

# Novel Crown Ether Chalcone-Based: Synthesis, Characterization, Antioxidant, Biological evaluations and Wastewater Treatment

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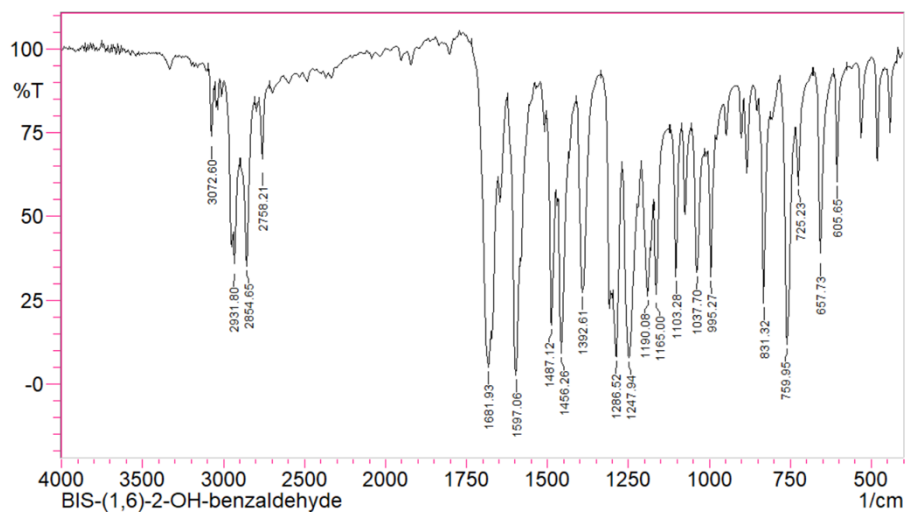


Fig.1. FT-IR spectrum of compound (1a)

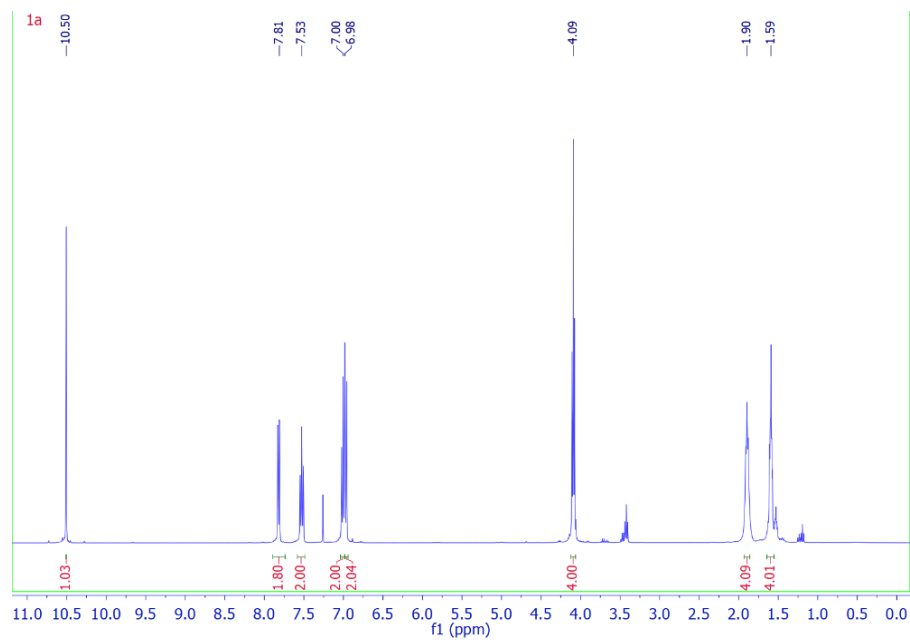


Fig.2. <sup>1</sup>H NMR spectrum of compound (1a)

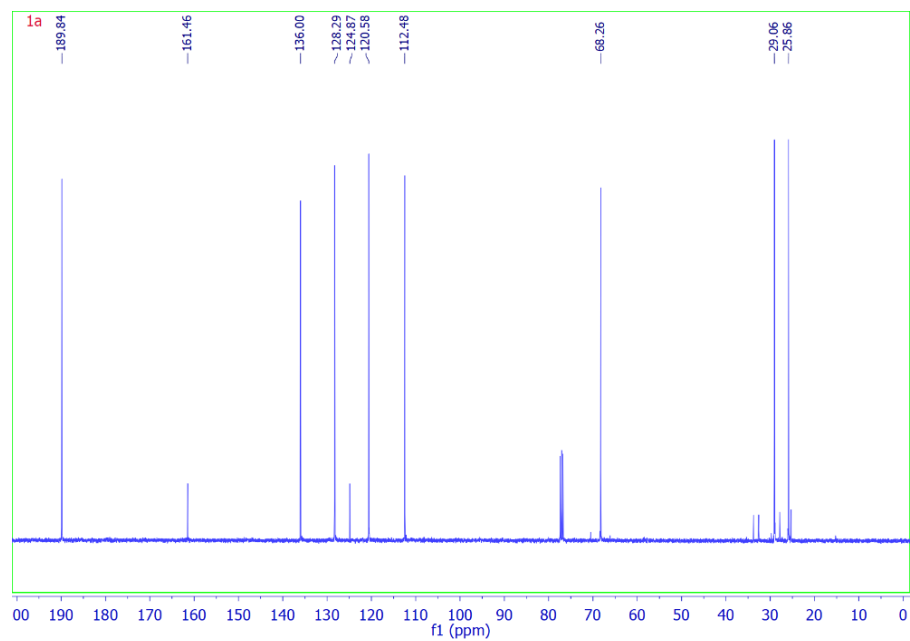


Fig.3. <sup>13</sup>C NMR spectrum of compound (1a)

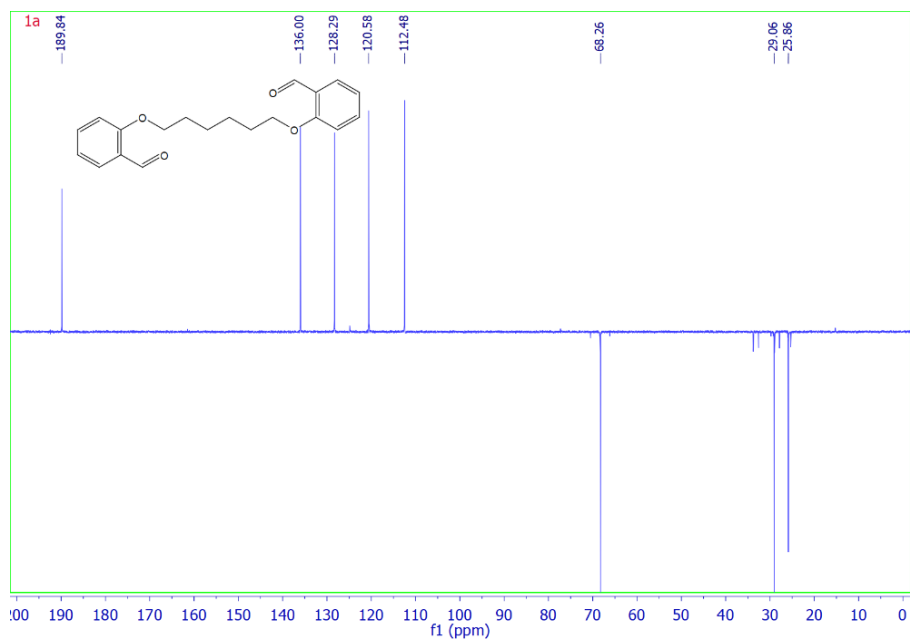


Fig.4. <sup>13</sup>C DEPT spectrum of compound (1a)

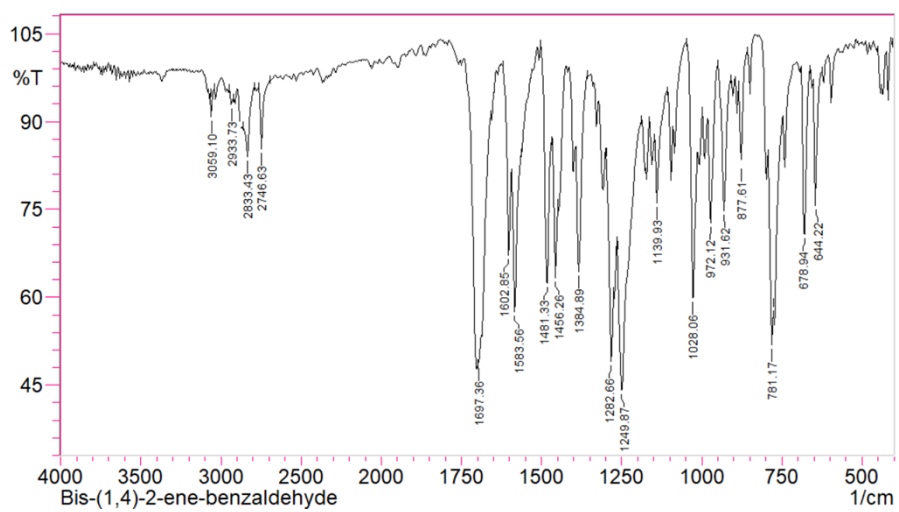


Fig.5. FT-IR spectrum of compound (1b)

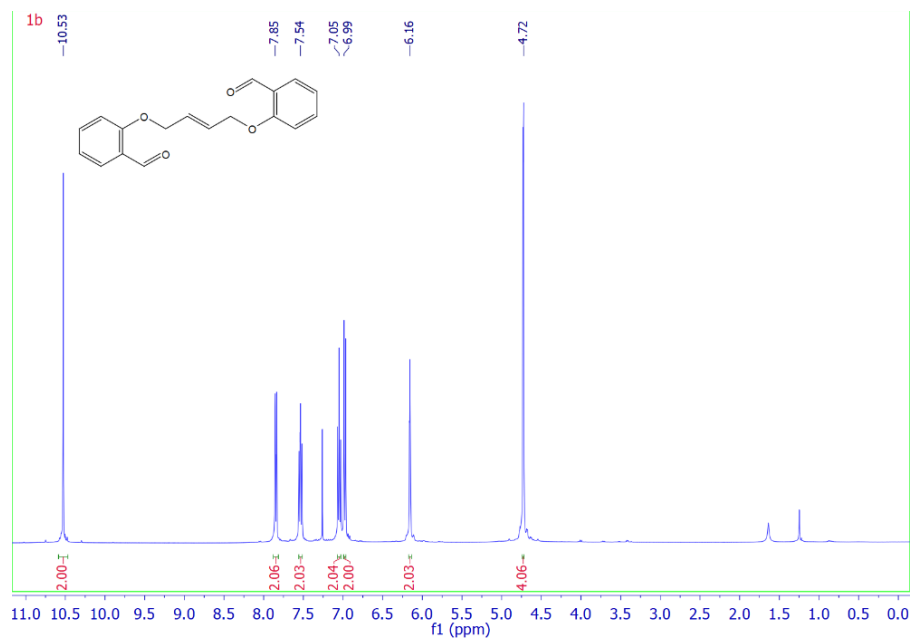


Fig.6. <sup>1</sup>H NMR spectrum of compound (1b)

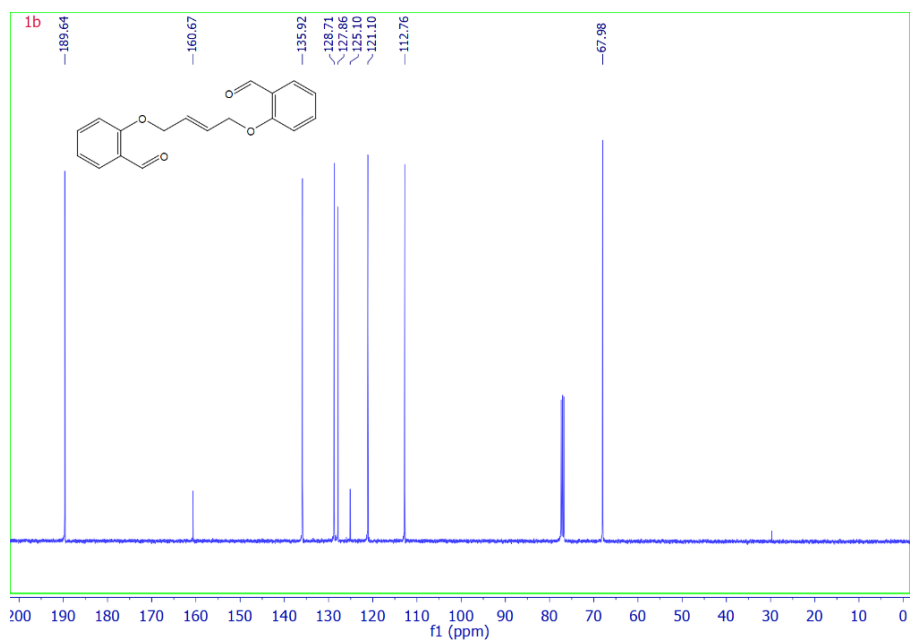


Fig.7. <sup>13</sup>C NMR spectrum of compound (1b)

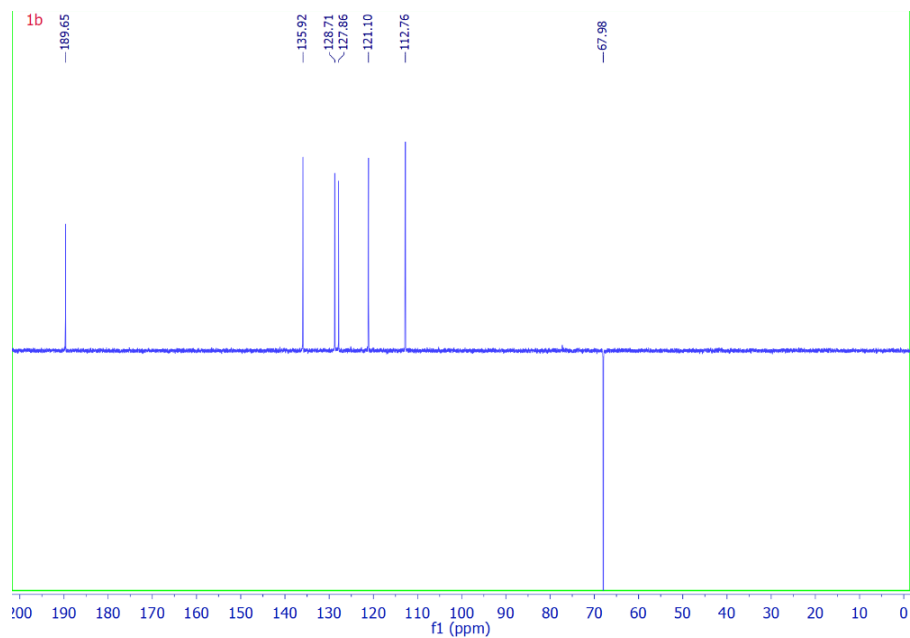


Fig.8.  $^{13}\text{C}$  DEPT spectrum of compound **(1b)**

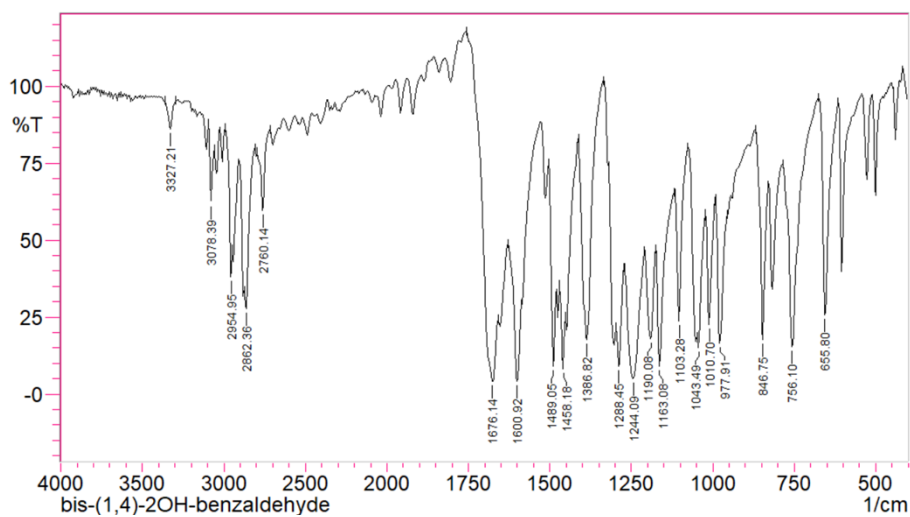


Fig.9. FT-IR spectrum of compound **(1c)**

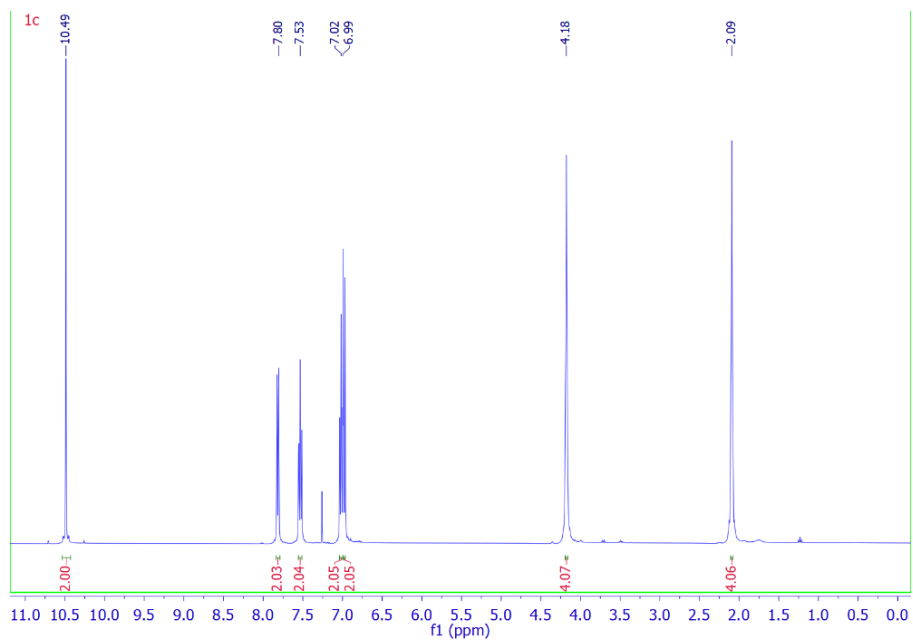


Fig.10. <sup>1</sup>H NMR spectrum of compound (1c)

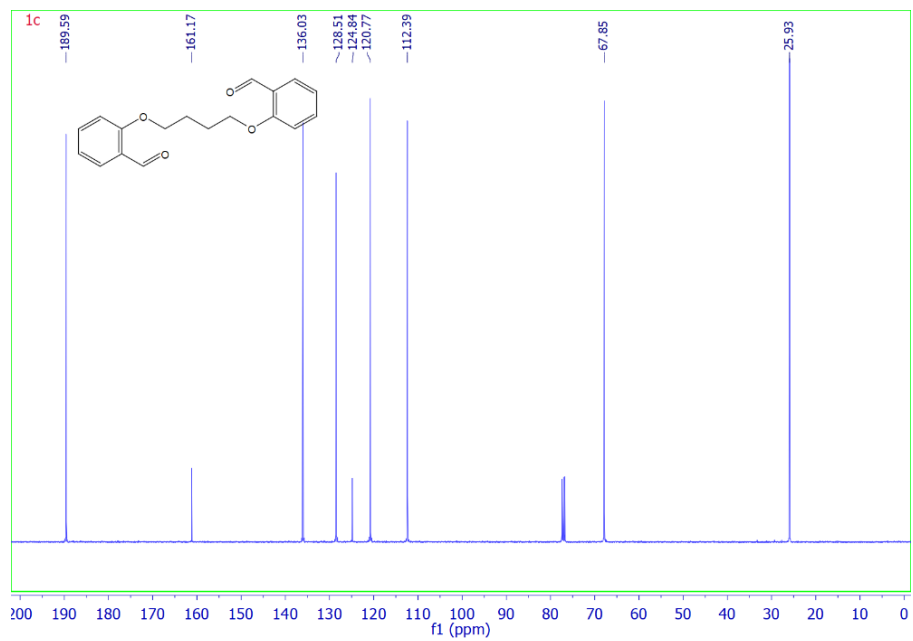


Fig.11. <sup>13</sup>C NMR spectrum of compound (1c)

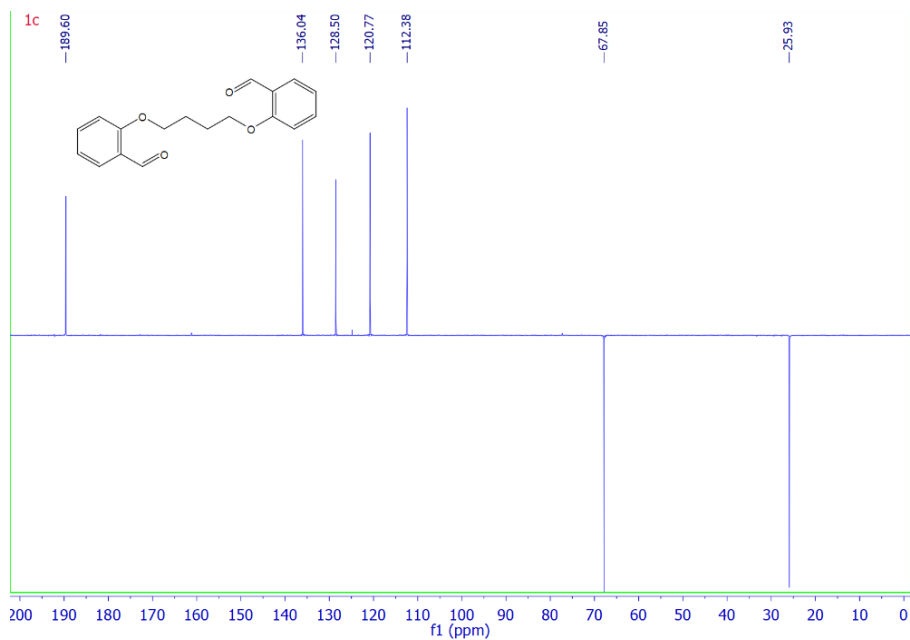


Fig.12.  $^{13}\text{C}$  DEPT spectrum of compound (**1c**)

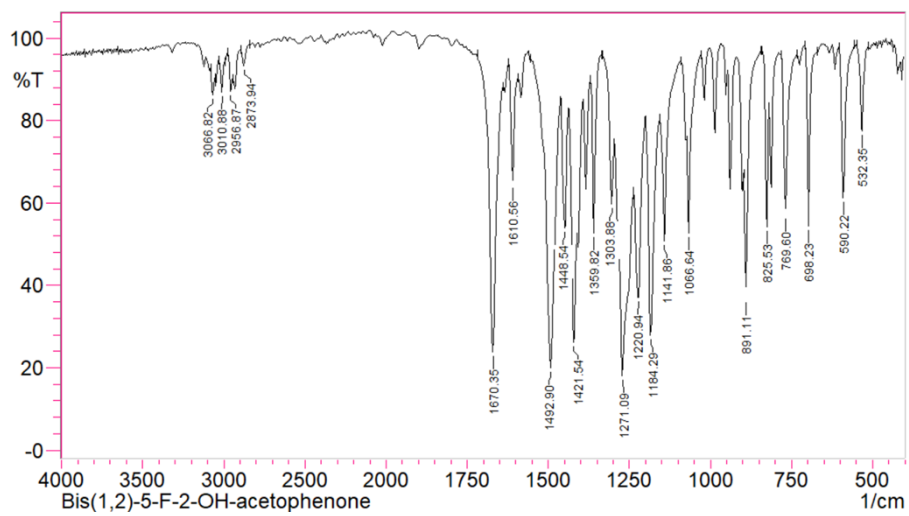


Fig.13. FT-IR spectrum of compound (**1d**)

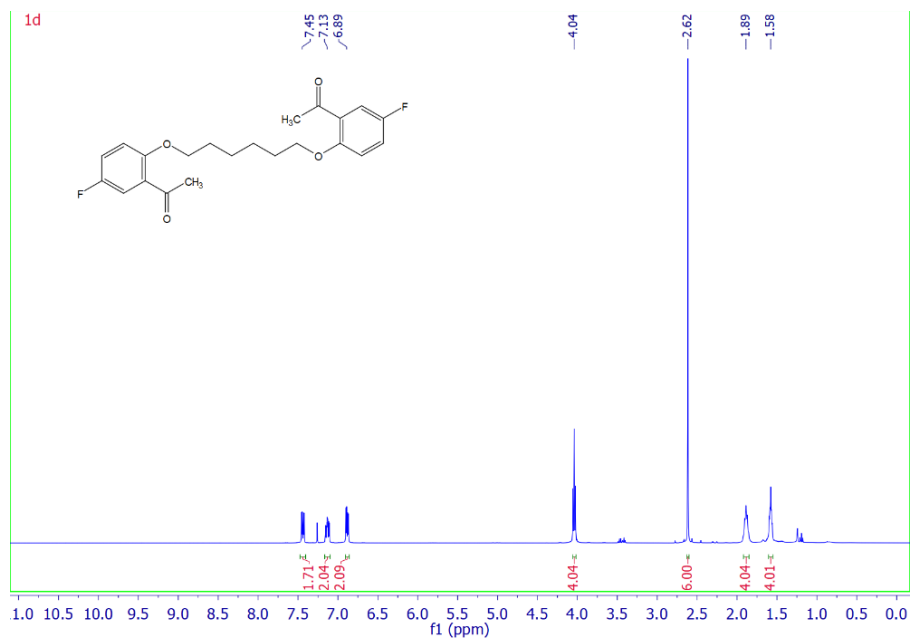


Fig.14. <sup>1</sup>H NMR spectrum of compound (**1d**)

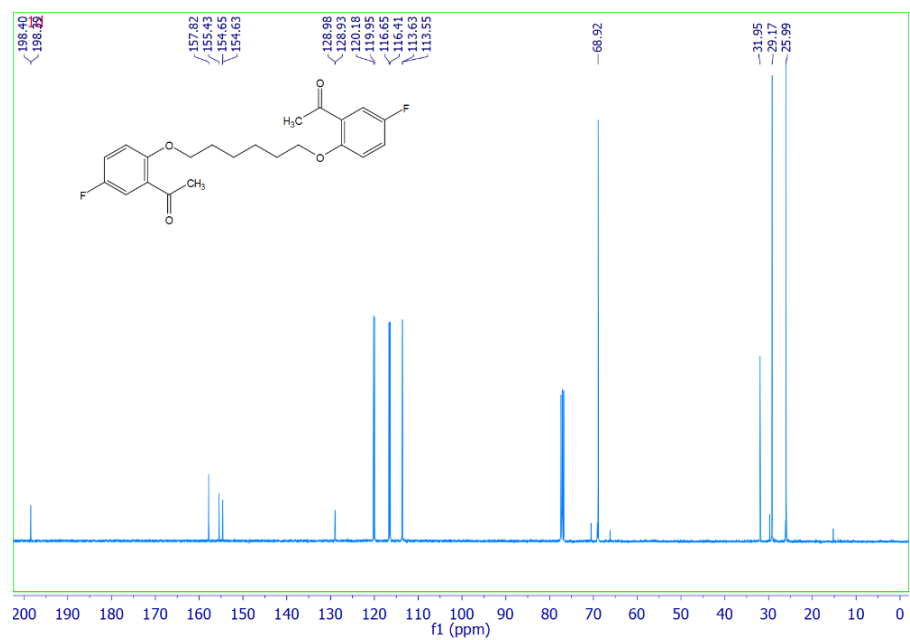


Fig.15. <sup>13</sup>C NMR spectrum of compound (**1d**)



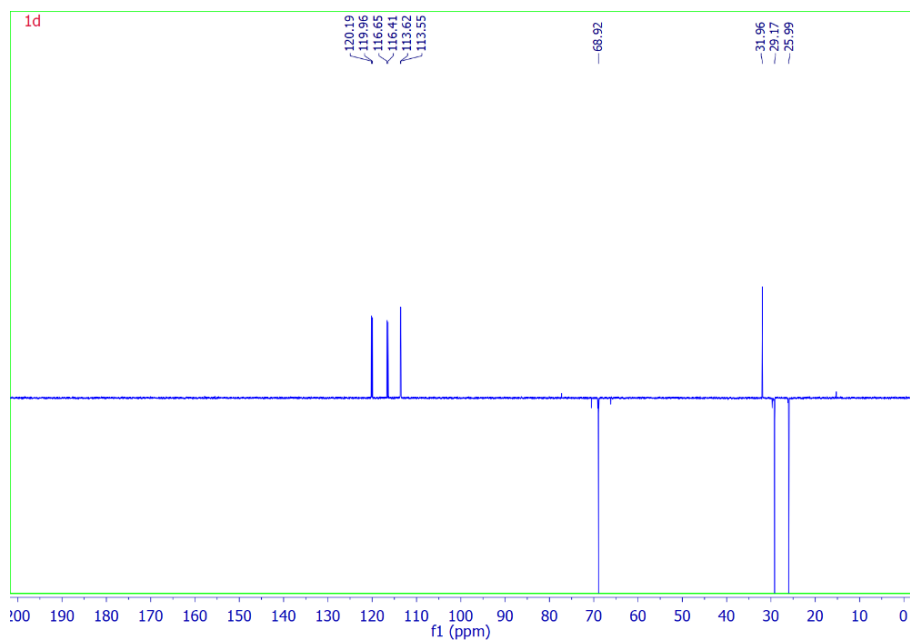


Fig.16.  $^{13}\text{C}$  DEPT spectrum of compound (**1d**)

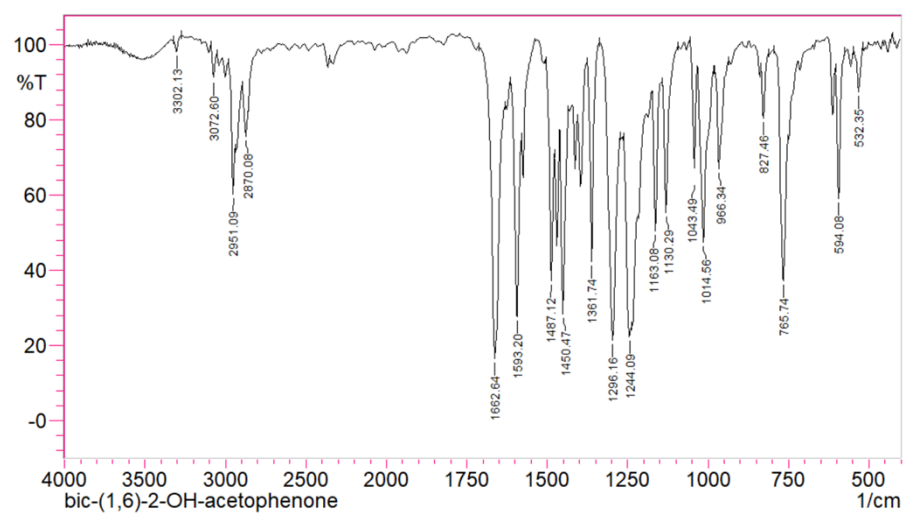


Fig.17. FT-IR spectrum of compound (**1e**)

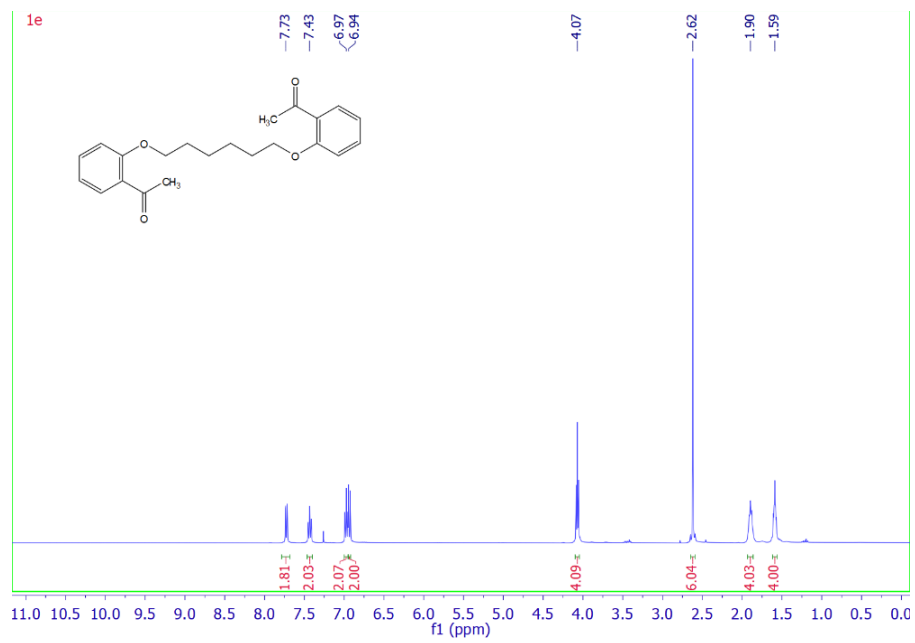


Fig.18. <sup>1</sup>H NMR spectrum of compound **(1e)**

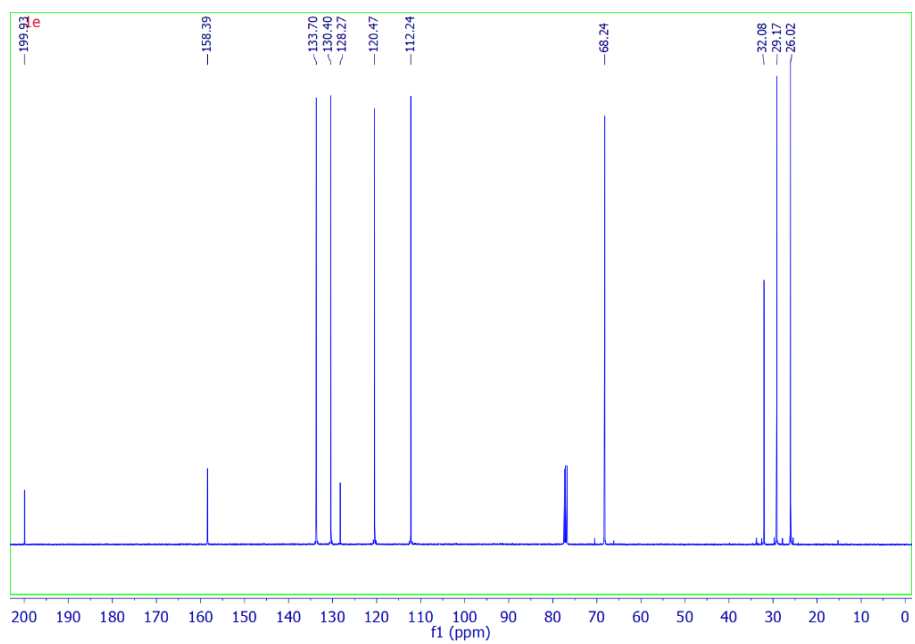


Fig.19. <sup>13</sup>C NMR spectrum of compound **(1e)**



Fig.20.  $^{13}\text{C}$  DEPT spectrum of compound (1e)

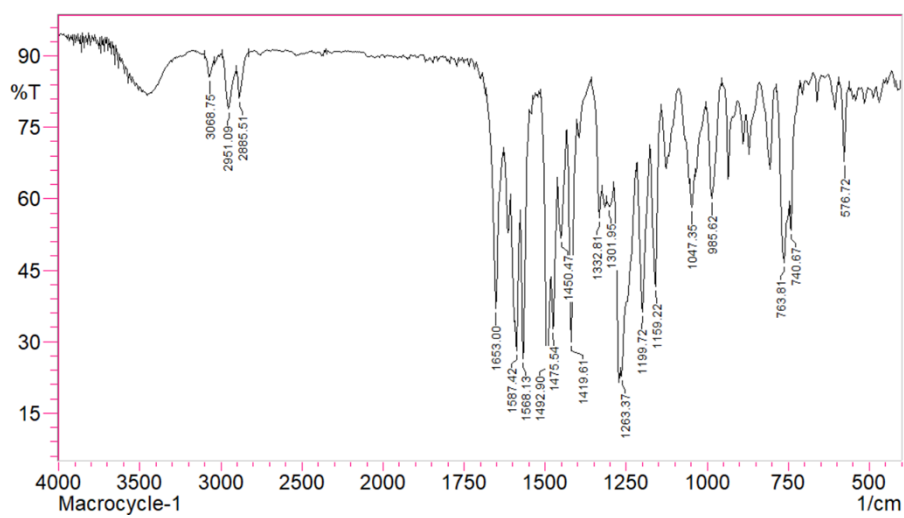


Fig.21. FT-IR spectrum of compound (2a)

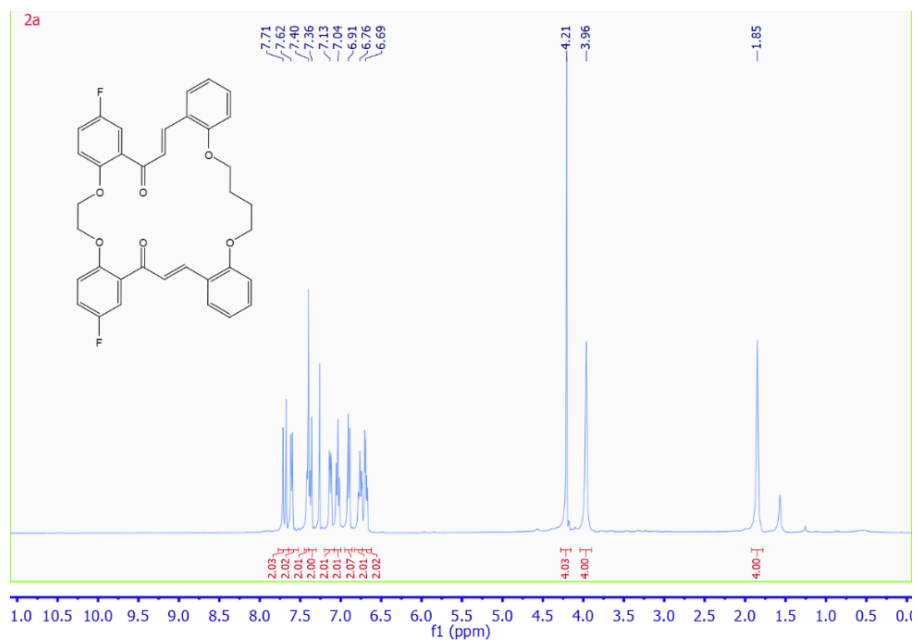


Fig.22.  $^1\text{H}$  NMR spectrum of compound (**2a**)

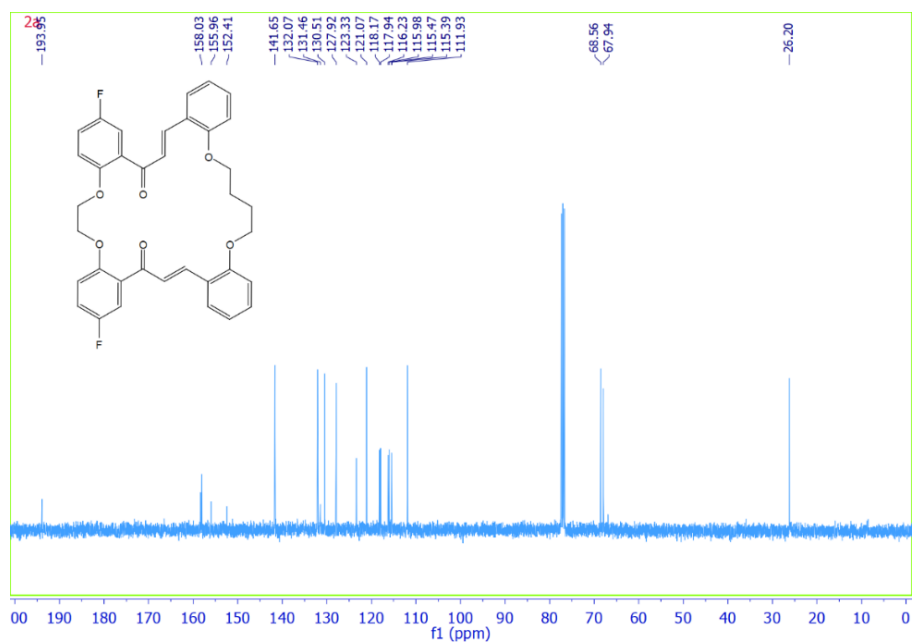


Fig.23.  $^{13}\text{C}$  NMR spectrum of compound (**2a**)

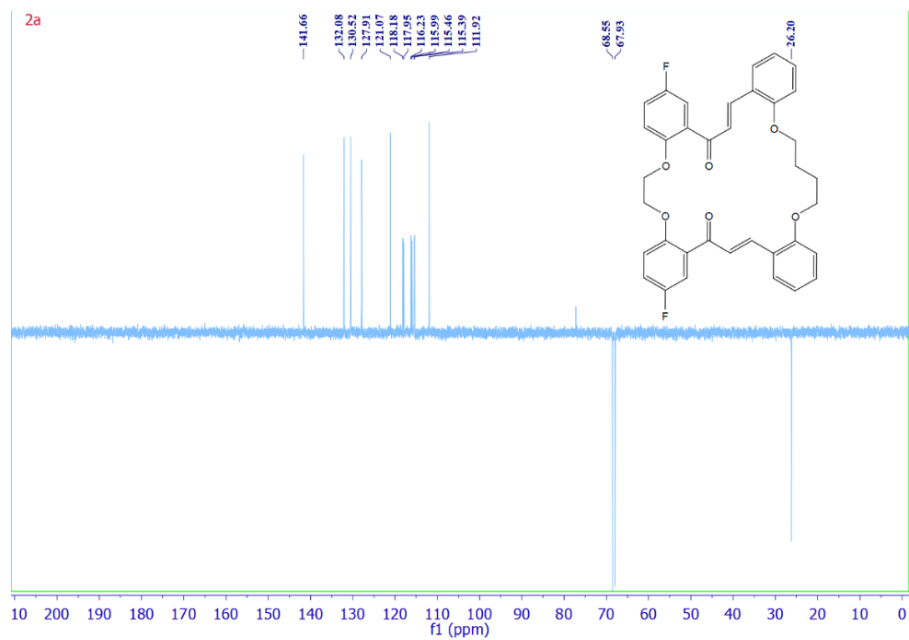


Fig.24. <sup>13</sup>C DEPT spectrum of compound (**2a**)

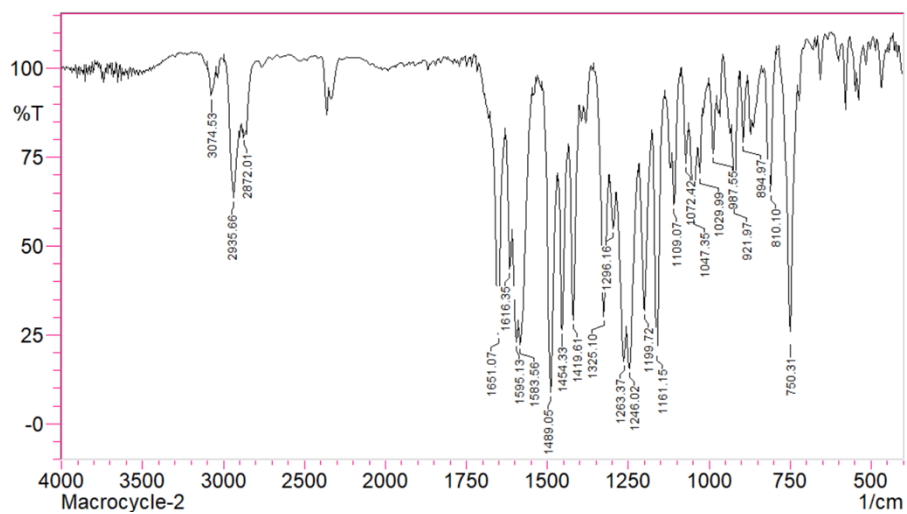


Fig.25. FT-IR spectrum of compound (**2b**)

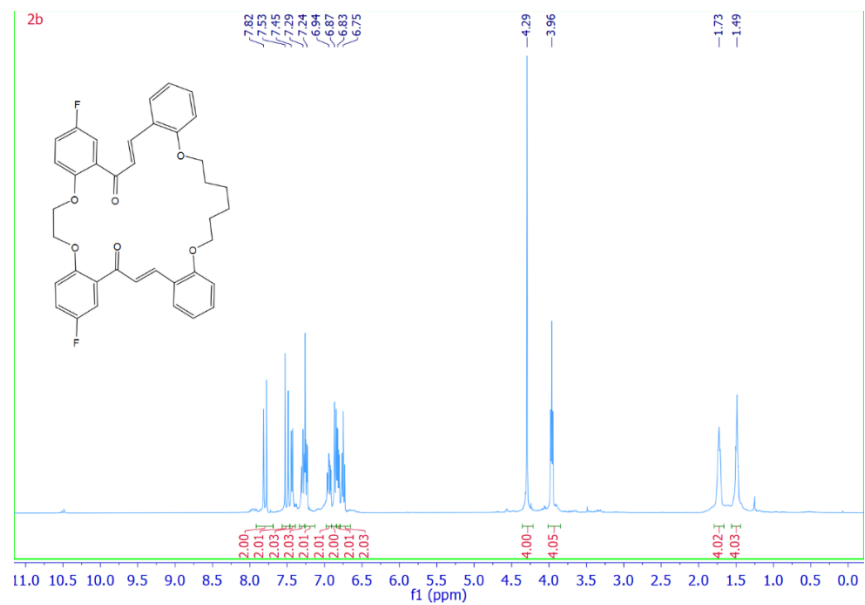


Fig.26. <sup>1</sup>H NMR spectrum of compound (**2b**)

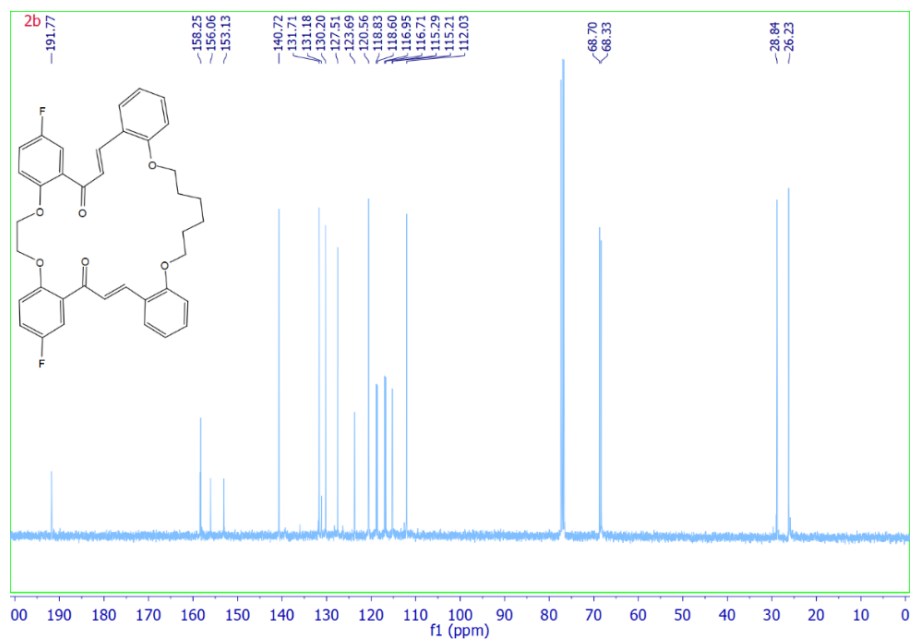


Fig.27. <sup>13</sup>C NMR spectrum of compound (**2b**)

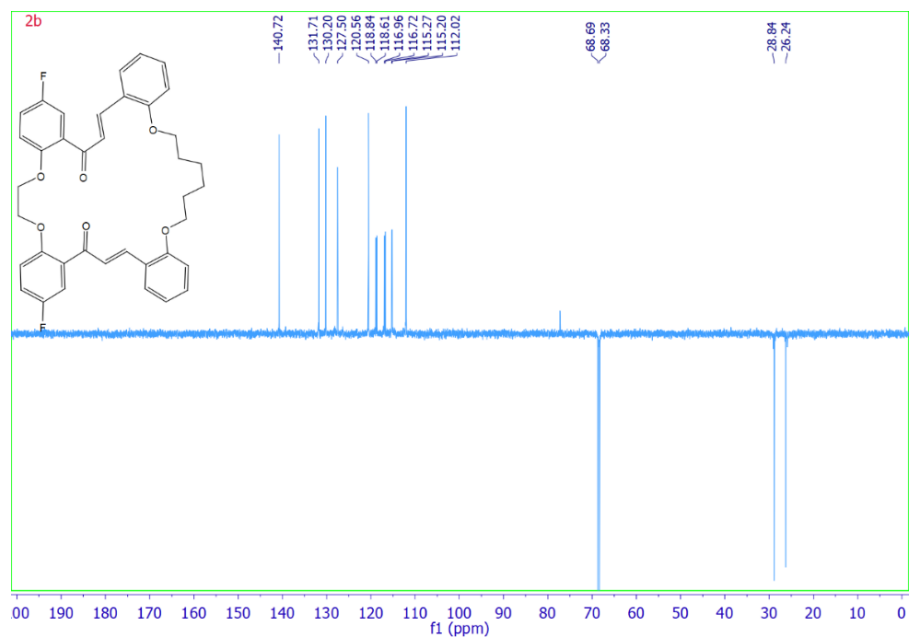


Fig.28.  $^{13}\text{C}$  DEPT spectrum of compound (**2b**)

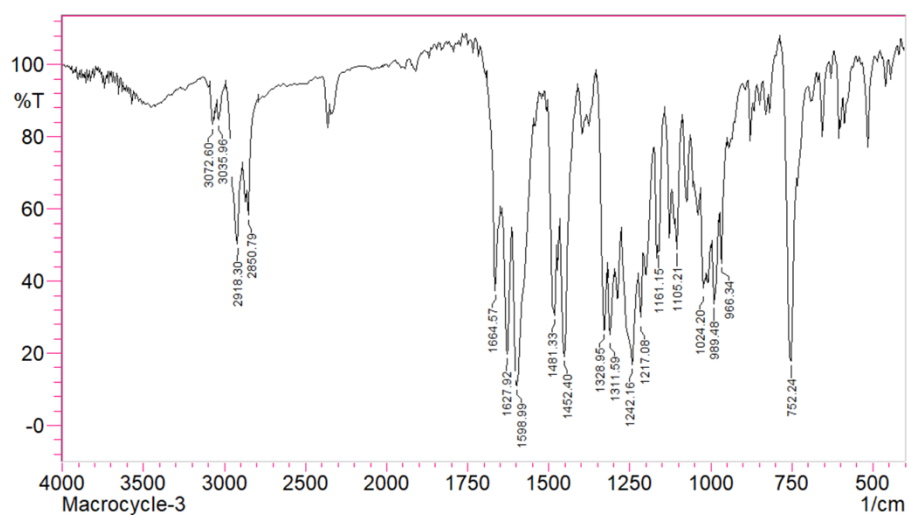


Fig.29. FT-IR spectrum of compound (**2c**)

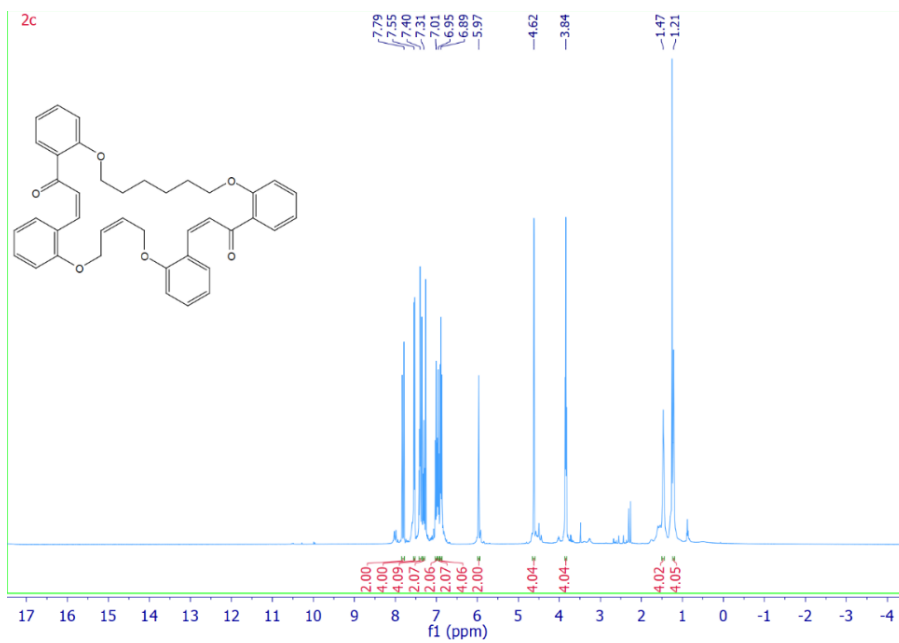


Fig.30. <sup>1</sup>H NMR spectrum of compound (**2c**)

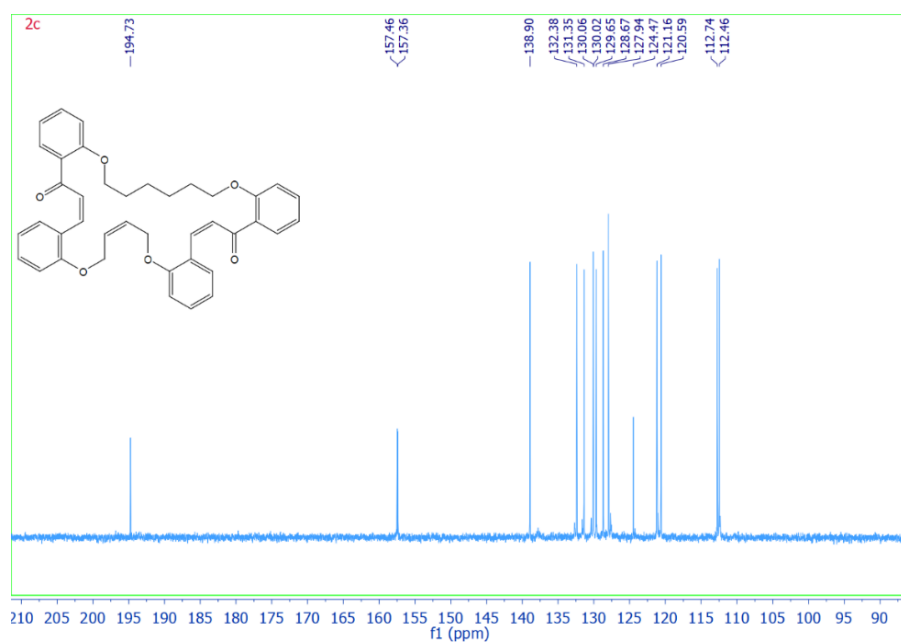


Fig.31. <sup>13</sup>C NMR spectrum of compound (**2c**)



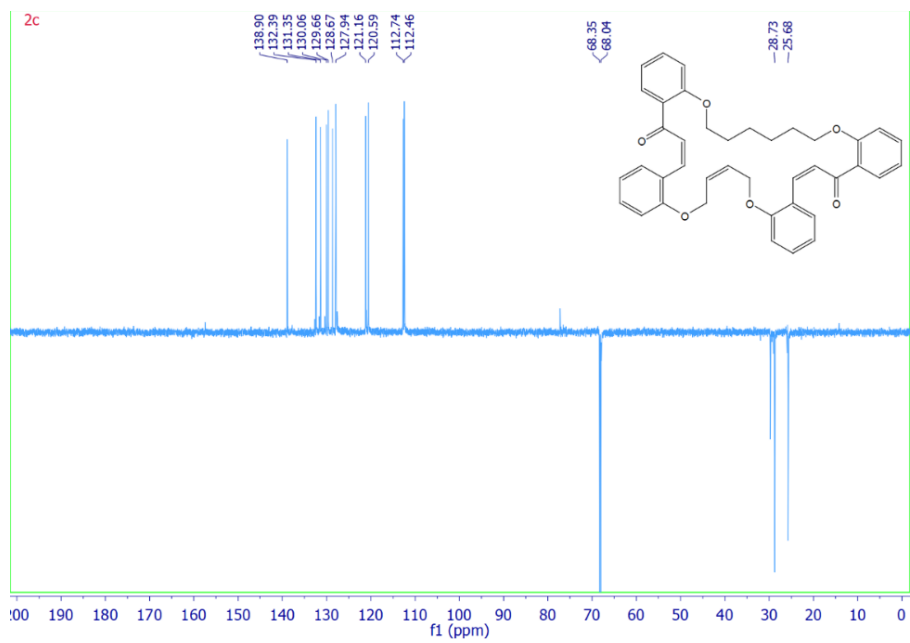


Fig.32.  $^{13}\text{C}$  DEPT spectrum of compound (**2c**)

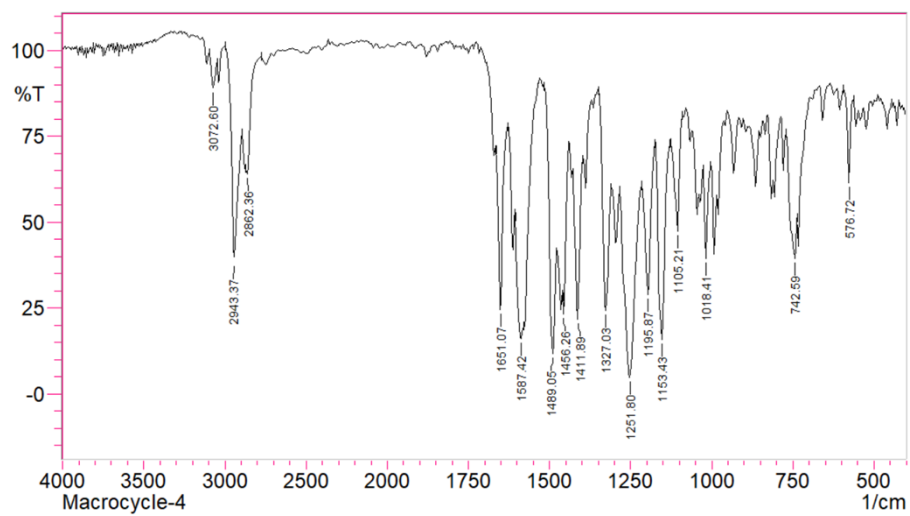


Fig.33. FT-IR spectrum of compound (**2d**)

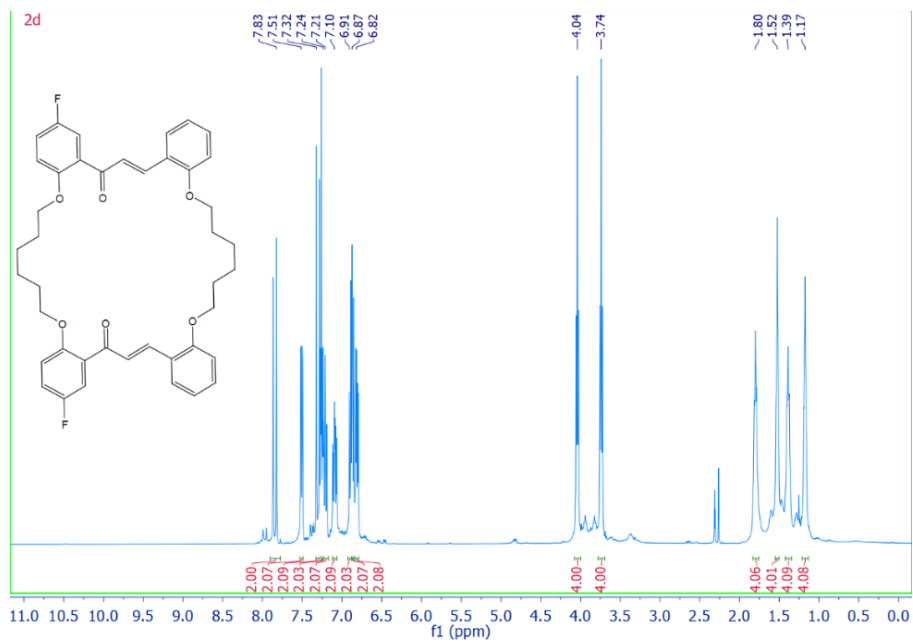


Fig.34. <sup>1</sup>H NMR spectrum of compound (**2d**)

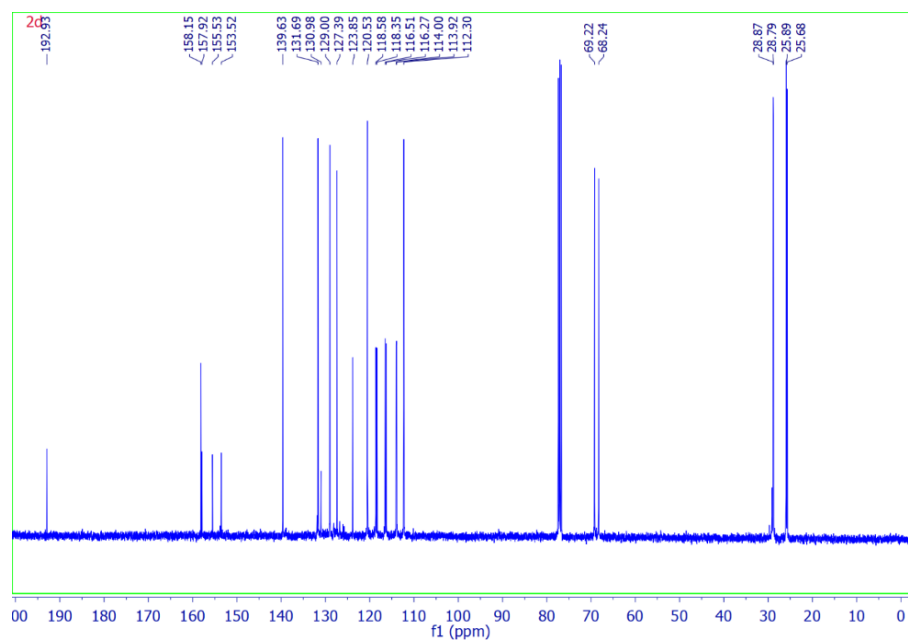


Fig.35. <sup>13</sup>C NMR spectrum of compound (**2d**)

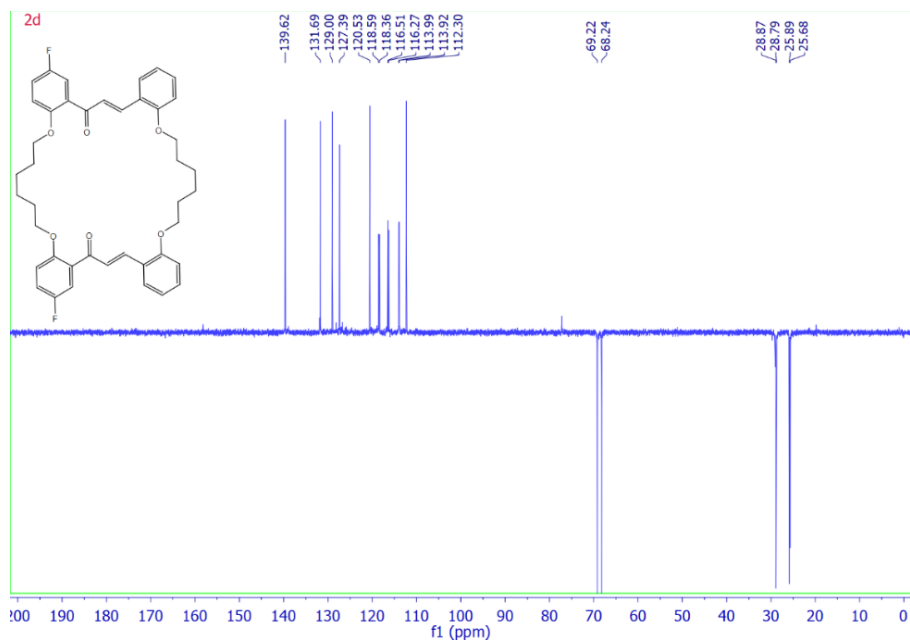


Fig.36.  $^{13}\text{C}$  DEPT spectrum of compound (**2d**)

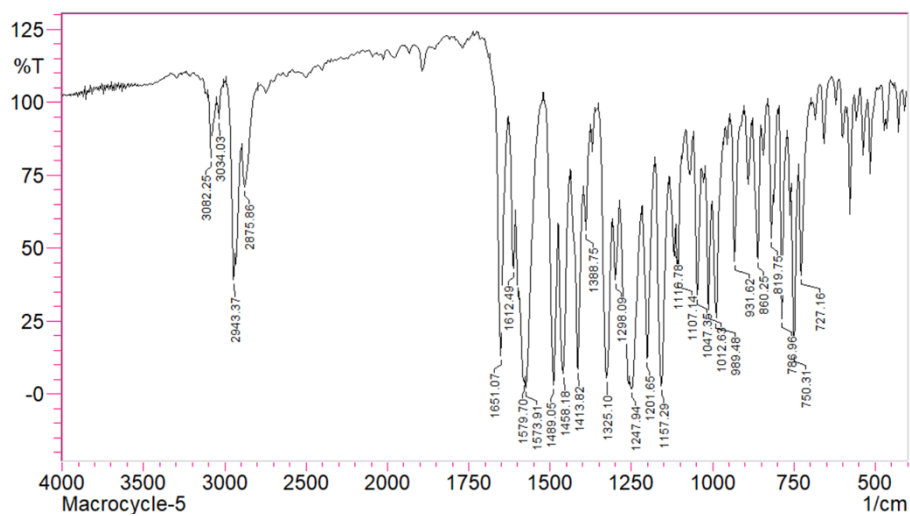


Fig.37. FT-IR spectrum of compound (**2e**)

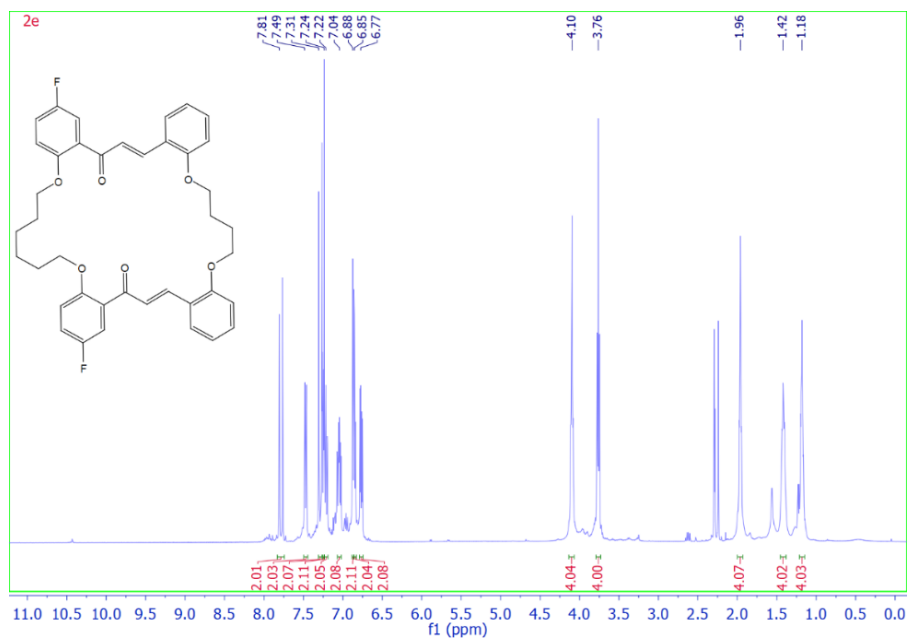


Fig.38. <sup>1</sup>H NMR spectrum of compound (**2e**)

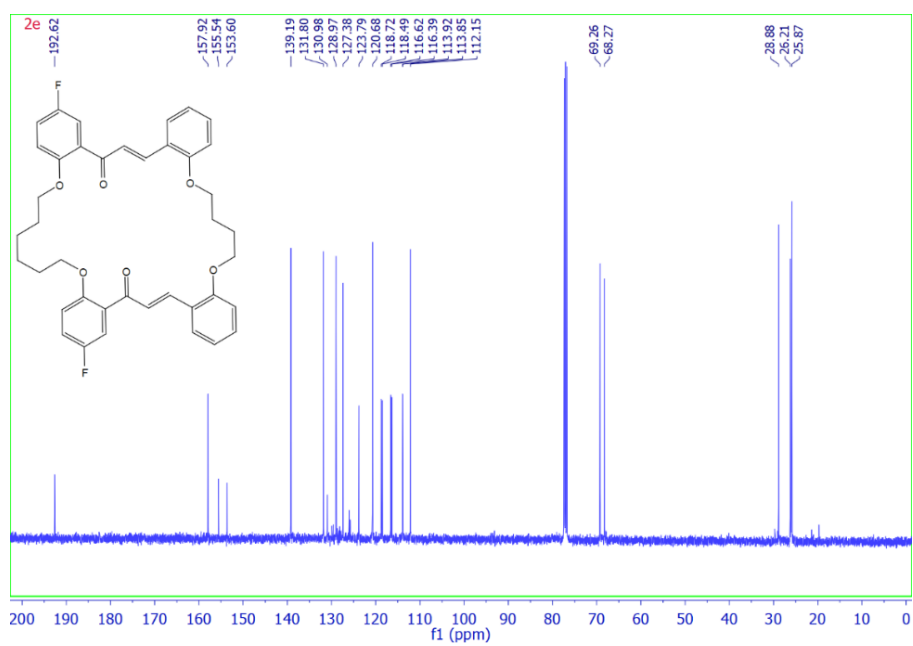


Fig.39. <sup>13</sup>C NMR spectrum of compound (**2e**)

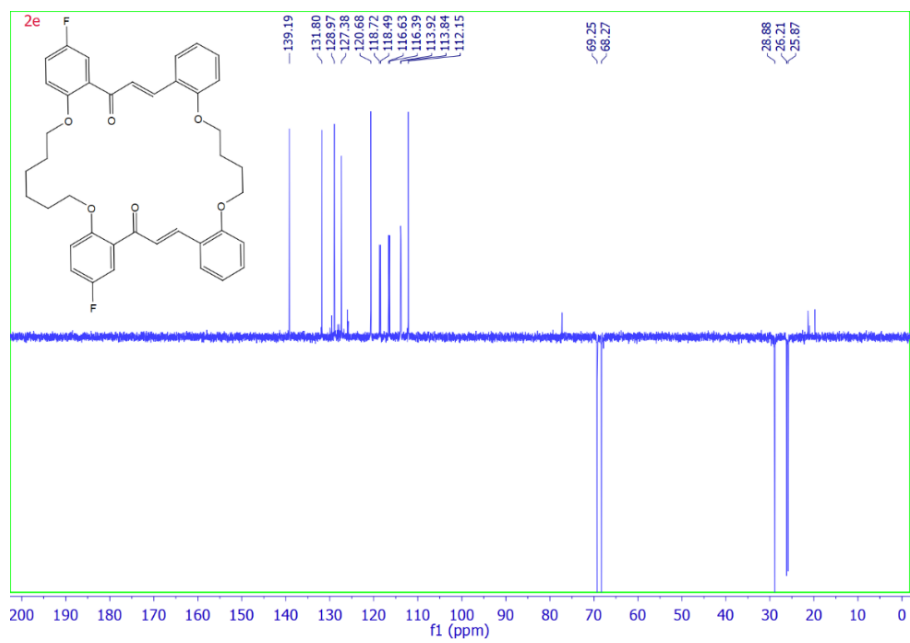


Fig.40.  $^{13}\text{C}$  DEPT spectrum of compound (**2e**)