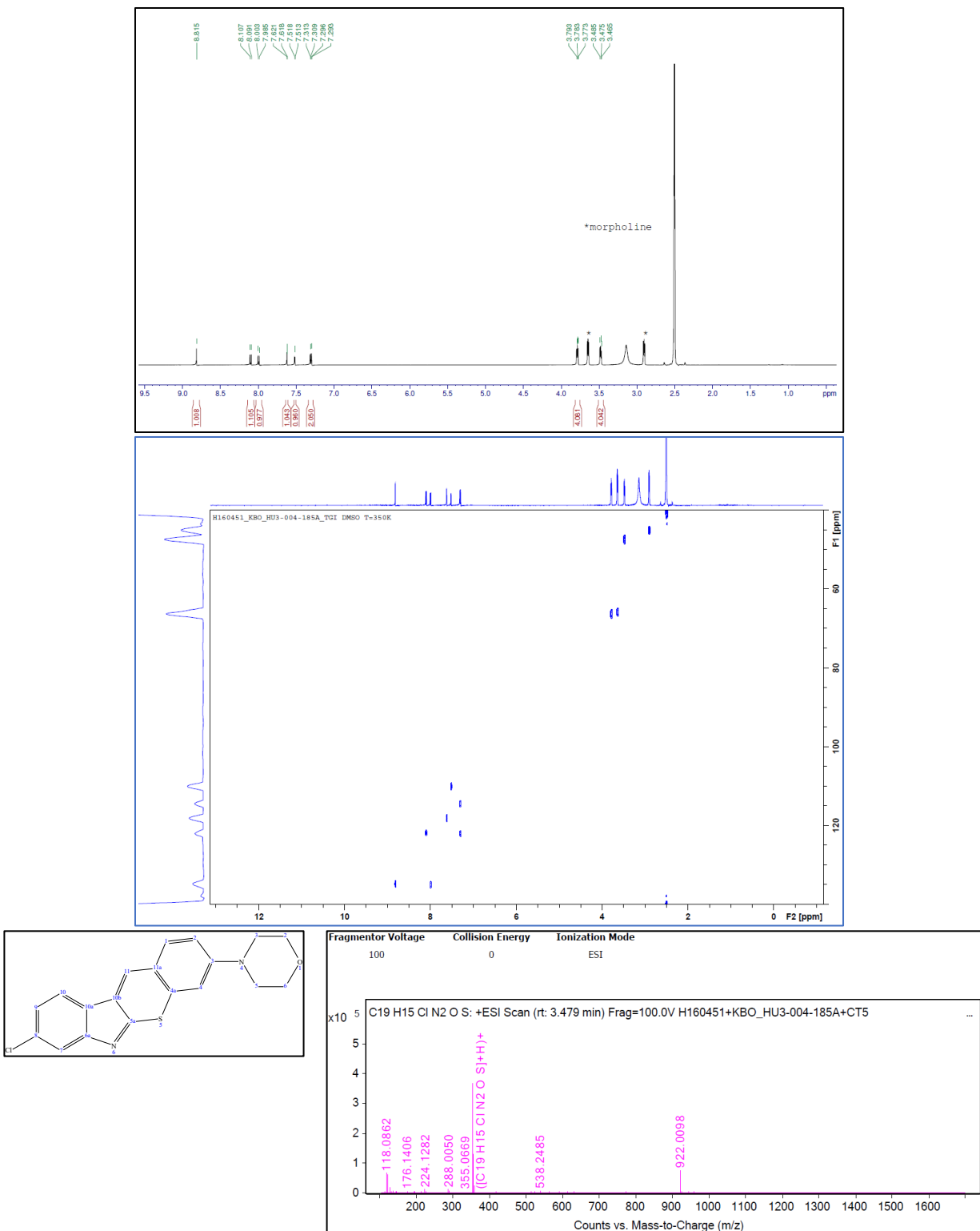


Figure S50. ¹H-NMR and HSQC and HRMS spectrum of **11c** 8-chloro-3-(morpholin-4-yl)[1]benzothiopyrano[2,3-*b*]indole

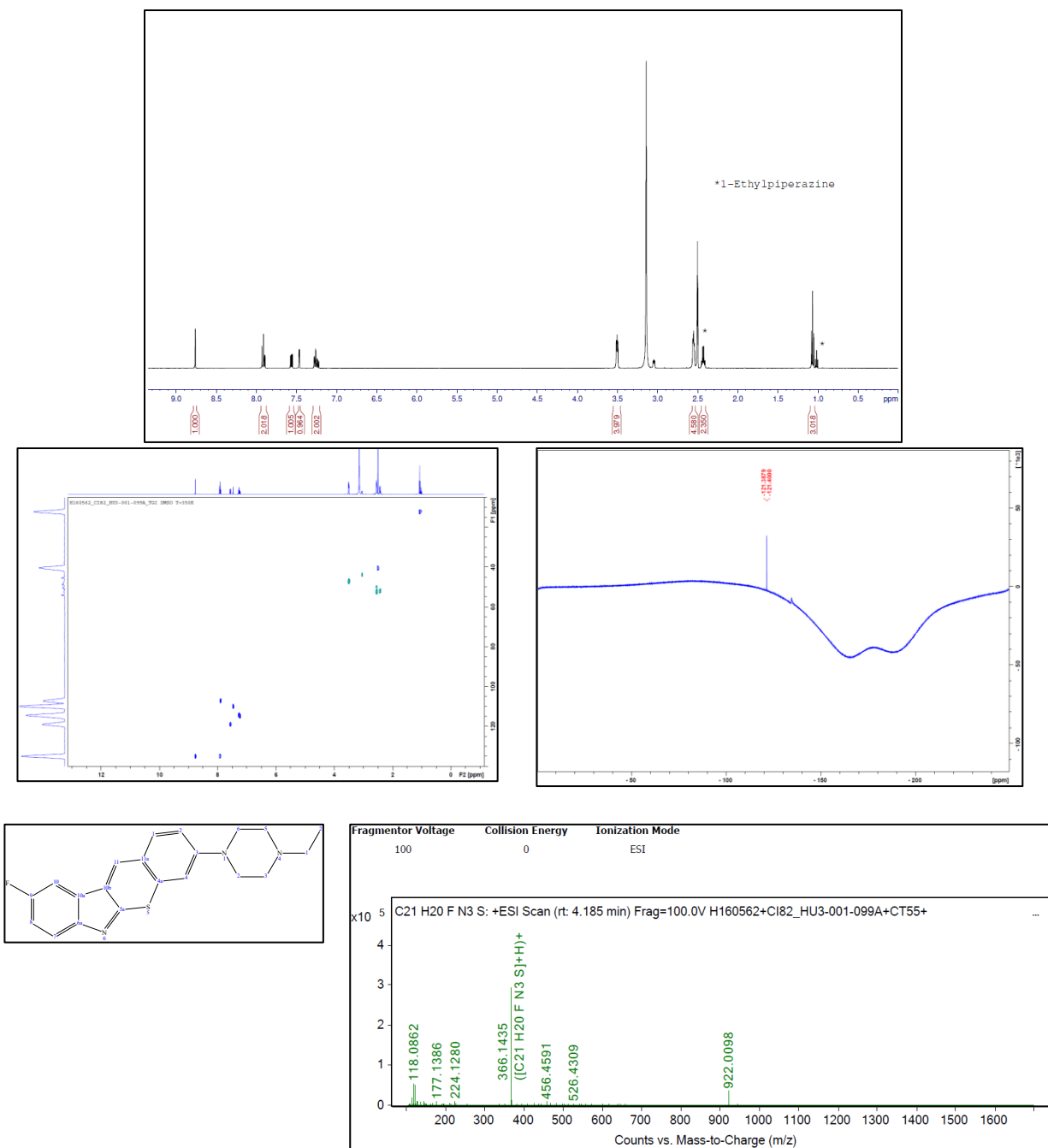


Figure S51. ^1H -NMR, ^{19}F -NMR and HSQC and HRMS spectrum of **11d** 3-(4-ethylpiperazin-1-yl)-9-fluoro[1]benzothiopyrano[2,3-*b*]indole

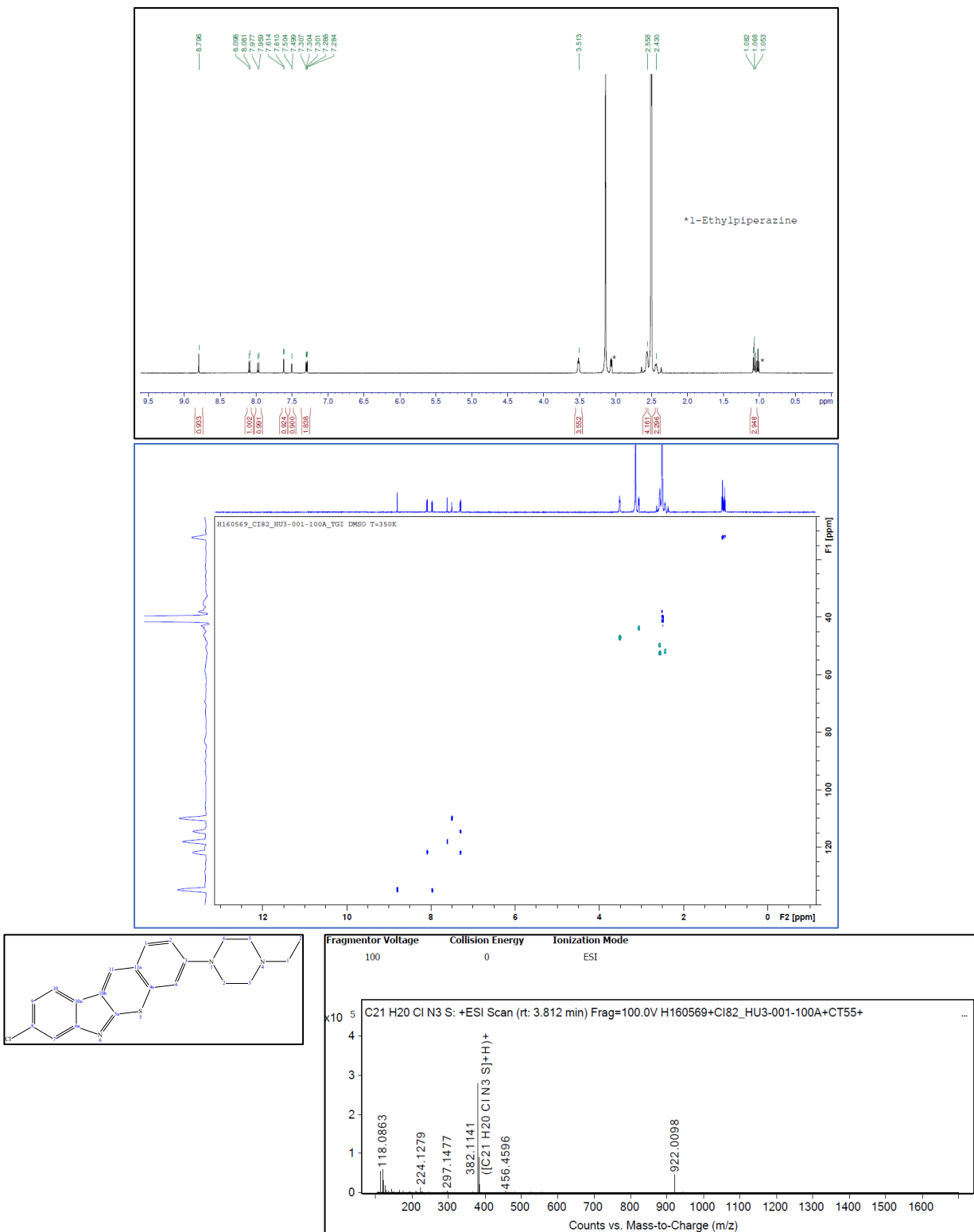


Figure S52. ¹H-NMR and HSQC and HRMS spectrum of **11e** 8-chloro-3-(4-ethylpiperazin-1-yl)[1]benzothiopyrano[2,3-*b*]indole