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## Supporting Information

# BN-heteroacene-cored Luminogens with Dual Channel Detection for Fluoride Anion

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## <sup>1</sup>H, <sup>13</sup>CNMR and HRMS spectra for new compounds

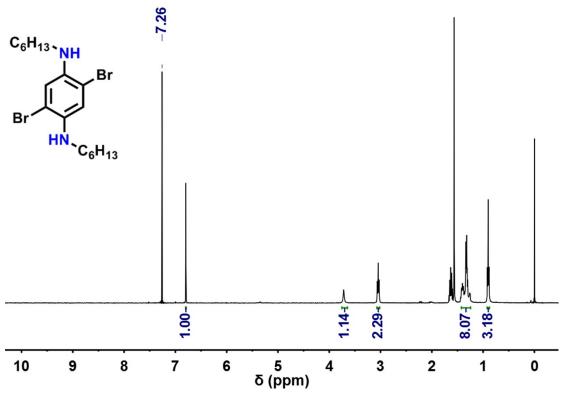


Figure S1. <sup>1</sup>H NMR spectra of compound 2

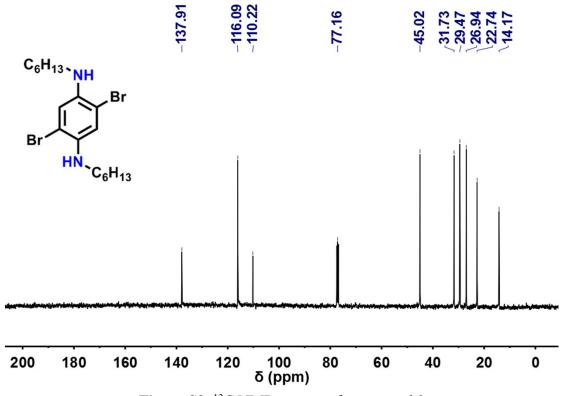


Figure S2. <sup>13</sup>C NMR spectra of compound 2

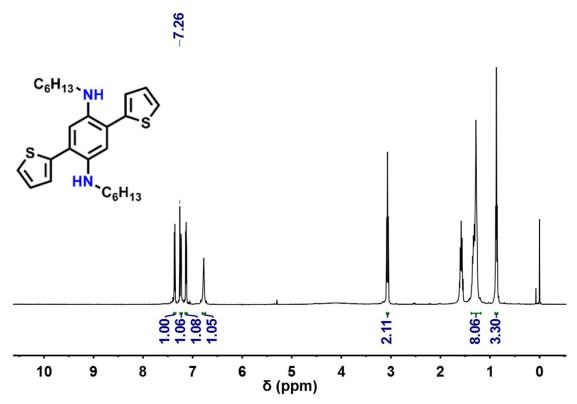


Figure S3. <sup>1</sup>H NMR spectra of compound 3

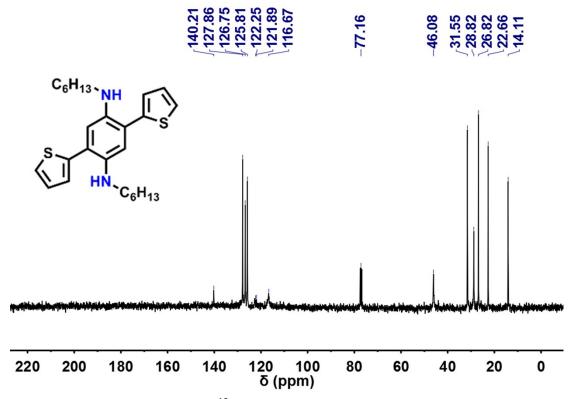


Figure S4. <sup>13</sup>C NMR spectra of compound 3

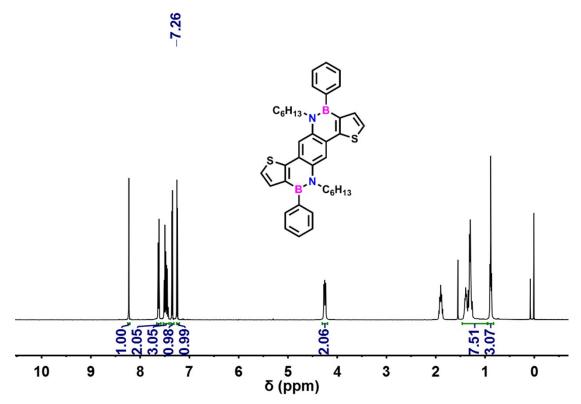


Figure S3. <sup>1</sup>H NMR spectra of compound 4

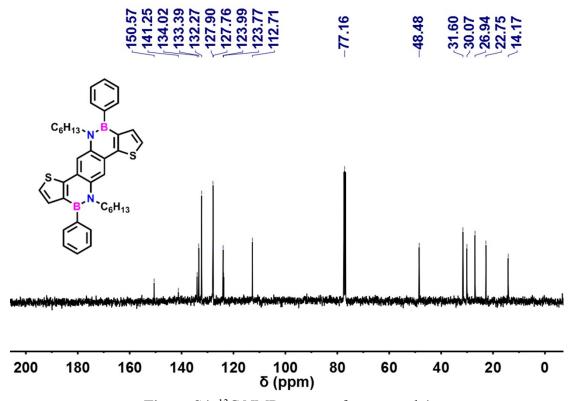


Figure S4. <sup>13</sup>C NMR spectra of compound 4

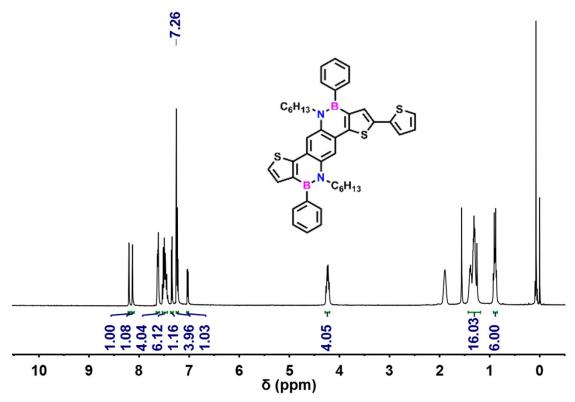


Figure S5. <sup>1</sup>H NMR spectra of compound 6a

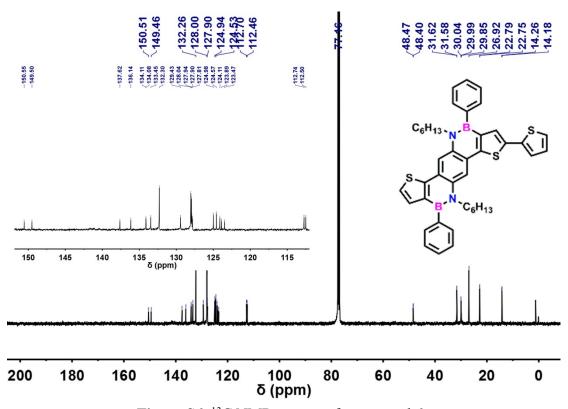
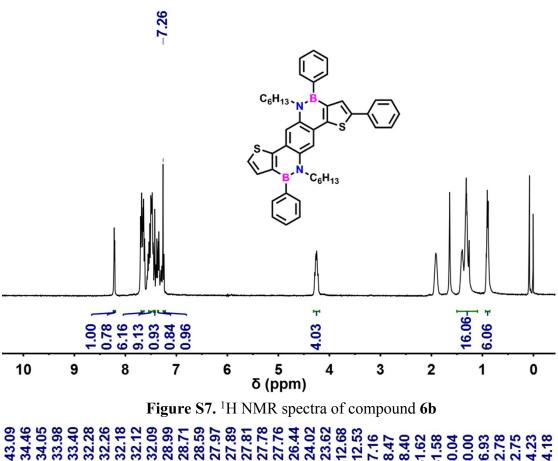


Figure S6. <sup>13</sup>C NMR spectra of compound 6a



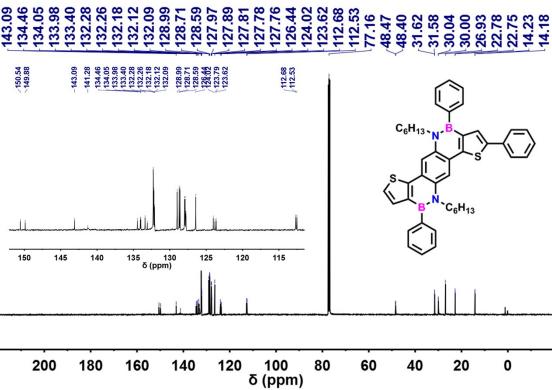


Figure S8. <sup>13</sup>C NMR spectra of compound 6b

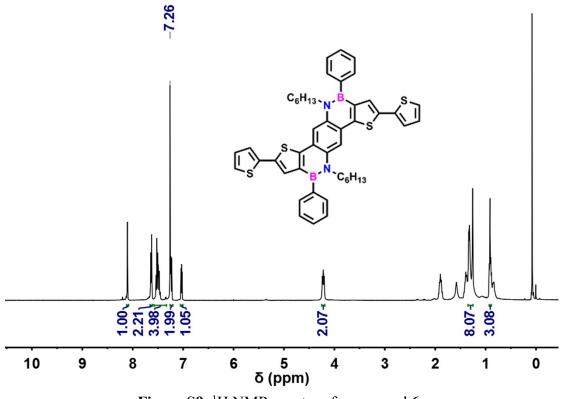


Figure S9. <sup>1</sup>H NMR spectra of compound 6c

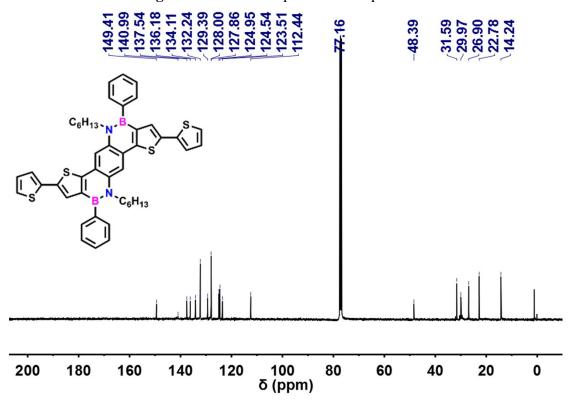


Figure S10. <sup>13</sup>C NMR spectra of compound 6c

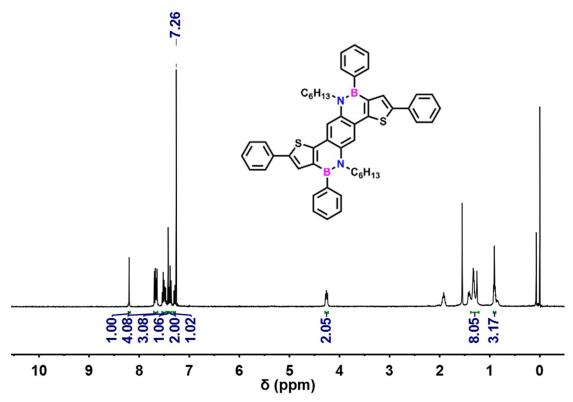


Figure S11. <sup>1</sup>H NMR spectra of compound 6d

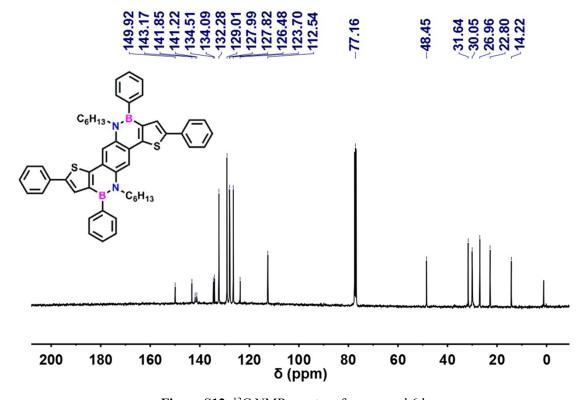


Figure S12. <sup>13</sup>C NMR spectra of compound 6d

## Mass Spectrum SmartFormula Report Analysis Info Acquisition Date 12/17/2014 10:18:35 AM D:\Data\gaojh\Q-TOF-gaojh-20141216-ZJ2014-12-8-8.d Analysis Name tune 100-600 pos141217.m Method Operator Jiang Sample Name ZJ2014-12-8-8 micrOTOF-Q II 10324 Instrument / Ser# Comment **Acquisition Parameter** Source Type Ion Polarity Positive Set Nebulizer 0.4 Bar 4500 V -500 V 200 °C 2.2 l/min Active Set Capillary Set Dry Heater Focus Set End Plate Offset Scan Begin 50 m/z Set Dry Gas Scan End 600 m/z Set Collision Cell RF 120.0 Vpp Set Divert Valve Source Intens. +MS, 0.6-0.6min 4-441.2384 3-2-0-420 425 430 435 440 445 450 m/z mSigma 4.4 err [mDa] 0.8 err [ppm] e Conf N-Rule Formula Score m/z 441.2393 Meas, m/z 441.2384 C 26 H 37 N 2 S 2 100.00

Figure S13. HRMS of 3

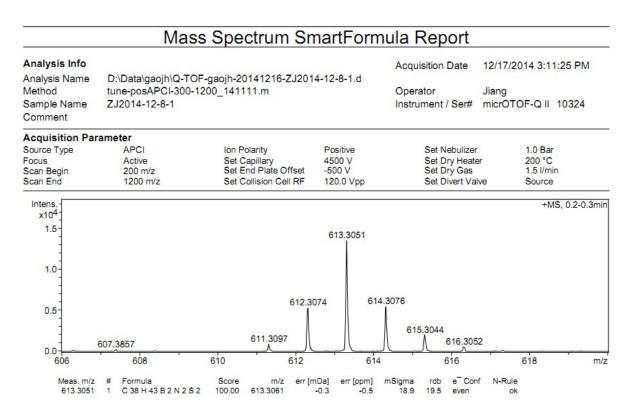


Figure S14. HRMS of 4

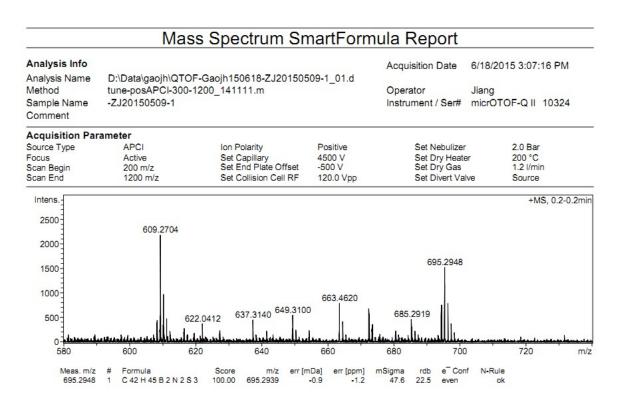


Figure S15. HRMS of 6a

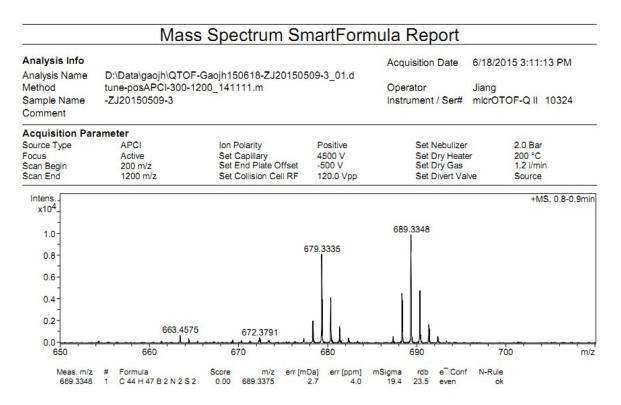


Figure S16. HRMS of 6b

### Mass Spectrum SmartFormula Report Analysis Info Acquisition Date 6/18/2015 3:09:09 PM Analysis Name D:\Data\gaojh\QTOF-Gaojh150618-ZJ20150509-2\_01.d Method tune-posAPCI-300-1200 141111.m Operator Sample Name -ZJ20150509-2 Instrument / Ser# micrOTOF-Q II 10324 Comment **Acquisition Parameter** Ion Polarity APCI Positive Source Type Set Nebulizer 2.0 Bar Set Capillary Set End Plate Offset 4500 V -500 V 200 °C Focus Active Set Dry Heater Scan Begin Scan End 200 m/z Set Dry Gas 1.2 l/min 120.0 Vpp 1200 m/z Set Collision Cell RF Set Divert Valve Source Intens. +MS, 0.1min 1500 767.2752 1250 1000 777.2797 750 500 250 750 755 760 770 765 790 795 775 785 Meas, m/z Score 100.00 err [mDa] 0.6 rdb e Conf N-Rule C 46 H 47 B 2 N 2 S 4 777.2818 25.5 777.2797 even

Figure S17. NMRS of 6c

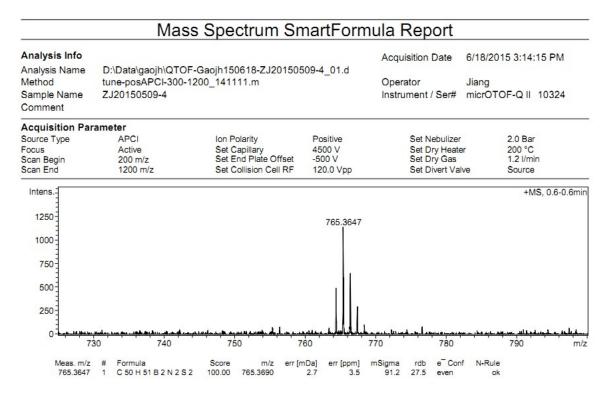
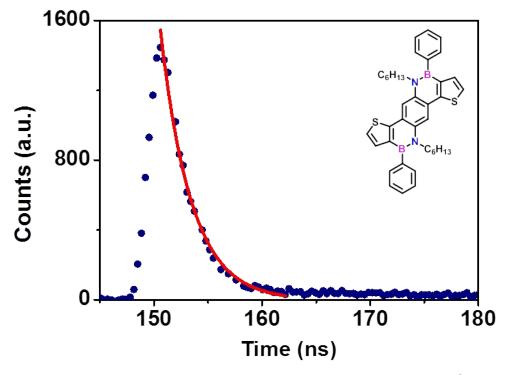
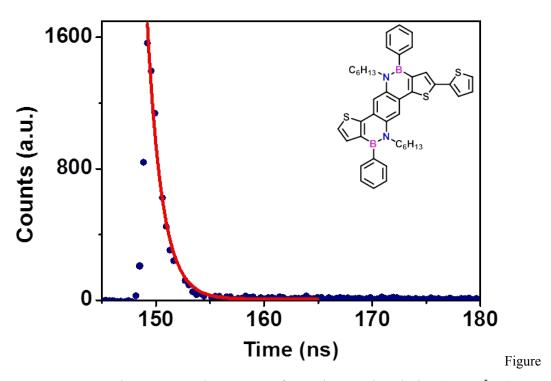


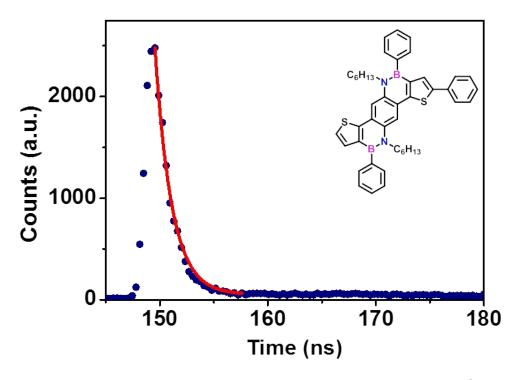
Figure S18. HRMS of 6d



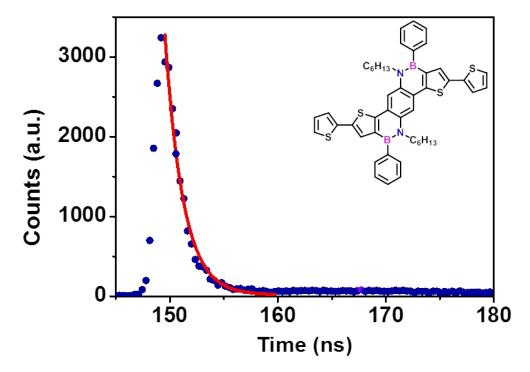
**Figure S19.** Fluorescence decay curve for **4** in CHCl<sub>3</sub> solution (1×10<sup>-5</sup> M).



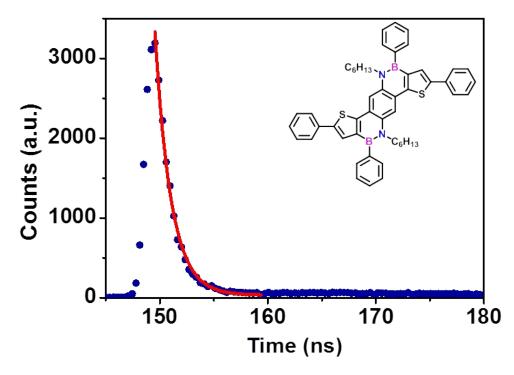
**Figure S20.** Fluorescence decay curve for **6a** in CHCl<sub>3</sub> solution (1×10<sup>-5</sup> M).



**Figure S21.** Fluorescence decay curve for **6b** in CHCl<sub>3</sub> solution (1×10<sup>-5</sup> M).



**Figure S22.** Fluorescence decay curve for **6c** in CHCl<sub>3</sub> solution  $(1 \times 10^{-5} \text{ M})$ .



**Figure S23.** Fluorescence decay curve for **6d** in CHCl<sub>3</sub> solution  $(1 \times 10^{-5} \text{ M})$ .