

Design and Synthesis of Novel Sulfa-Azo Dyes: A Sustainable Approach to Textile Dyeing Combined with Microwave Energy

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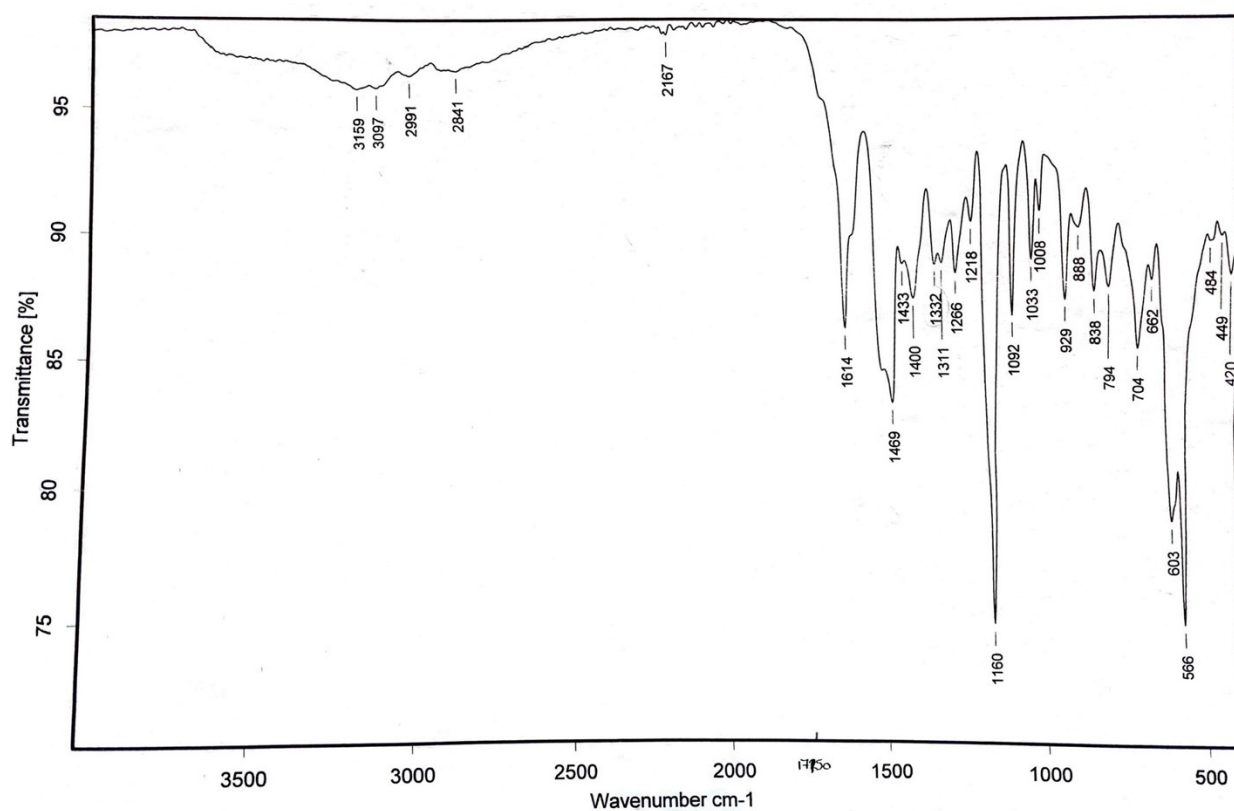
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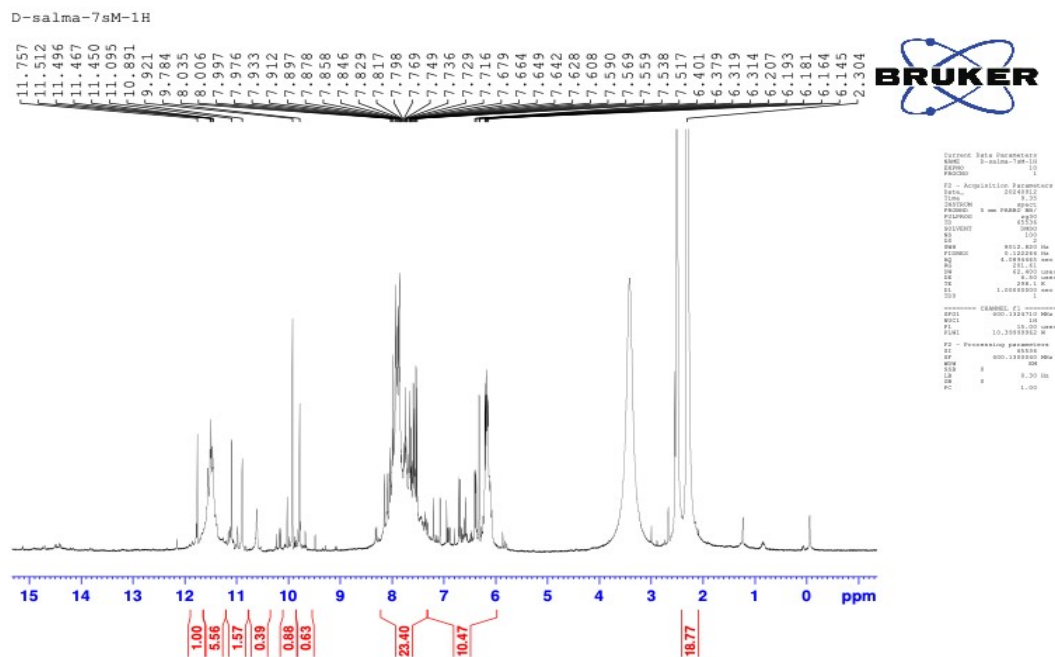
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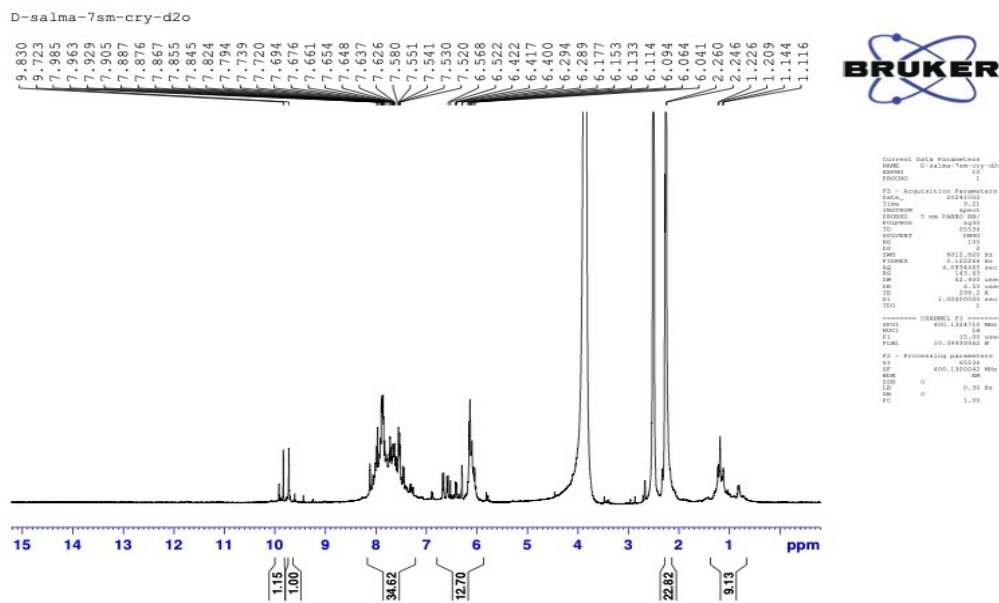
Supporting information:



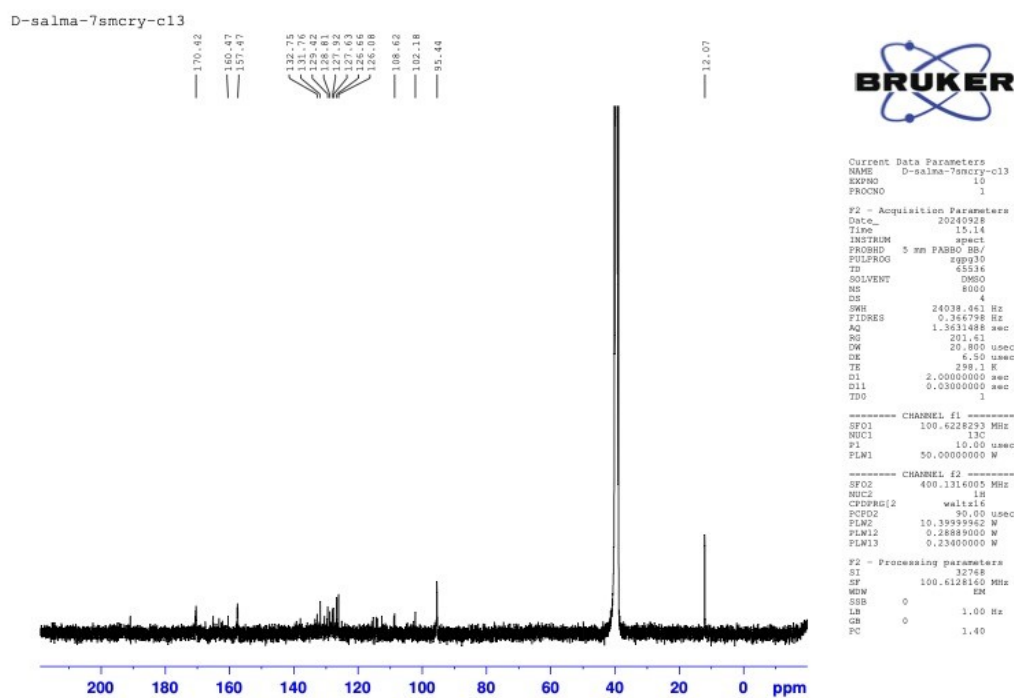
IR spectrum of 3a dye.



¹H NMR spectrum (DMSO-*d*₆) of 3a dye.

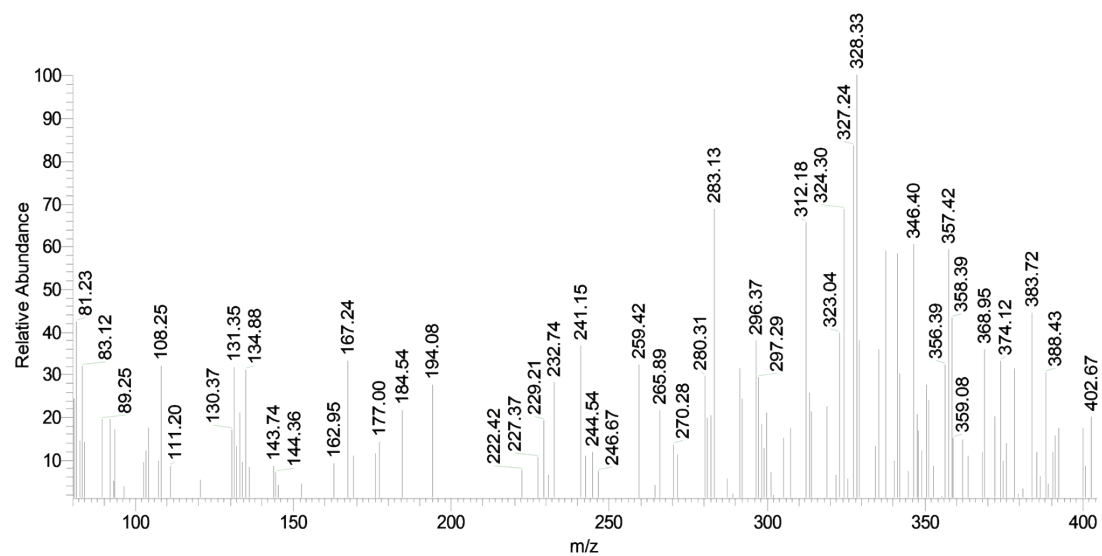


^1H NMR (D_2O) spectrum of 3a dye.

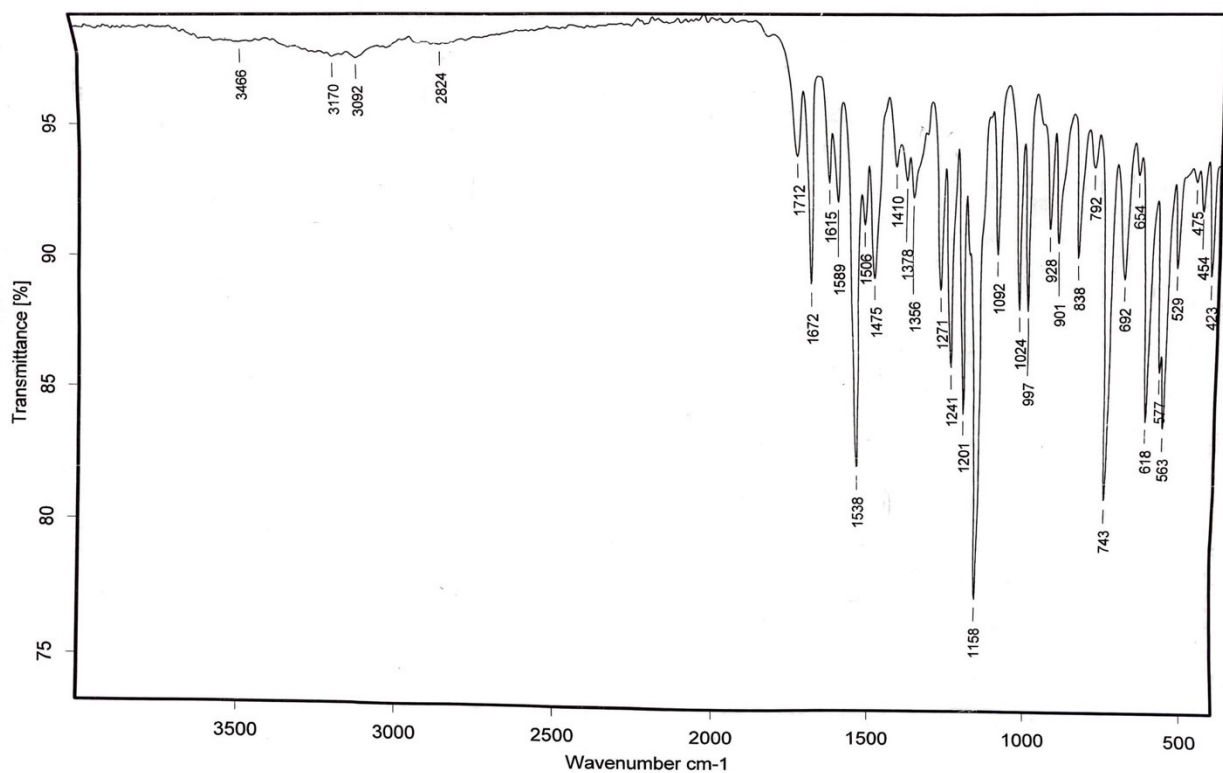


^{13}C NMR spectrum of 3a dye.

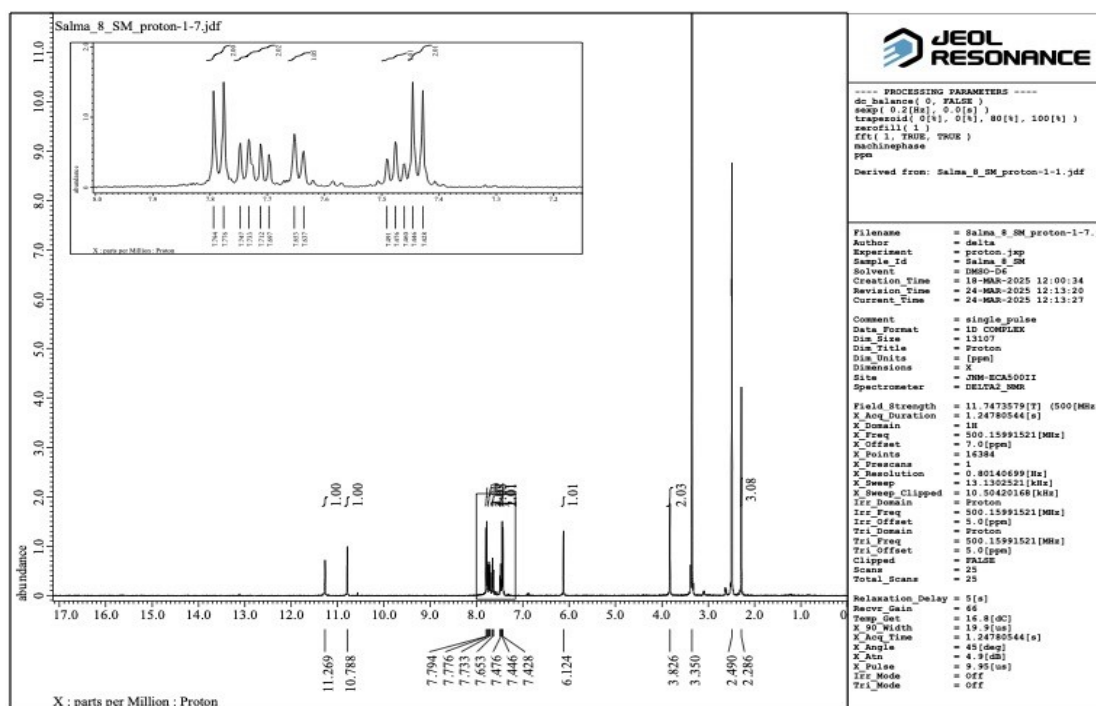
7 #12 RT: 0.22 P: + SB: 2 0.07 , 0.05 NL: 1.12E3
T: {0,0} + c EI Full ms [40.00-1000.00]



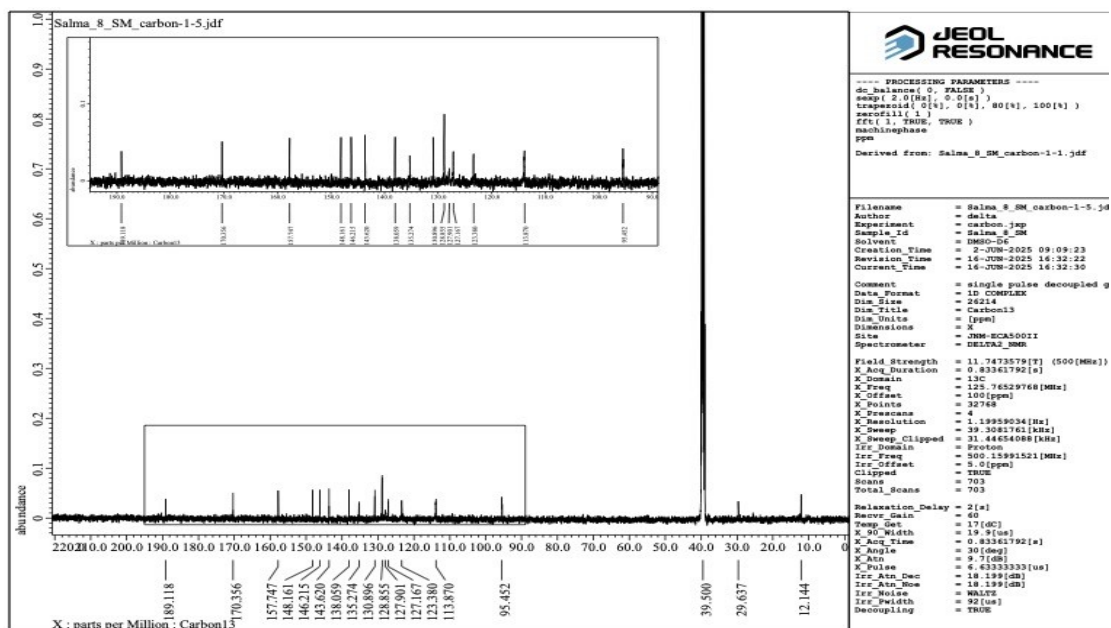
EI-MS of 3a dye.



IR spectrum of 4a dye.

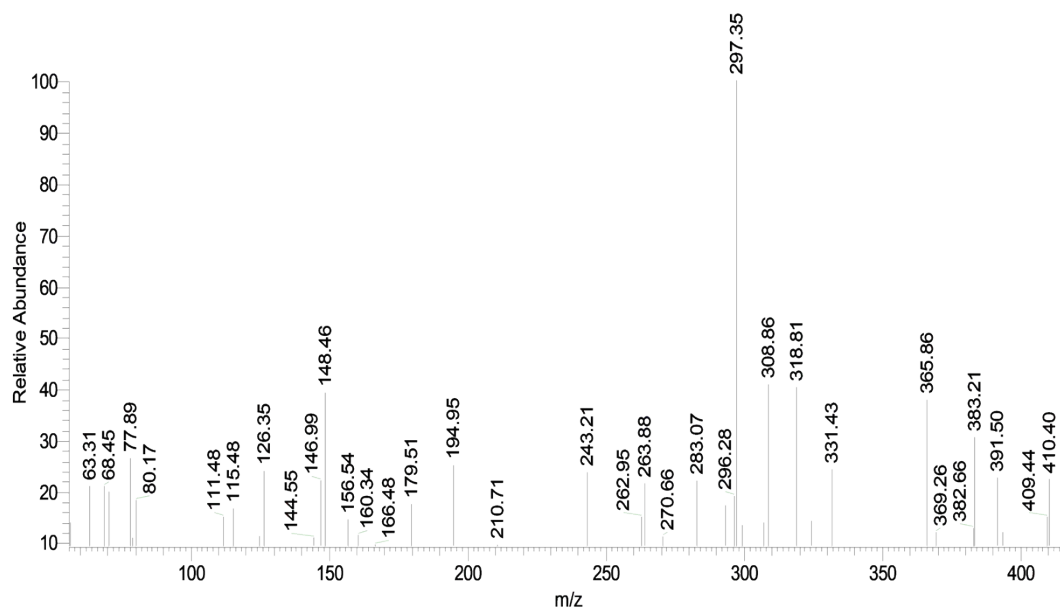


¹H NMR spectrum of 4a dye.

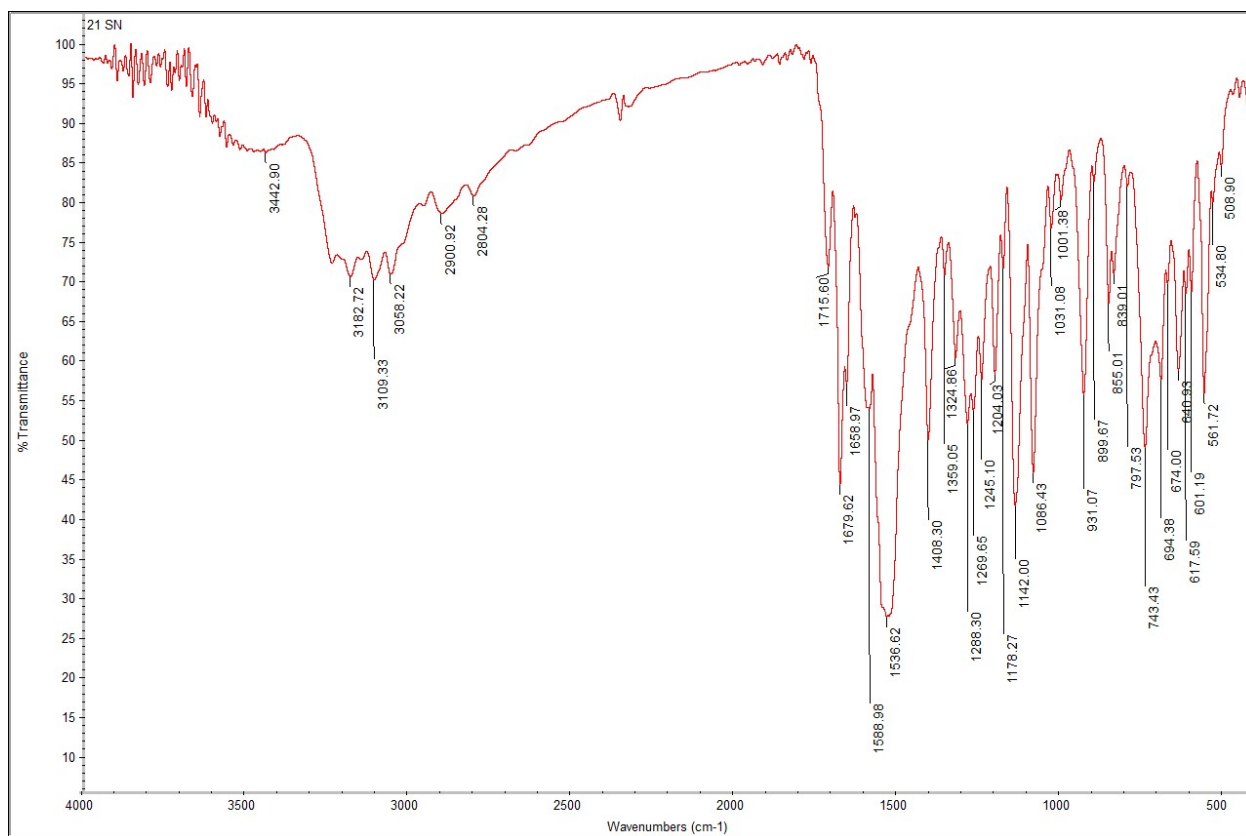


^{13}C NMR spectrum of 4a dye.

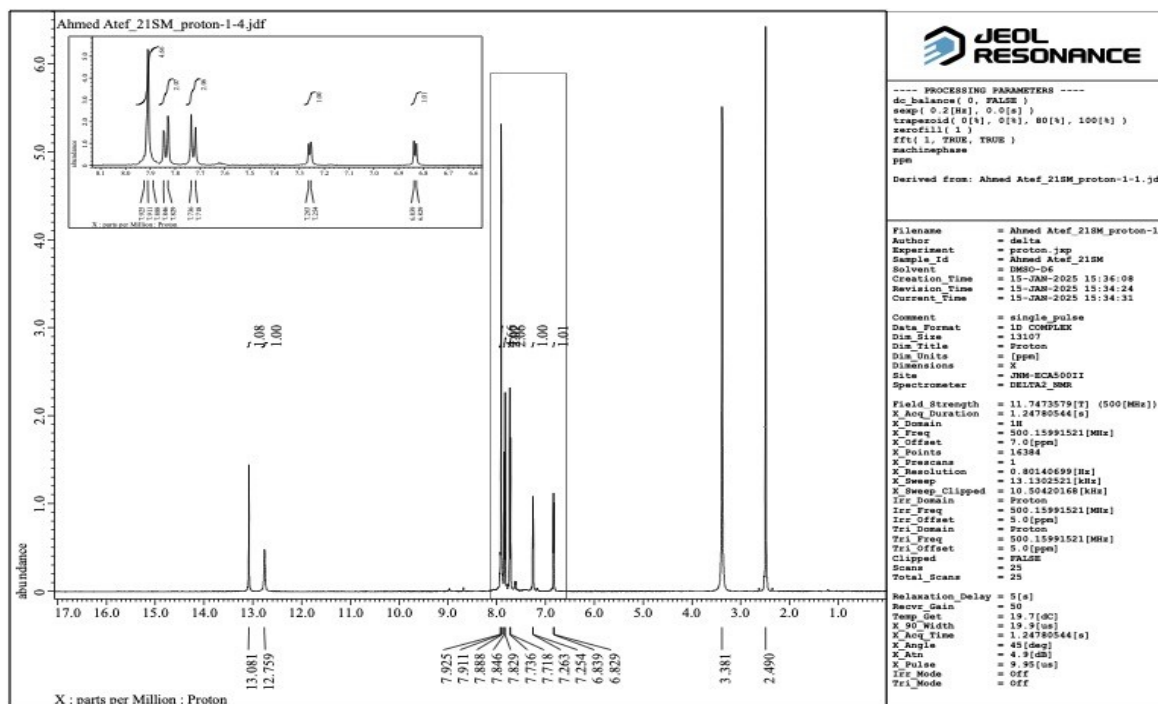
8#46 RT: 0.79 P: + NL: 5.83E2
 T: {0,0} + c EI Full ms [40.00-1000.00]



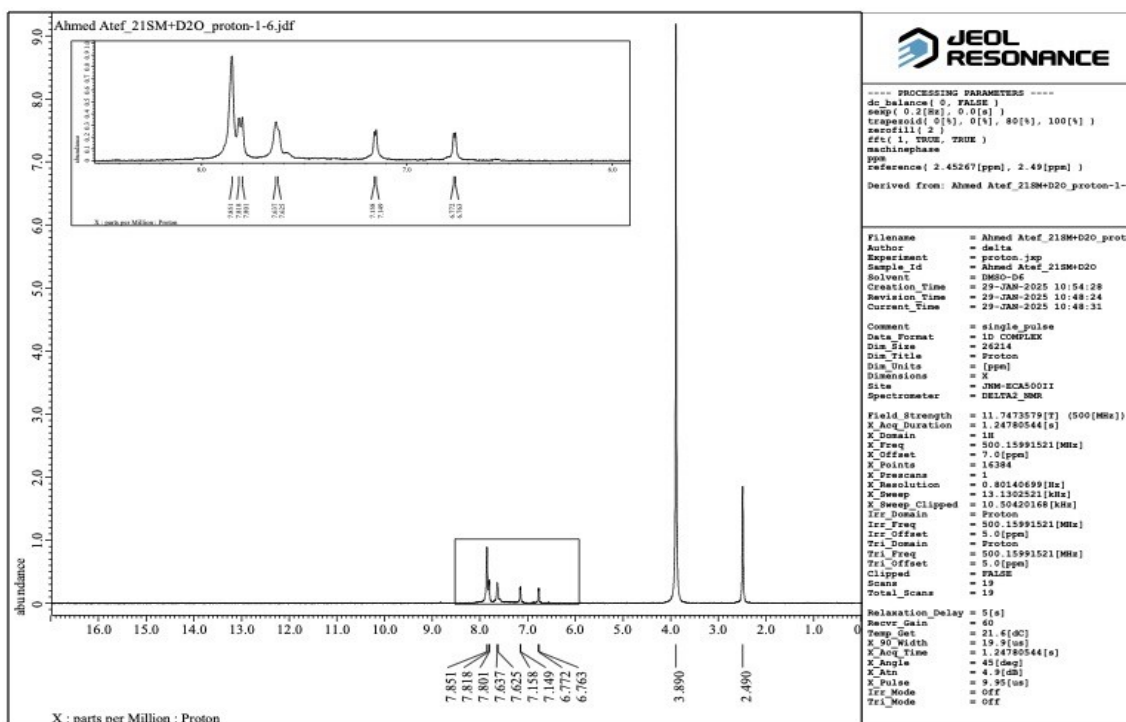
EI-MS of 4a dye.



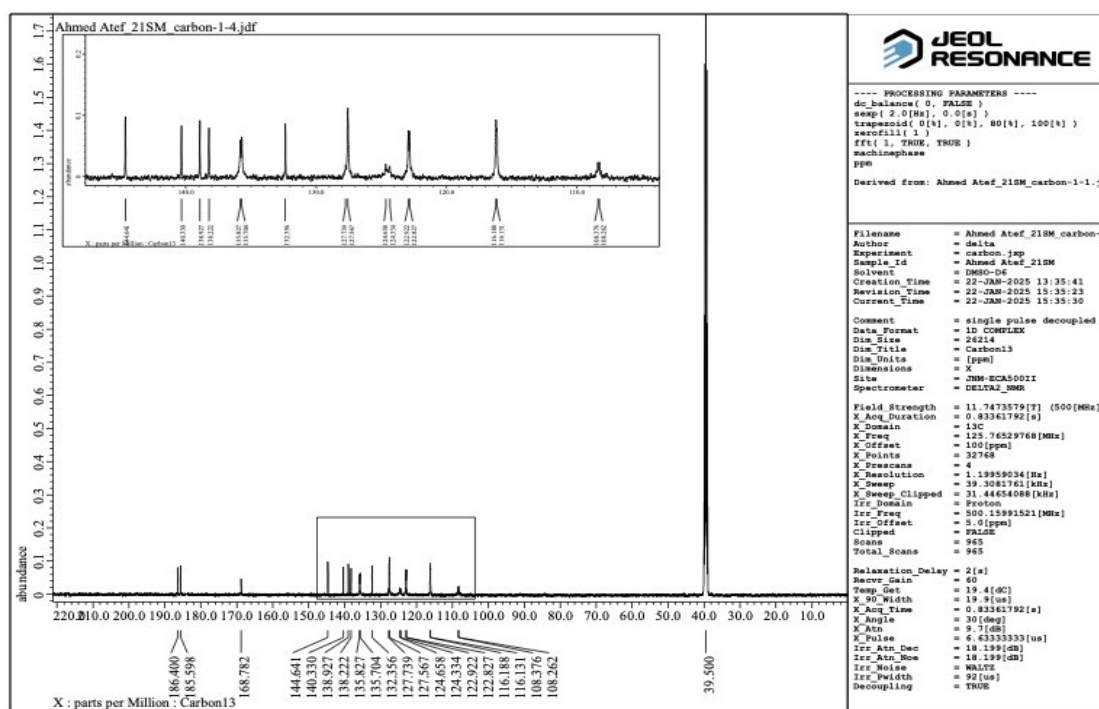
IR spectrum of 4b dye.



¹H NMR spectrum of 4b dye.

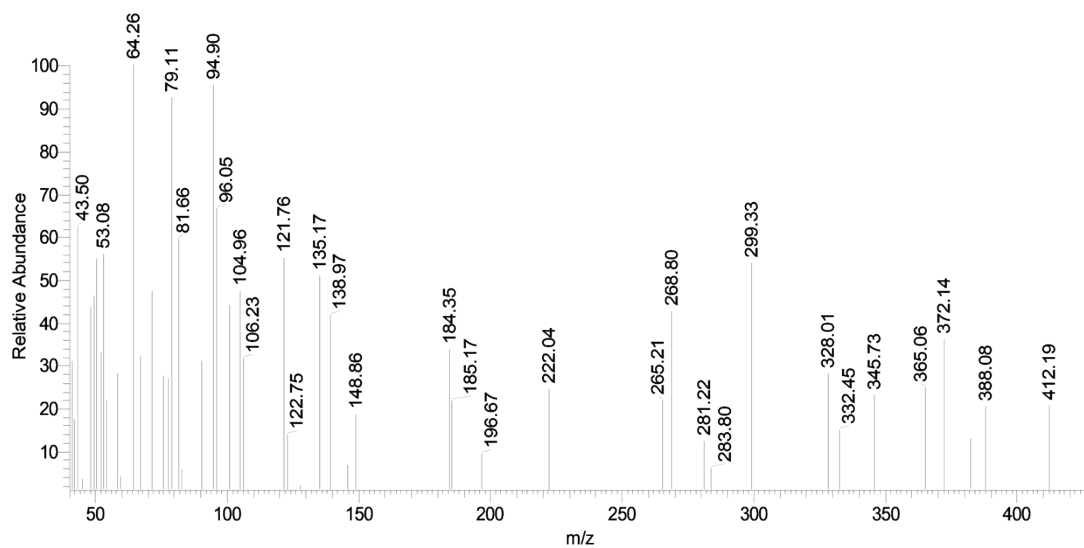


^1H NMR (D_2O) spectrum of 4b dye.

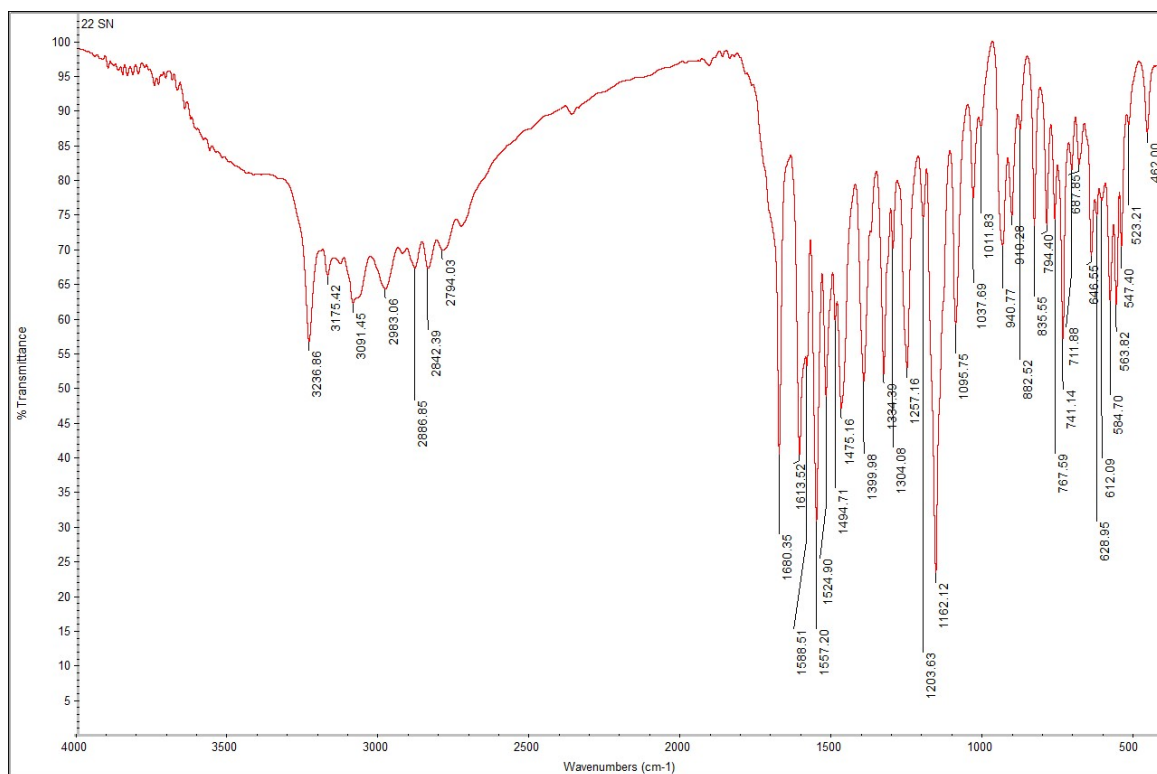


^{13}C NMR spectrum of 4b dye.

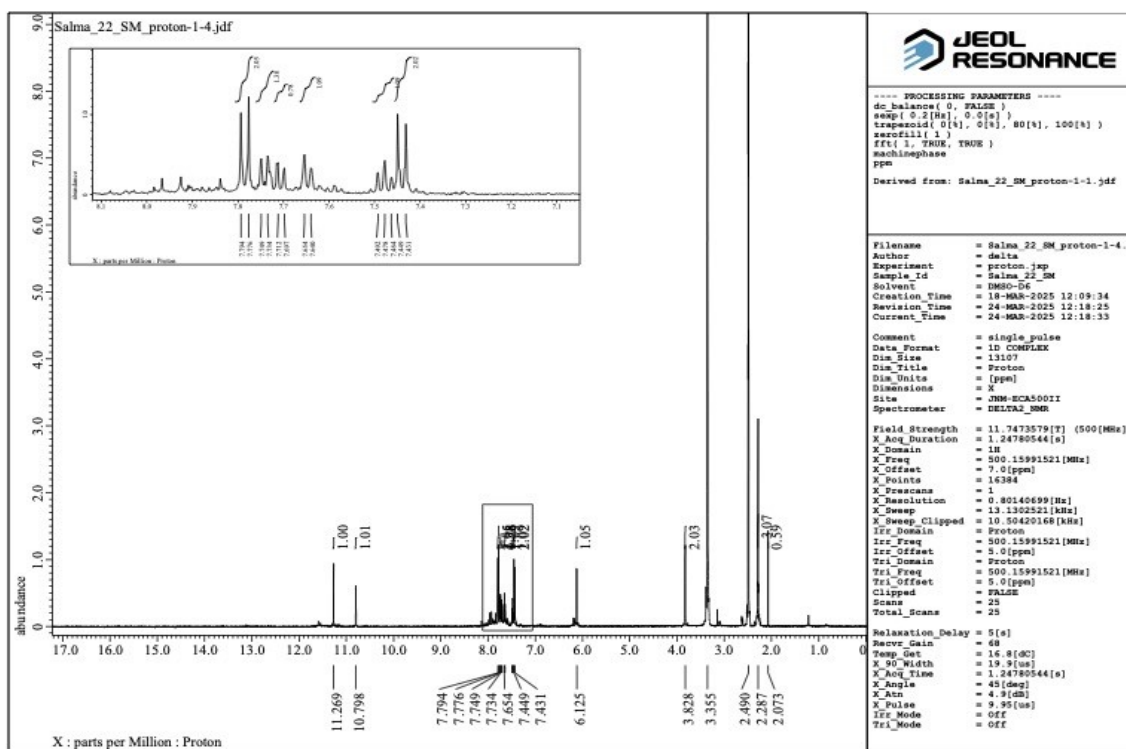
21 #248 RT: 4.17 P: + SB: 2 3.93, 3.95 NL: 5.67E2
T: {0,0} + c EI Full ms [40.00-1000.00]



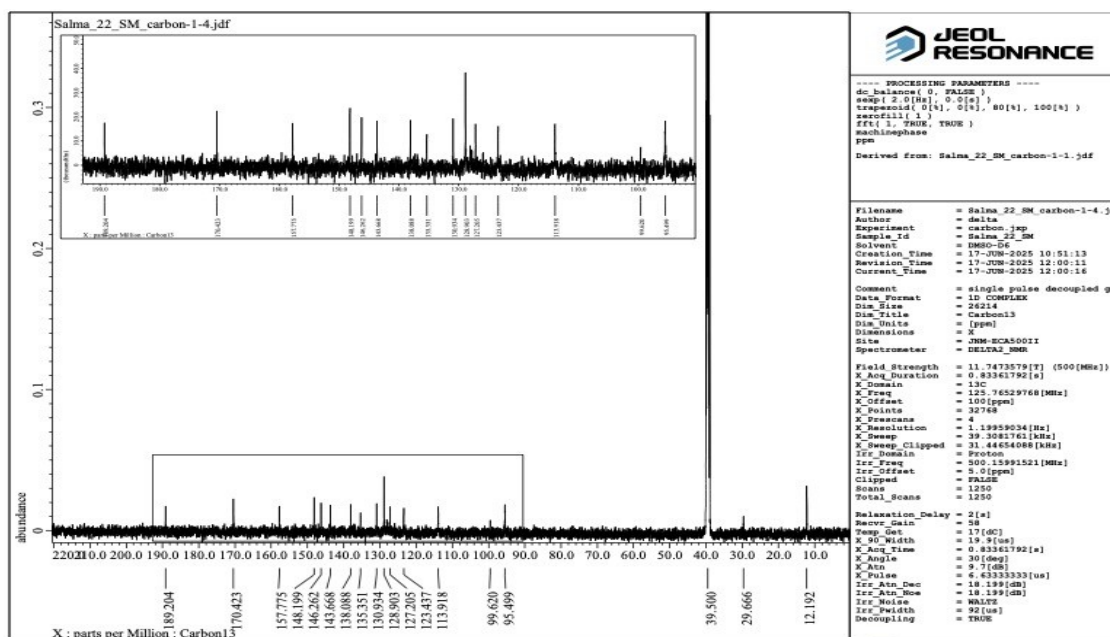
EI-MS of 4b dye.



IR spectrum of 5a dye.

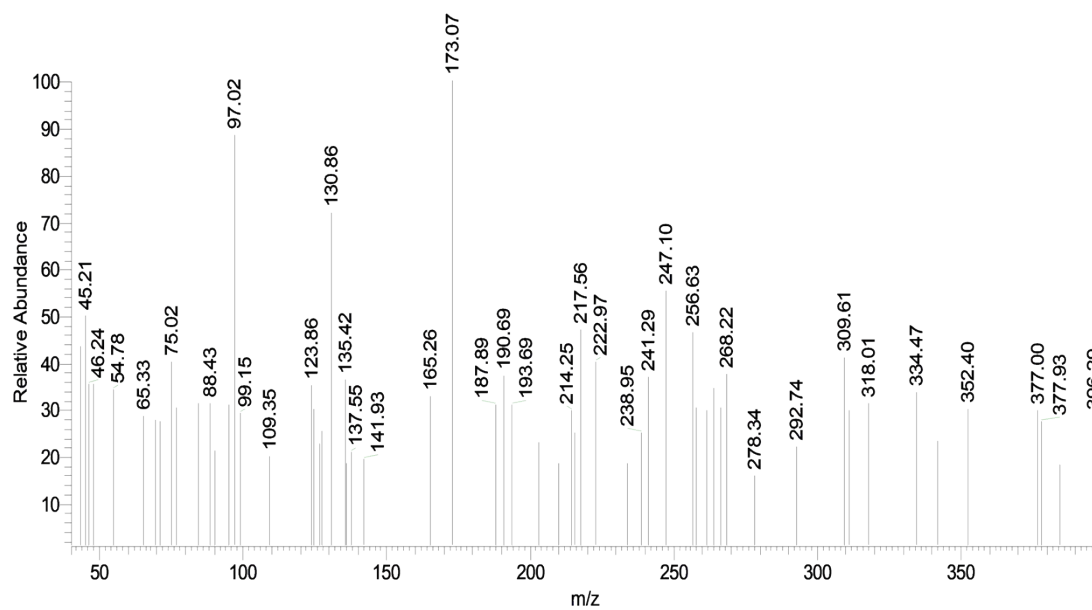


¹H NMR spectrum of 5a dye.

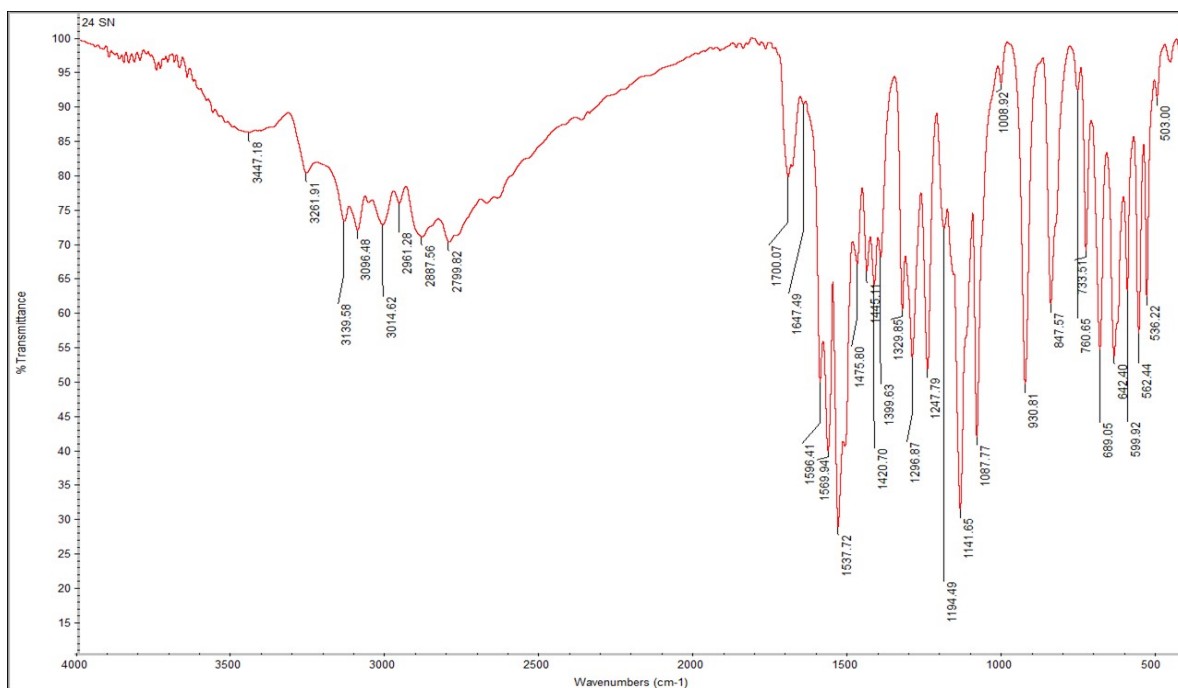


^{13}C NMR spectrum of 5a dye.

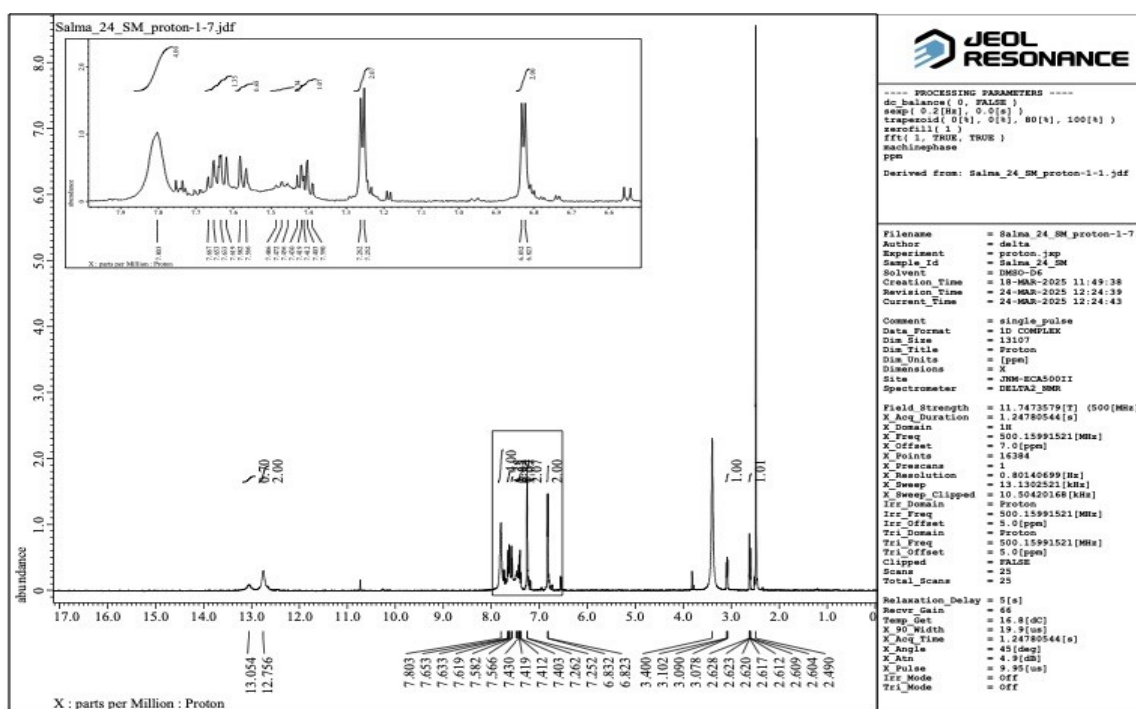
22 #20 RT: 0.35 P: + NL: 3.68E2
 T: [0,0] + c EI Full ms [40.00-1000.00]



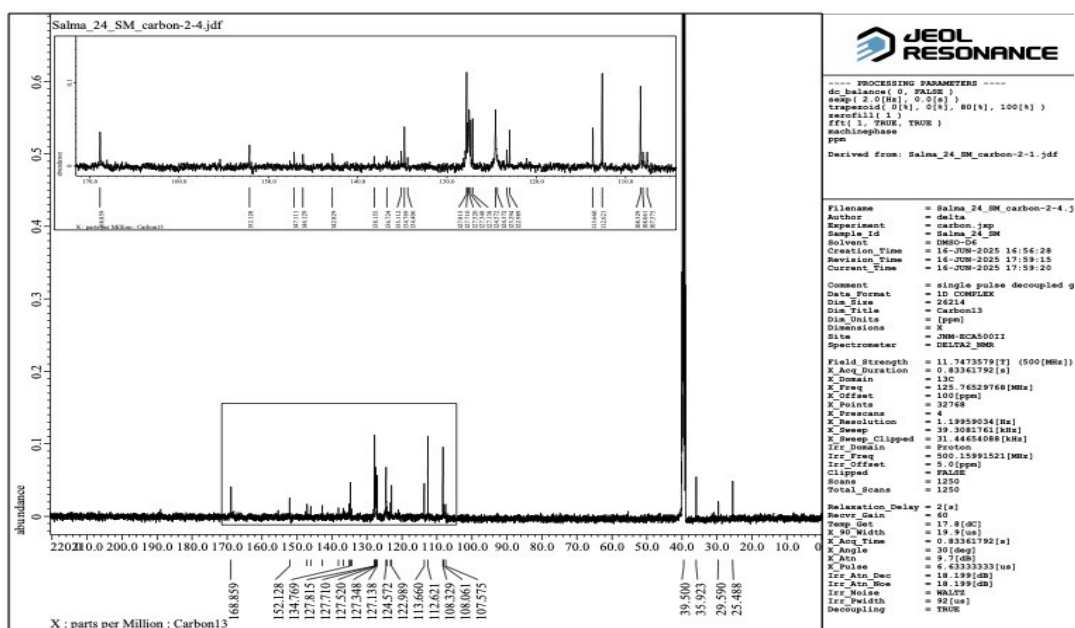
EI-MS of 5a dye.



IR spectrum of 5b dye.

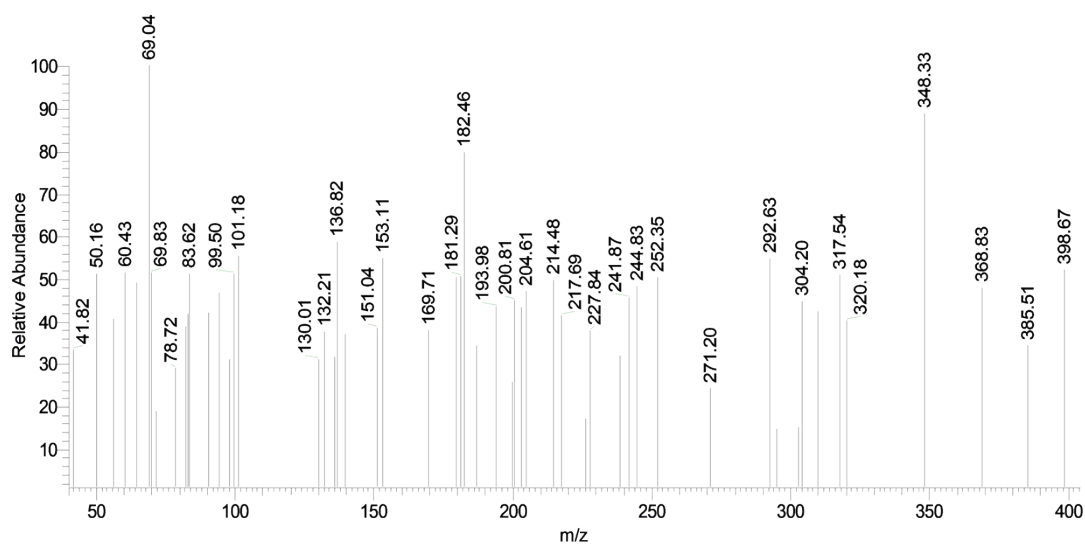


¹H NMR spectrum of 5a dye.

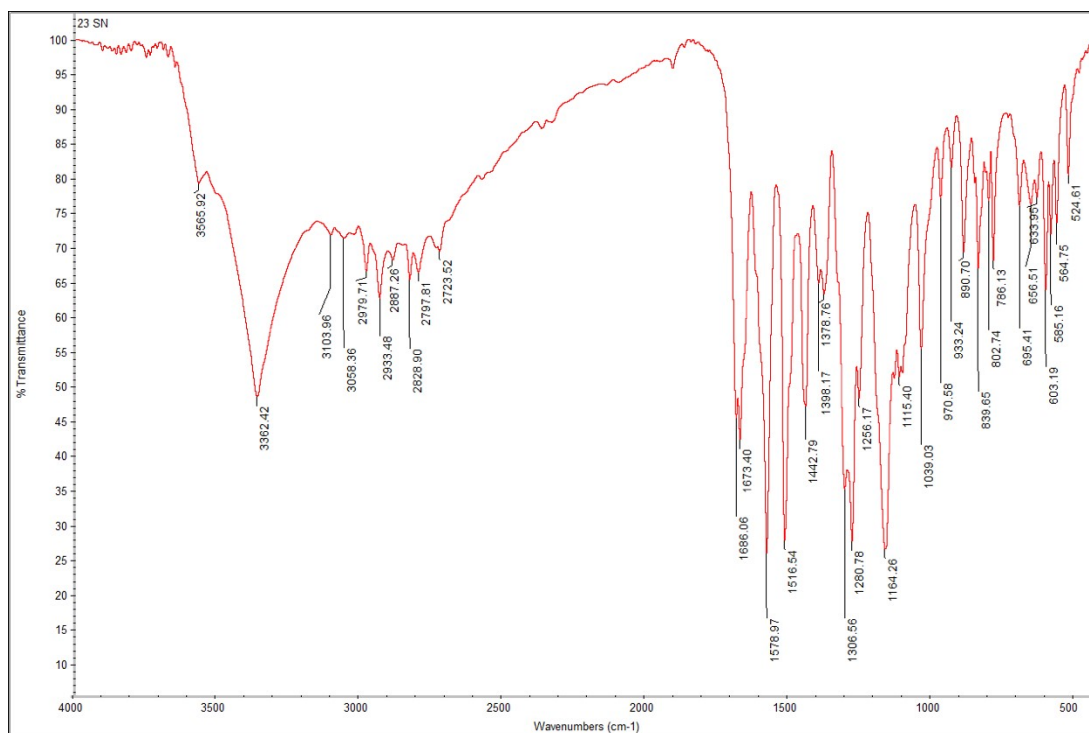


¹³C NMR spectrum of 5b dye.

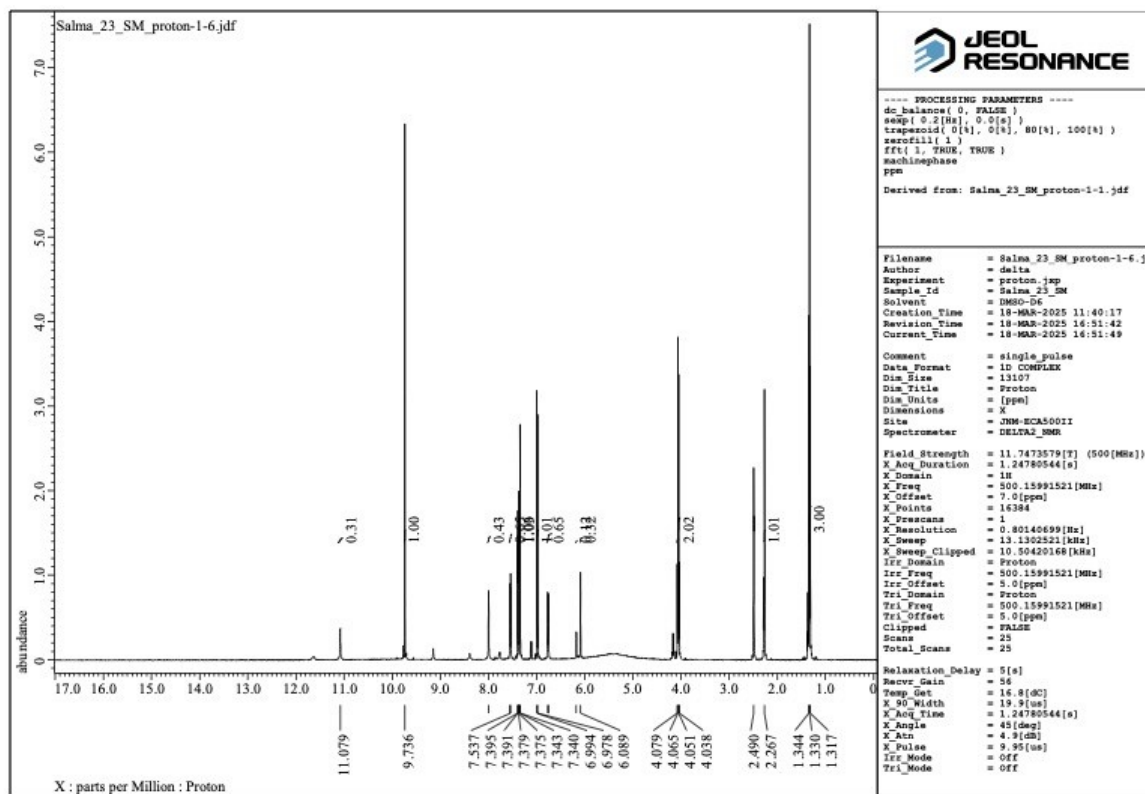
24 #41 RT: 0.70 P: + NL: 2.51E2
T: {0,0} + c EI Full ms [40.00-1000.00]



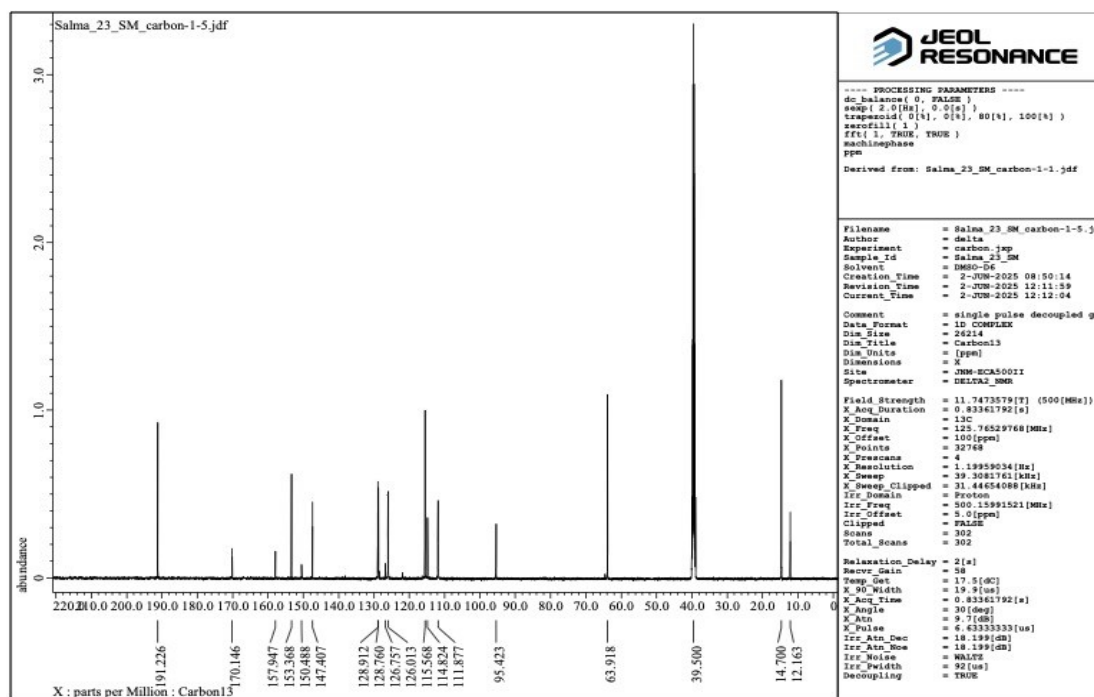
EI-MS of 5b dye.



IR spectrum of 6a dye.

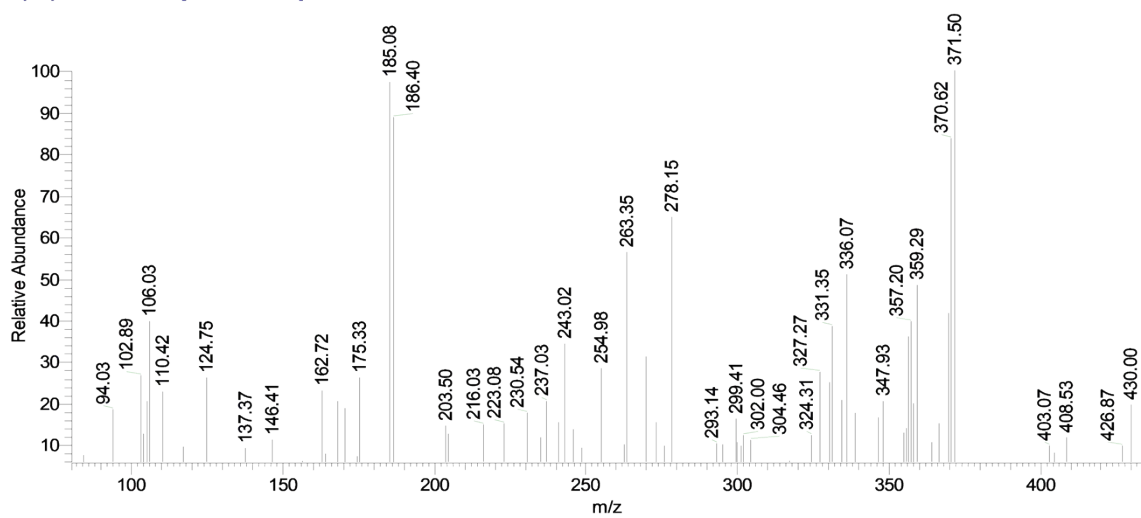


¹H NMR spectrum of 6a dye.



^{13}C NMR spectrum of 6a dye.

23 #254 RT: 4.27 P: + NL: 8.48E2
 T: {0,0} + c EI Full ms [40.00-1000.00]



EI-MS of 6a dye.