

Supplementary Information

Synthesis, optical, electrochemical properties and photovoltaic performance of novel panchromatic meso- thiophene BODIPY dyes with a variety of electron-donating groups at 3,5-positions

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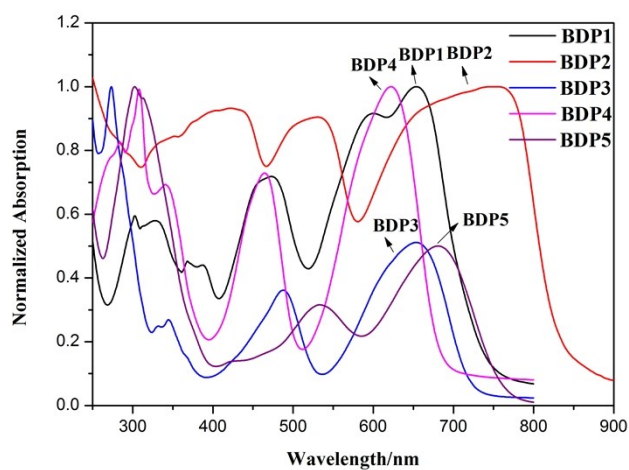


Fig. 1 Absorption spectra of **BDP1-5** in CH_2Cl_2 solution.

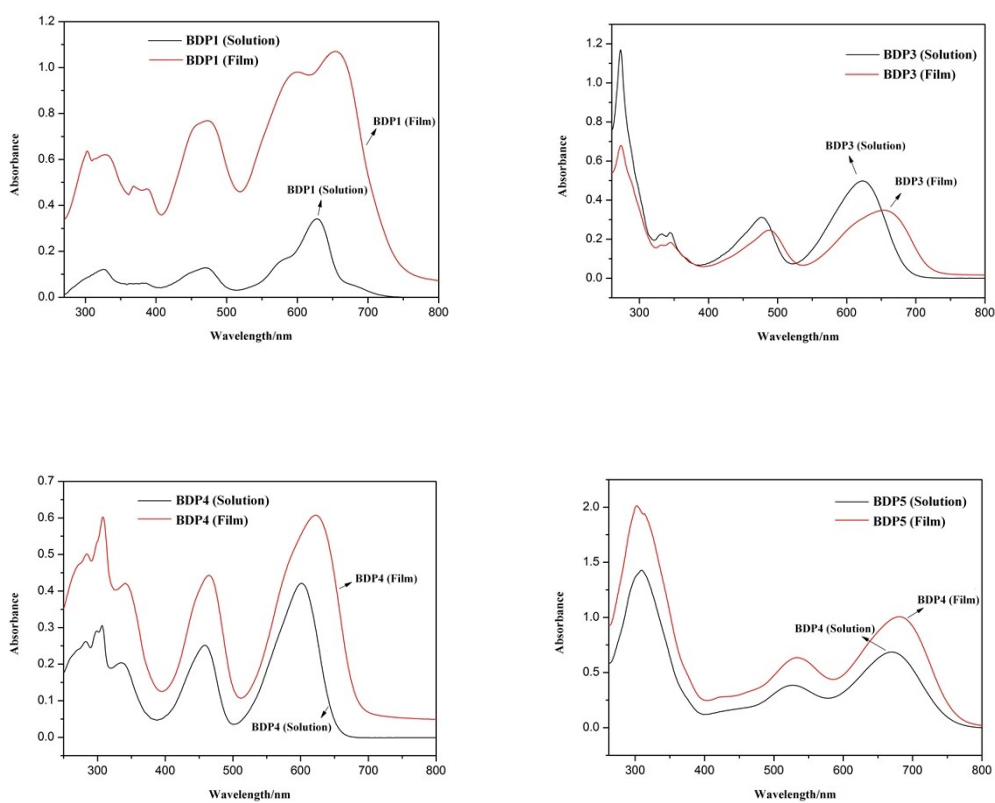


Fig. 2 The comparison of absorption spectra of **BDPs** in solution and in film.

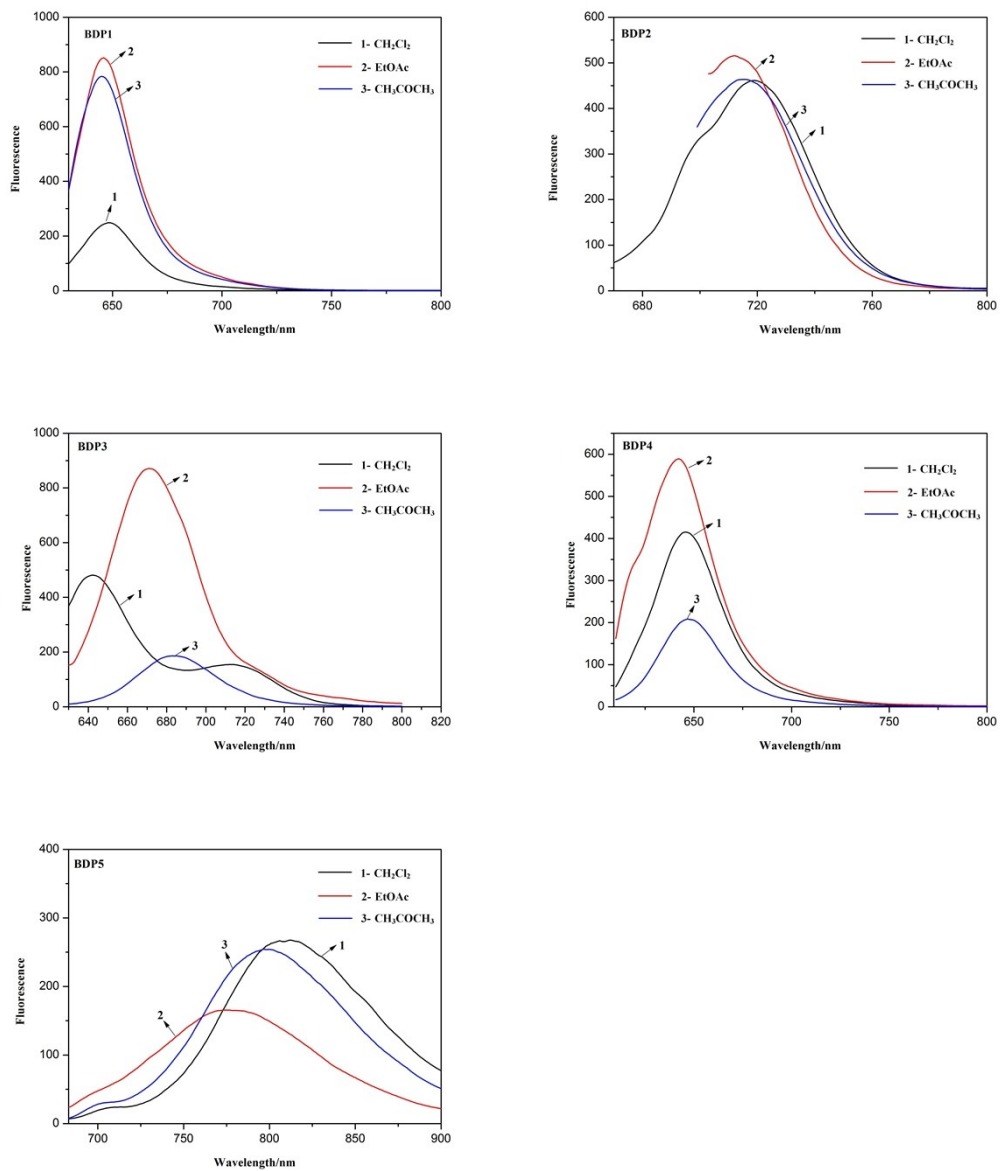


Fig. 3 Fluorescence spectra of **BDP1-5** recorded in different solutions.

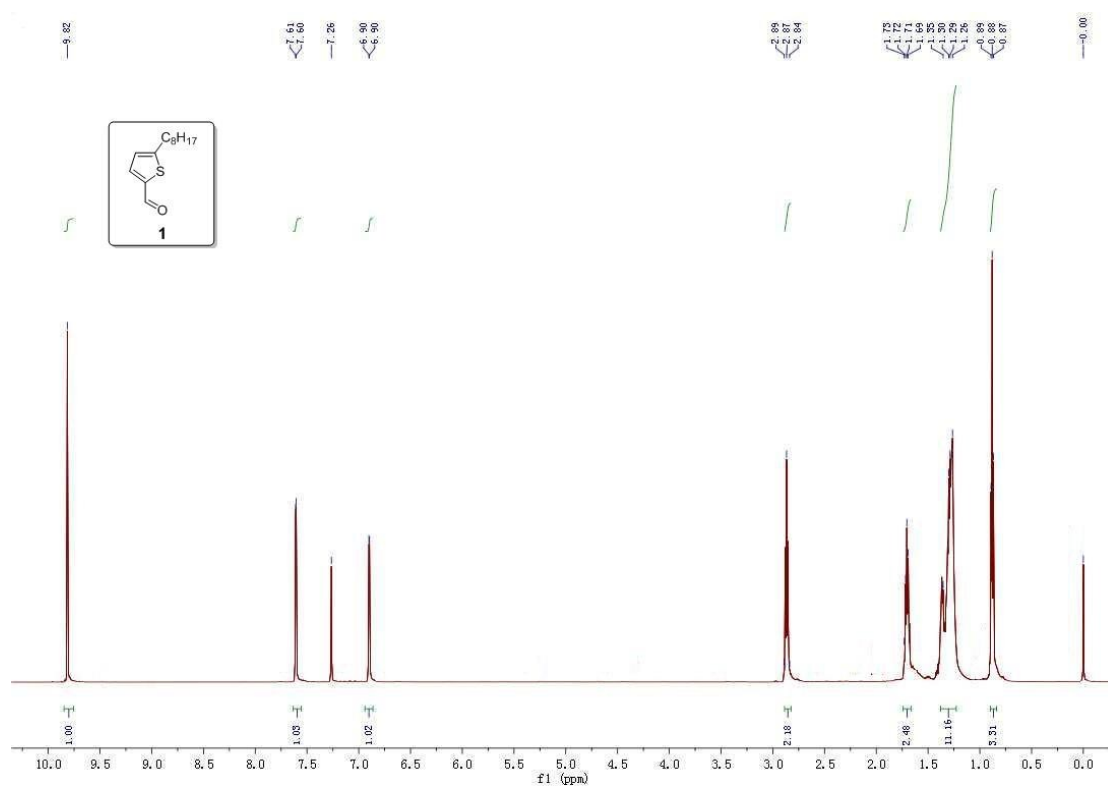


Fig. 4 ^1H NMR spectrum of compound **1**

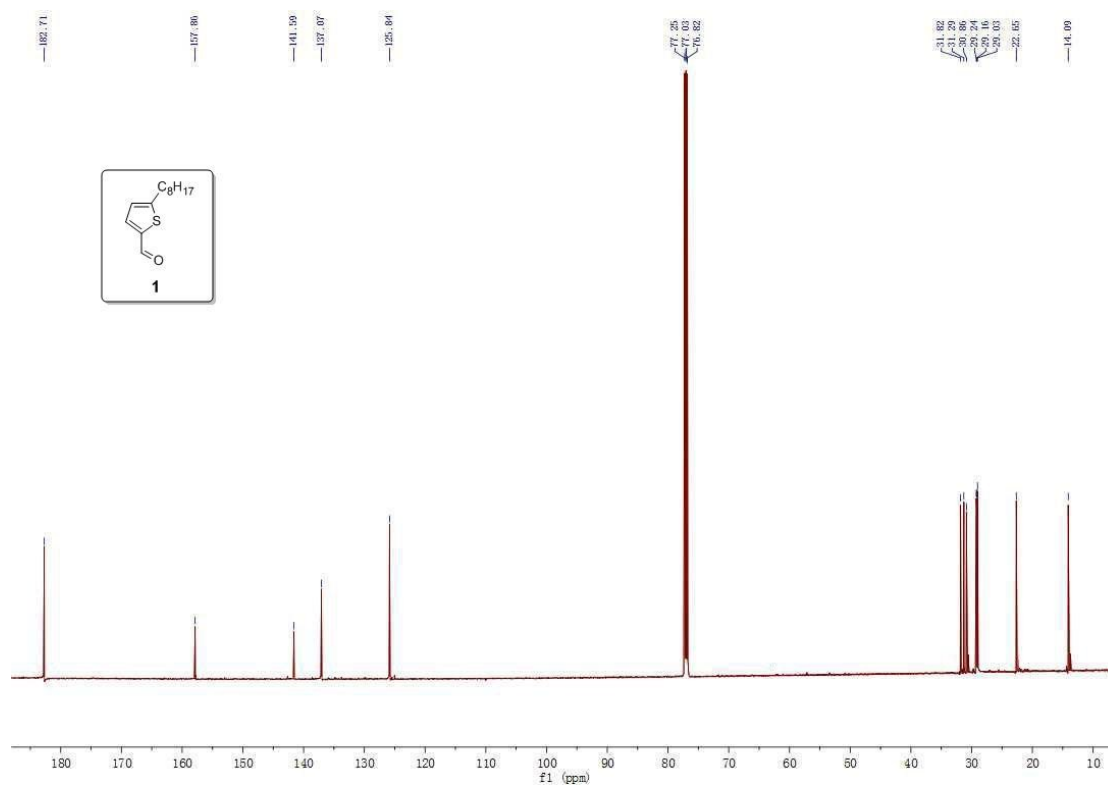


Fig. 5 ^{13}C NMR spectrum of compound **1**

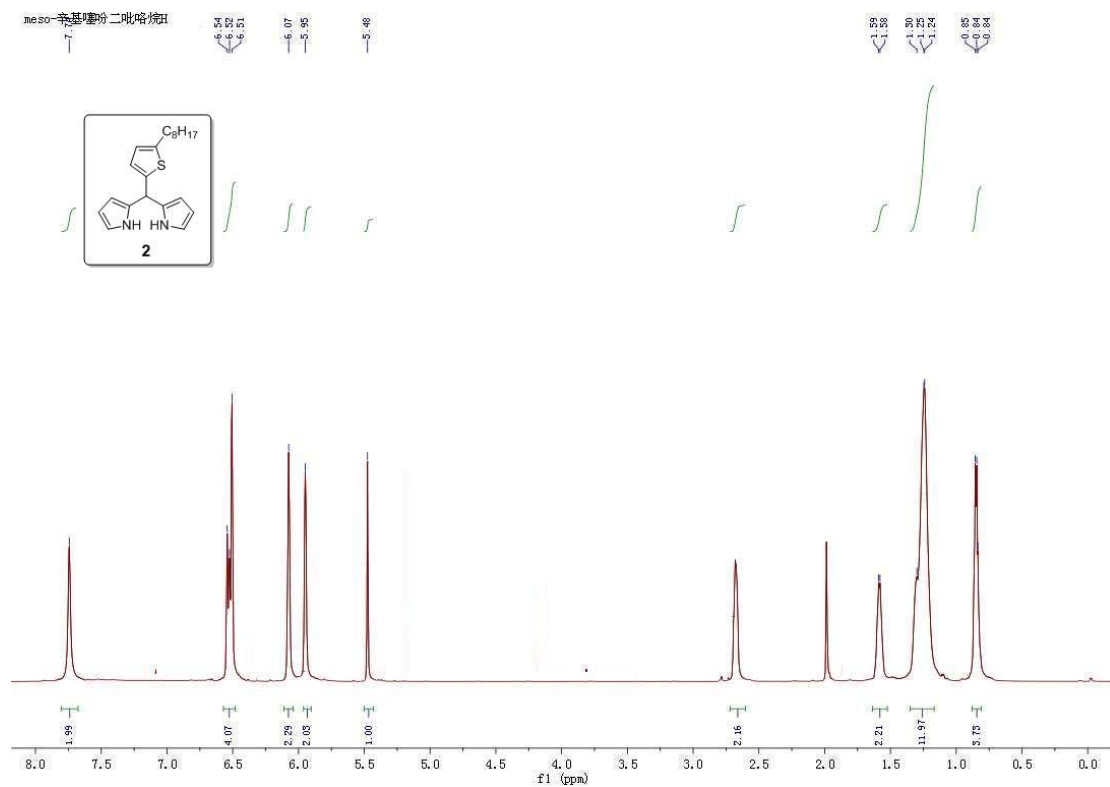


Fig. 6 ^1H NMR spectrum of compound **2**

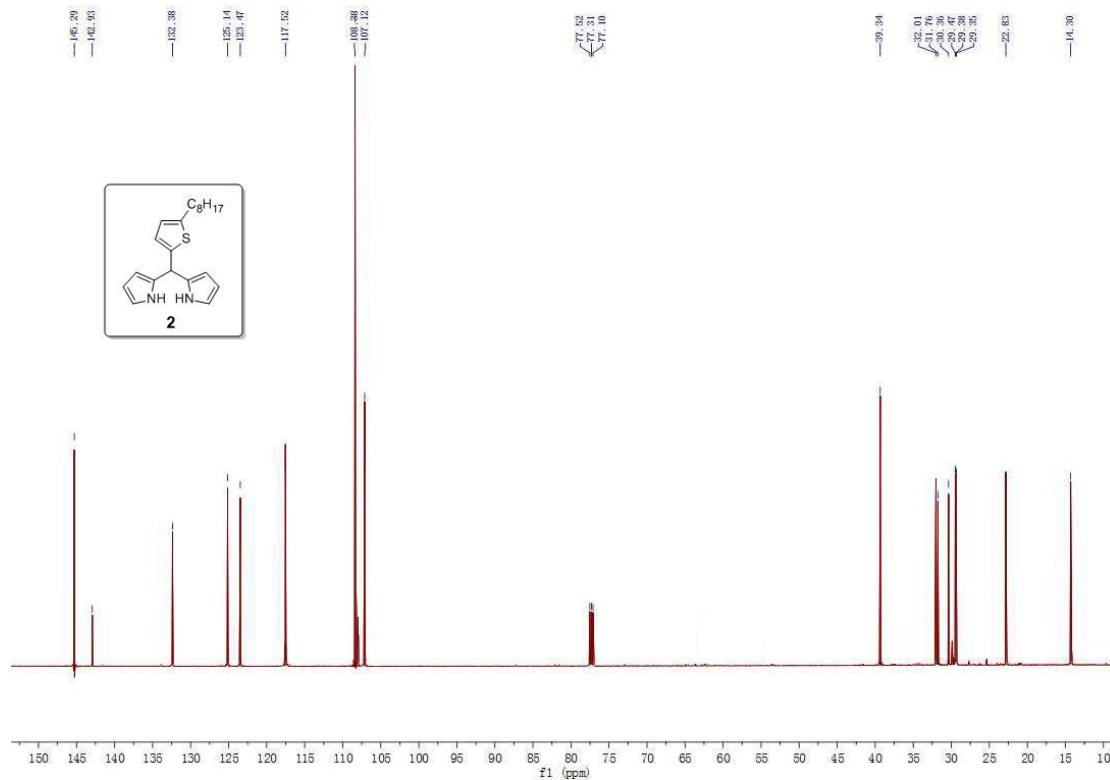


Fig. 7 ^{13}C NMR spectrum of compound **2**

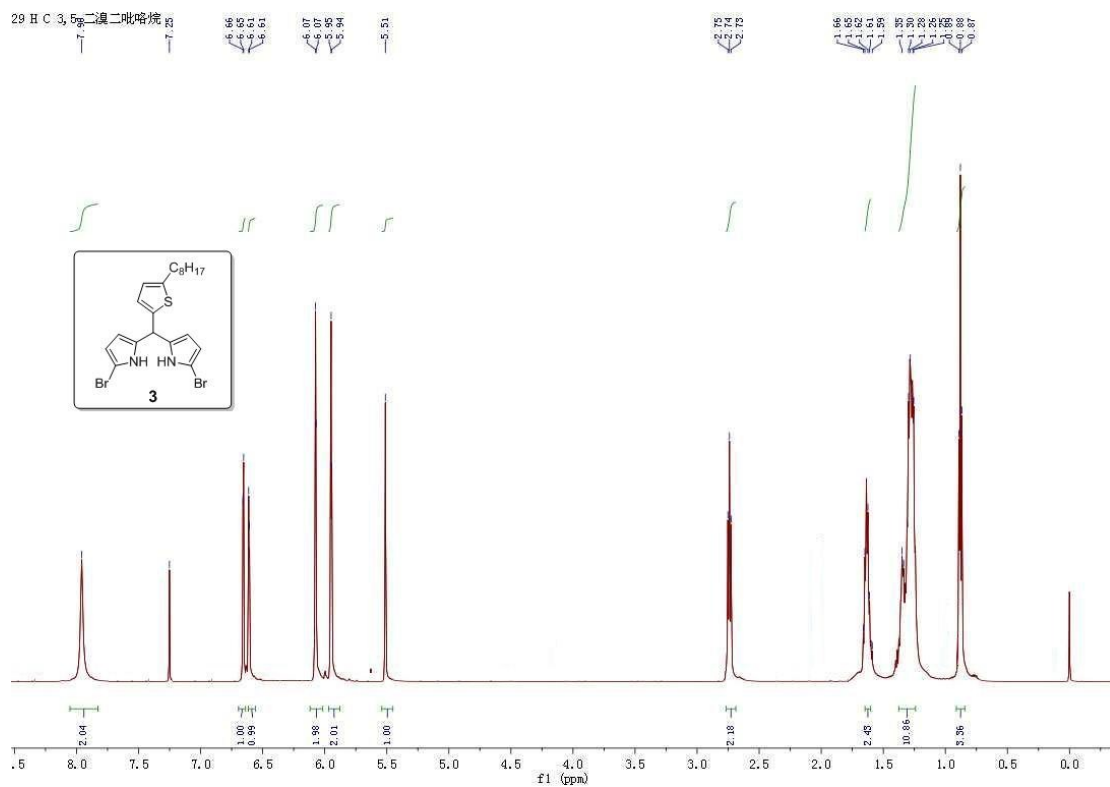


Fig. 8 ^1H NMR spectrum of compound **3**

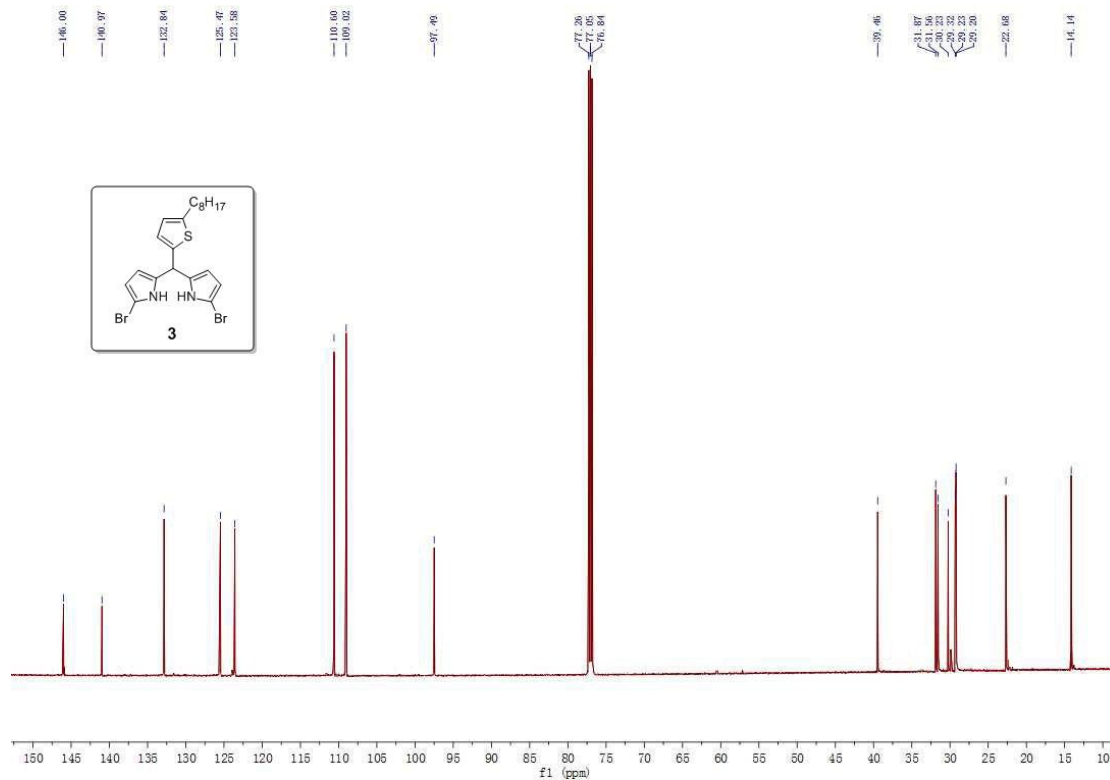


Fig. 9 ^{13}C NMR spectrum of compound **3**

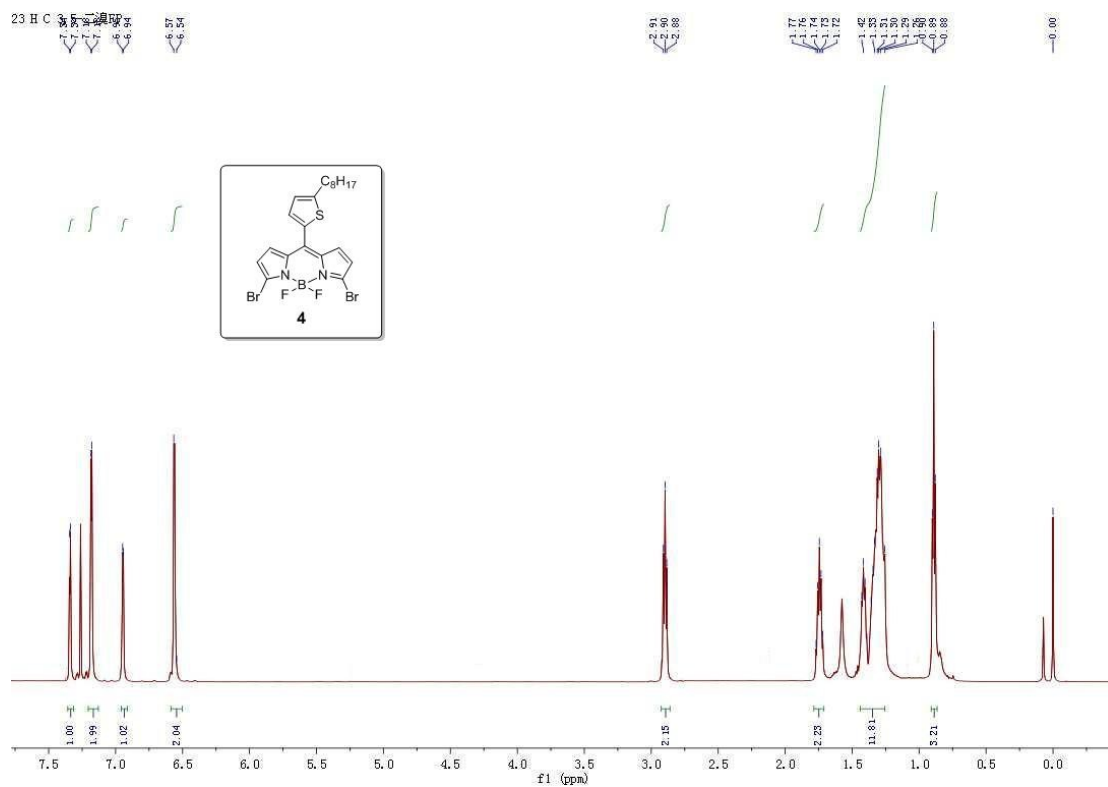


Fig. 10 ¹H NMR spectrum of compound **4**

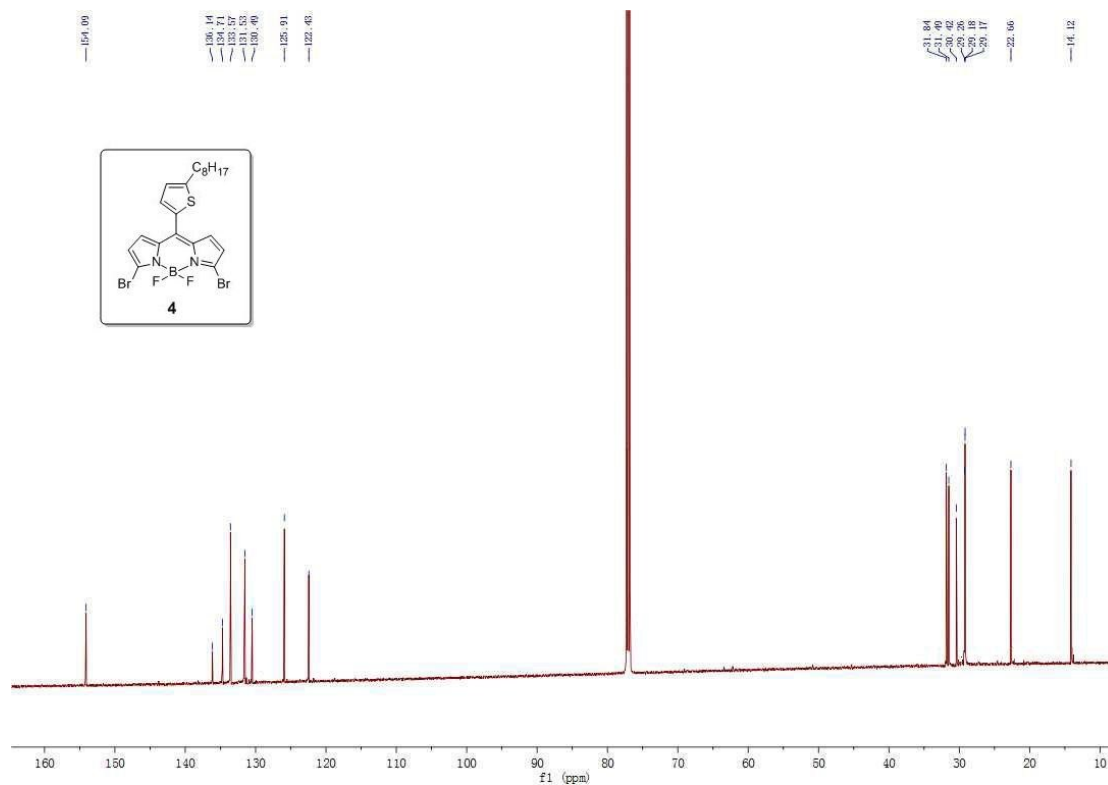


Fig. 11 ¹³C NMR spectrum of compound **4**

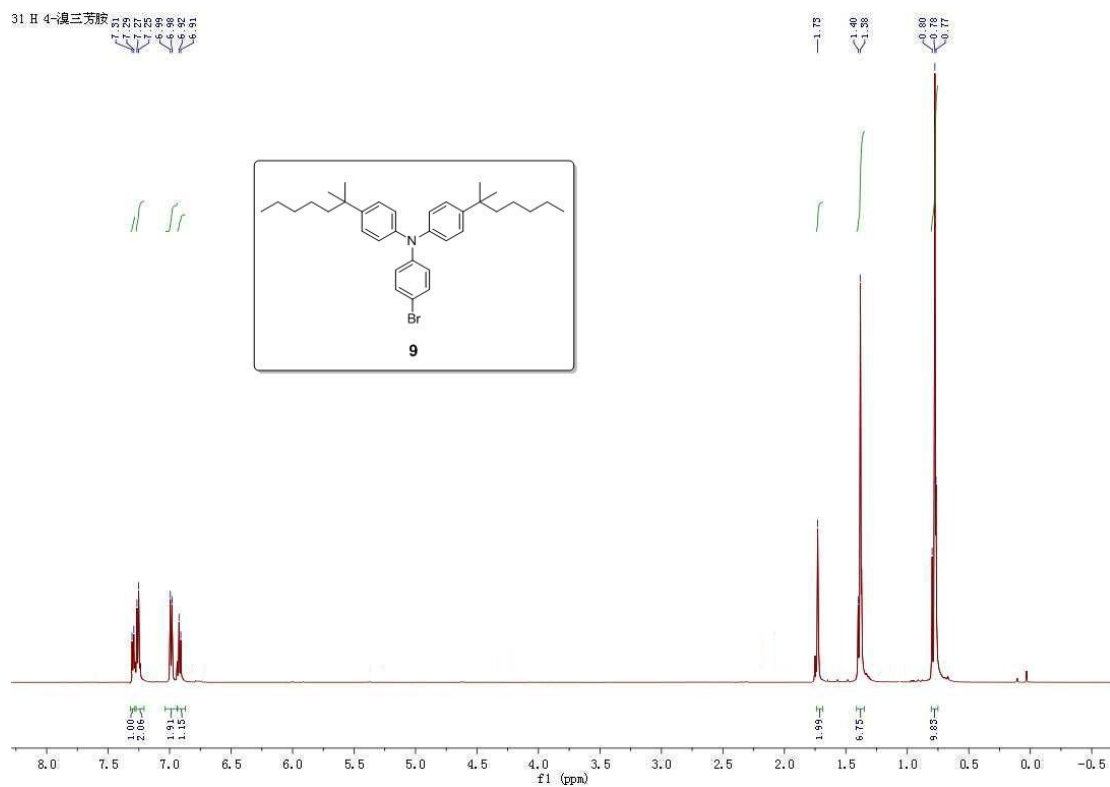


Fig. 12 ^1H NMR spectrum of compound **9**

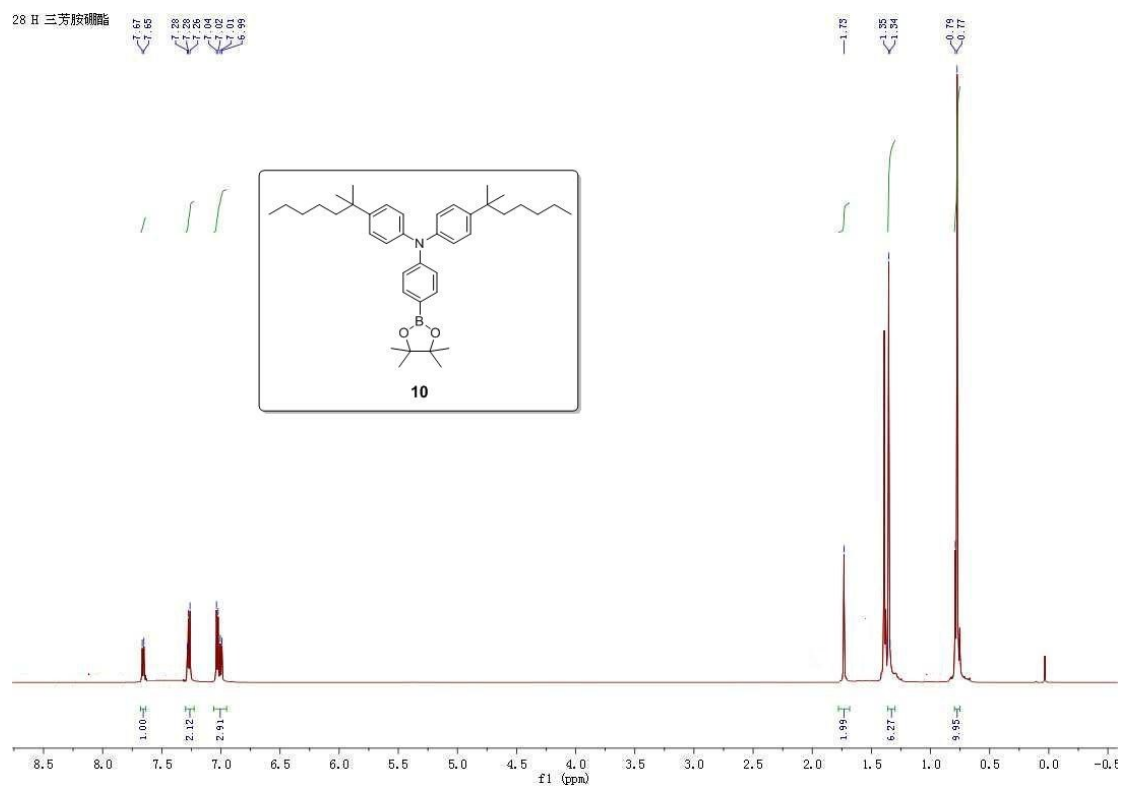
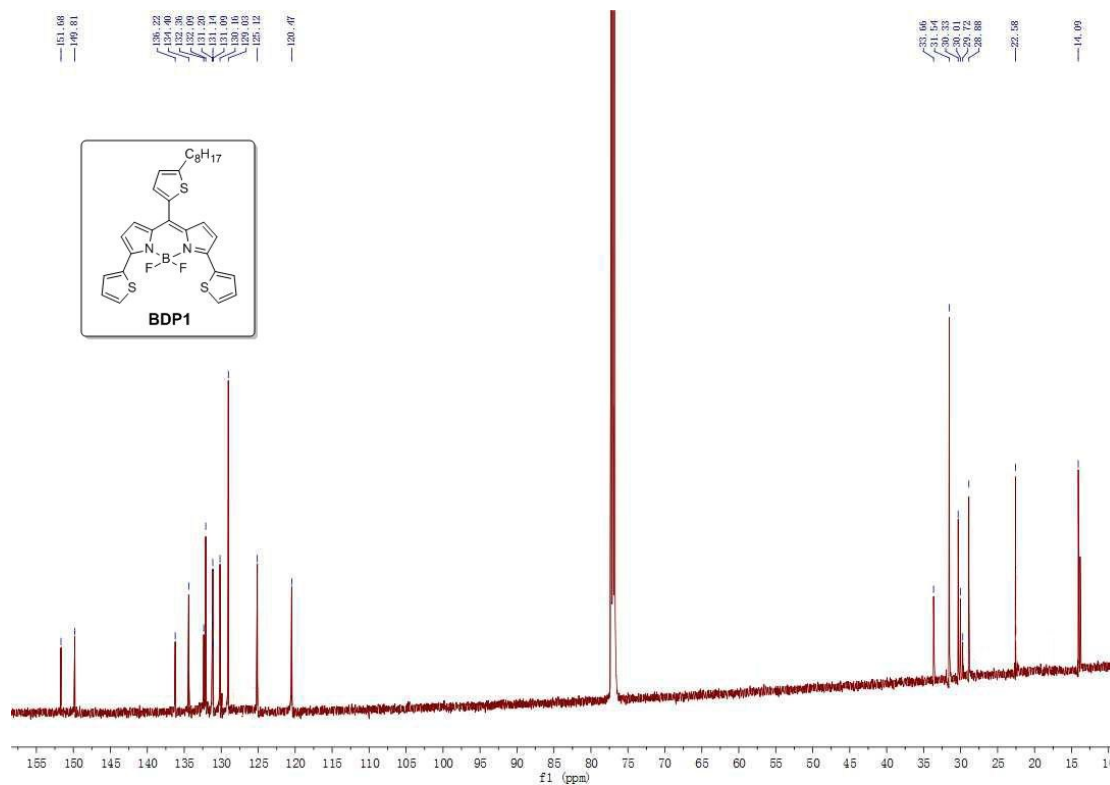
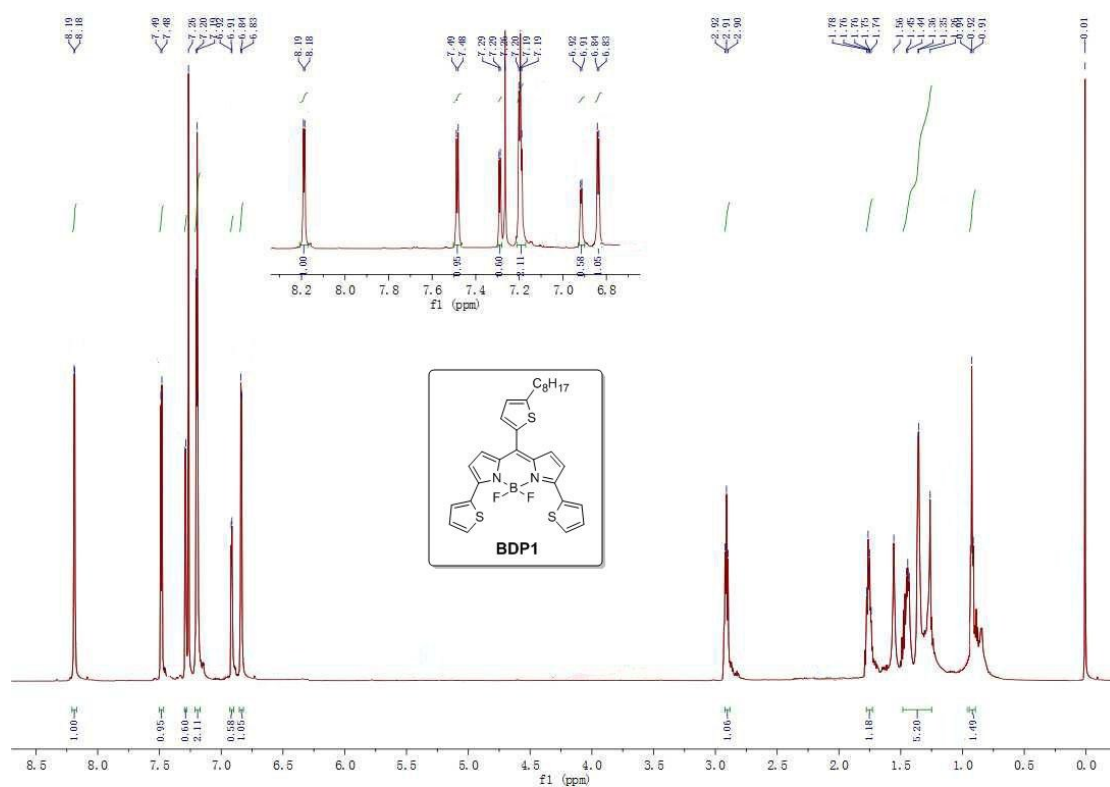


Fig. 13 ^1H NMR spectrum of compound **10**



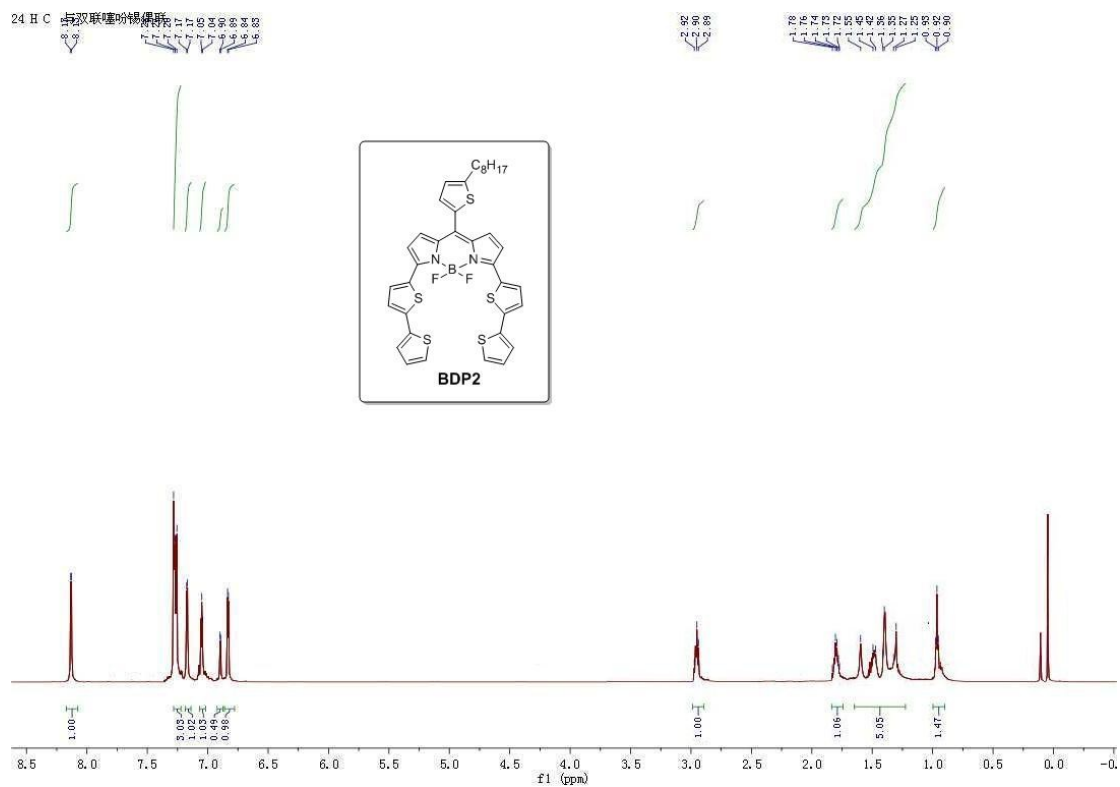


Fig. 16 ¹H NMR spectrum of compound **BDP2**

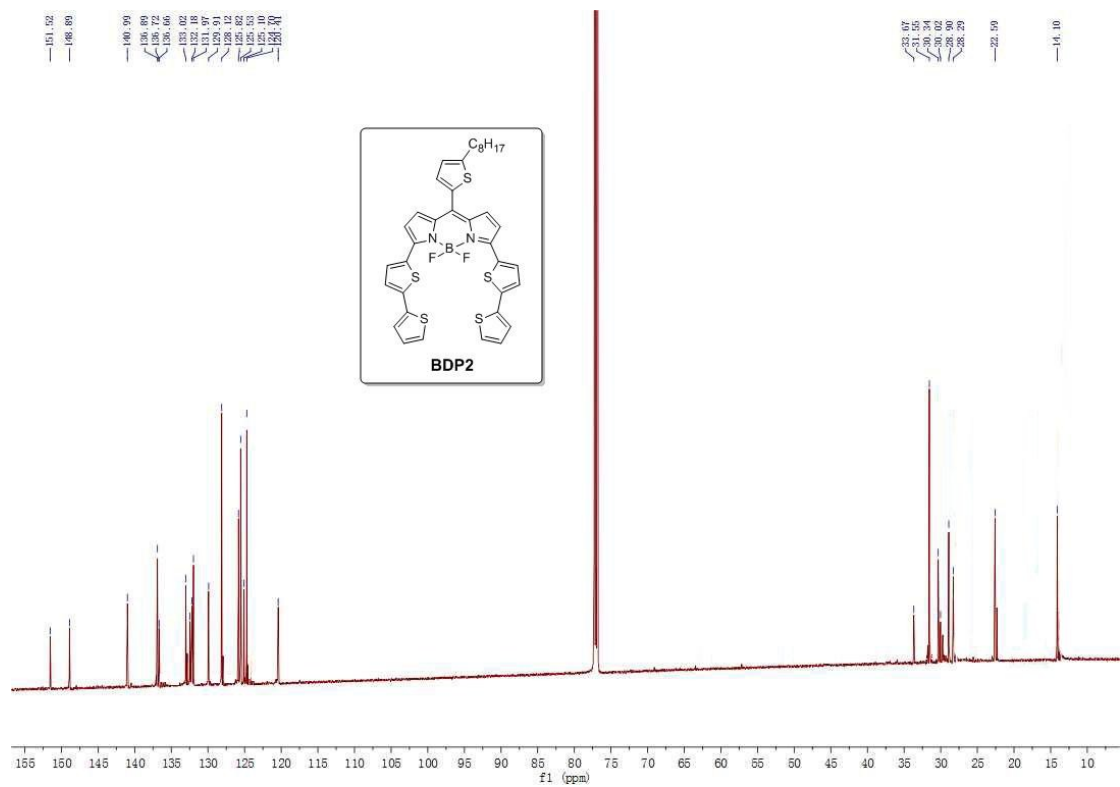
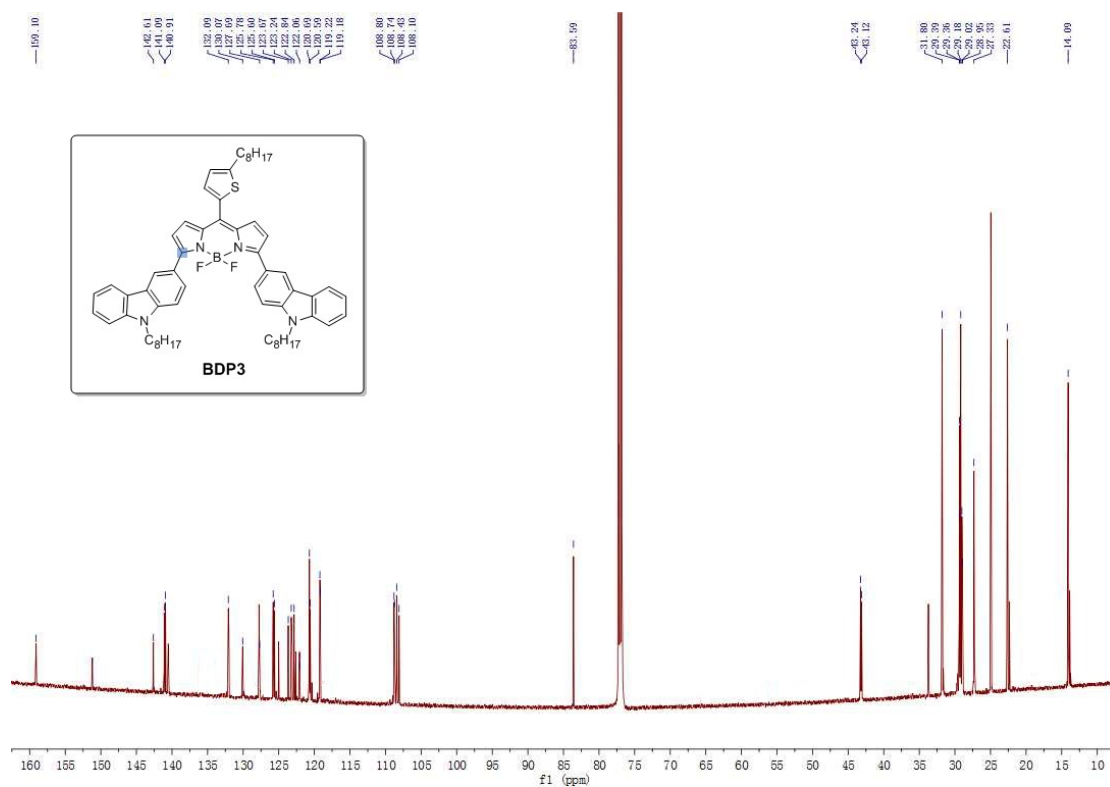
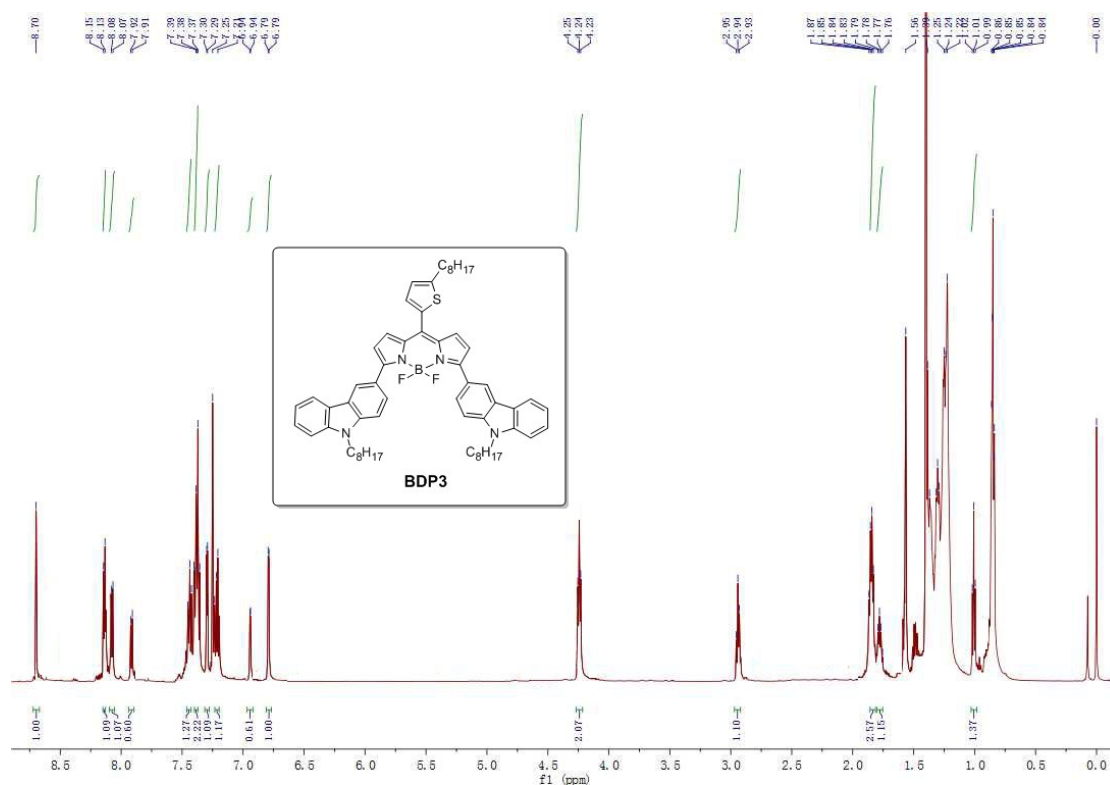


Fig. 17 ¹³C NMR spectrum of compound **BDP2**



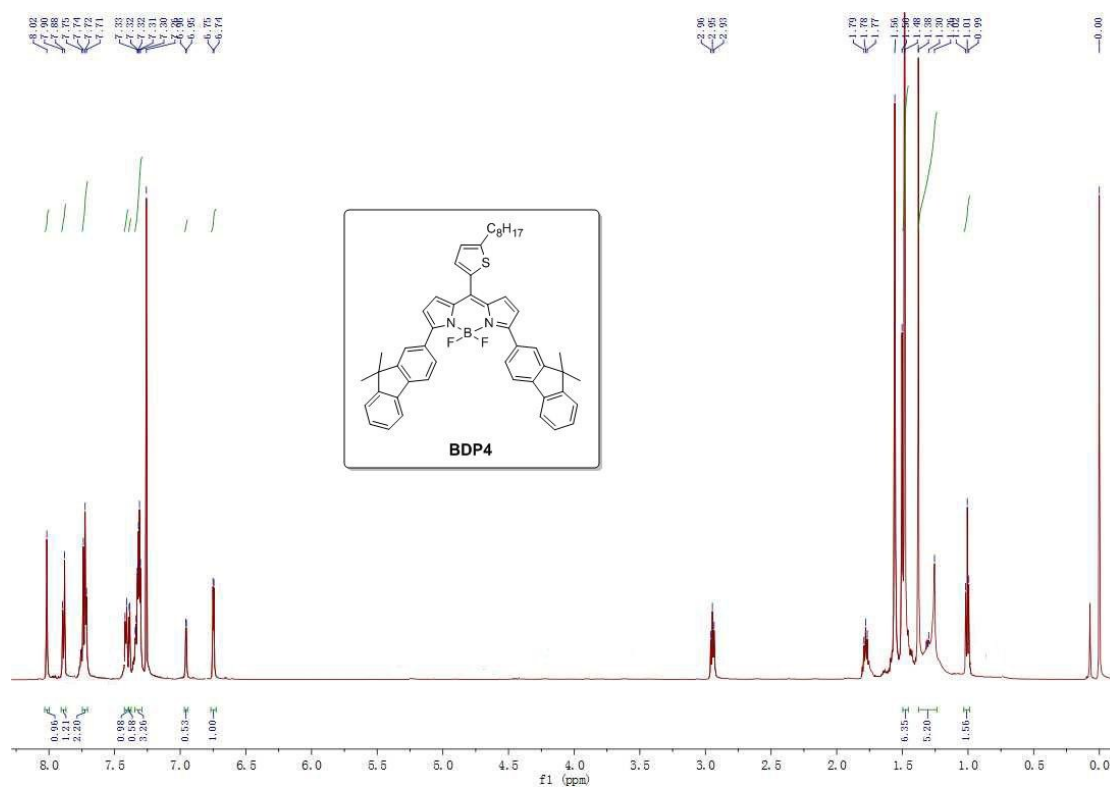


Fig. 20 ¹H NMR spectrum of compound **BDP4**

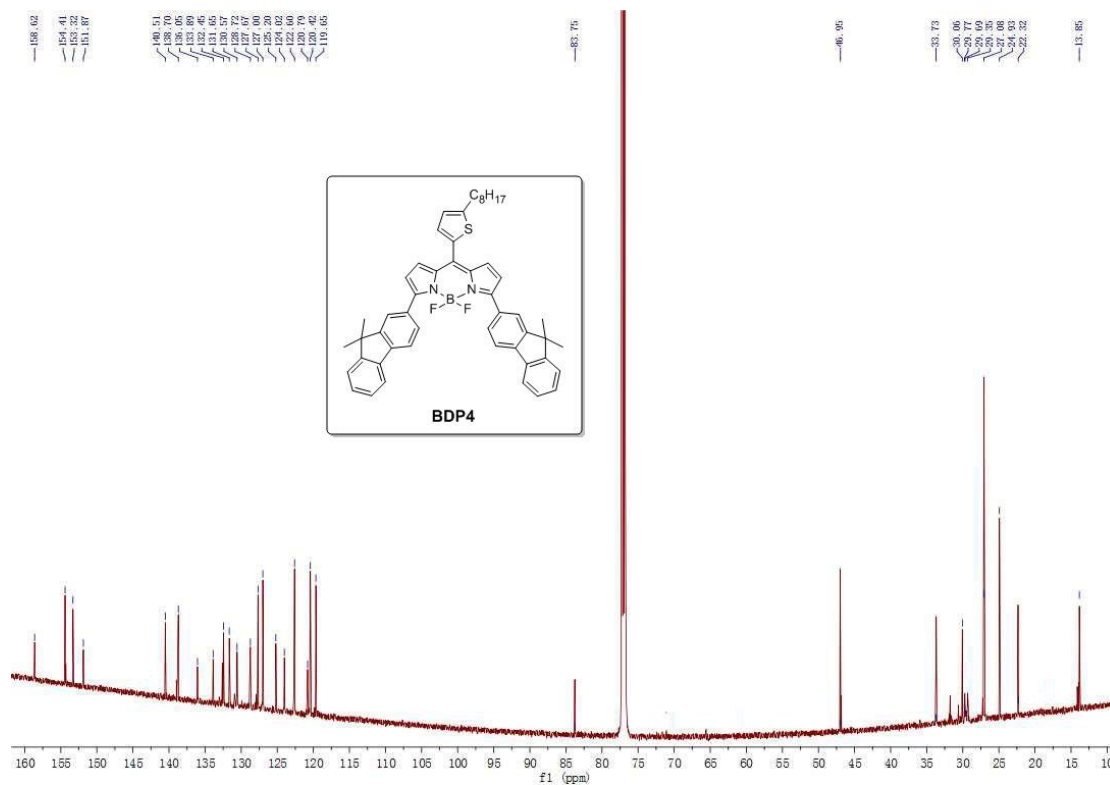


Fig. 21 ¹³C NMR spectrum of compound **BDP4**

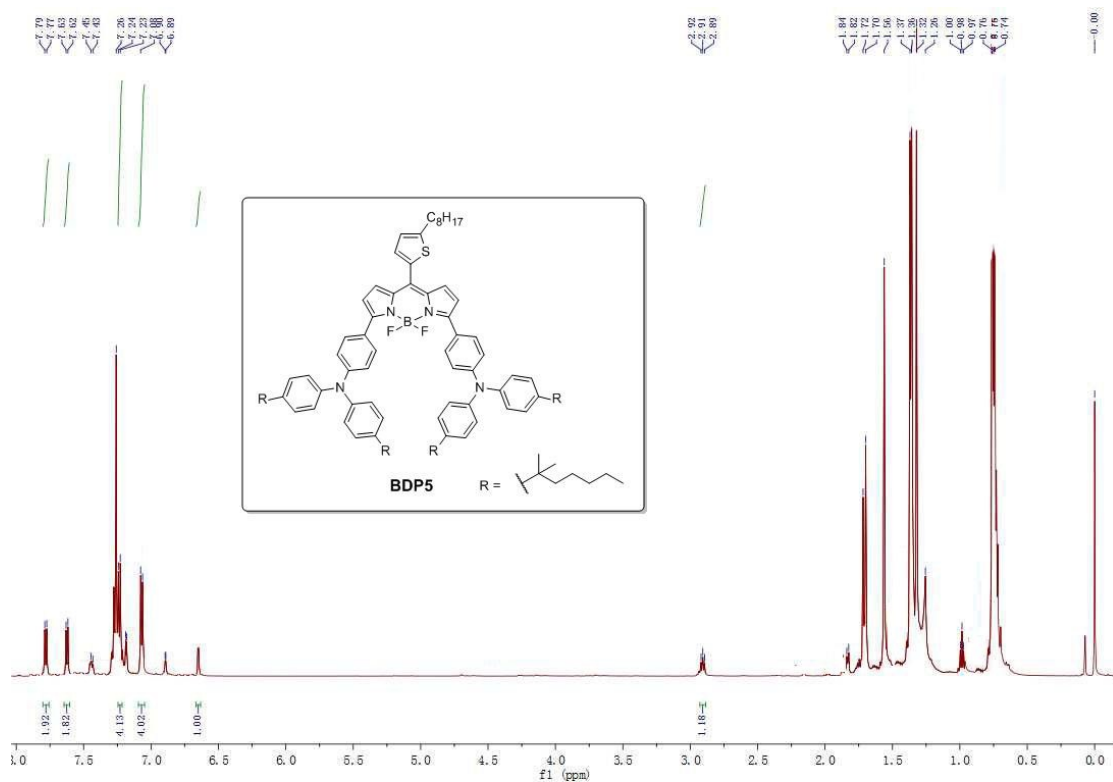


Fig. 22 ^1H NMR spectrum of compound **BDP5**

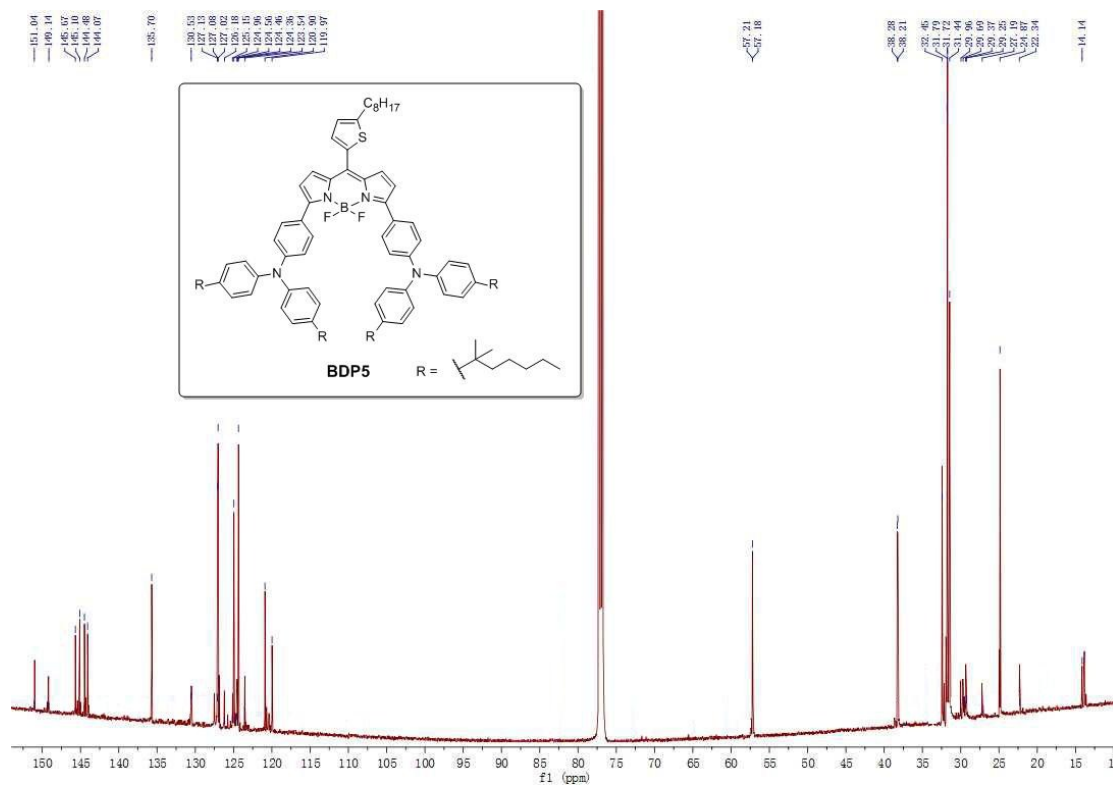


Fig. 23 ^{13}C NMR spectrum of compound **BDP5**