

## Supplementary Information

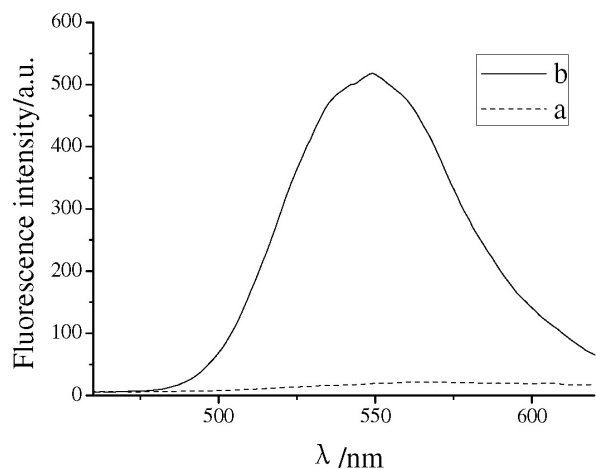
### Synthesis, Absorption and Fluorescence Spectral Characteristics of Trinucleus Dimethine Cyanine Dyes as Fluorescent Probes for DNA Detection

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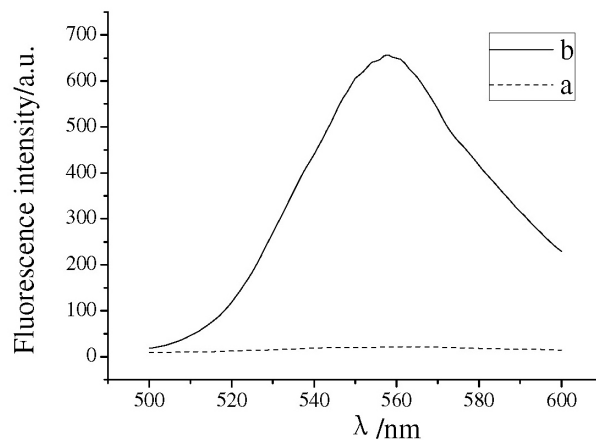
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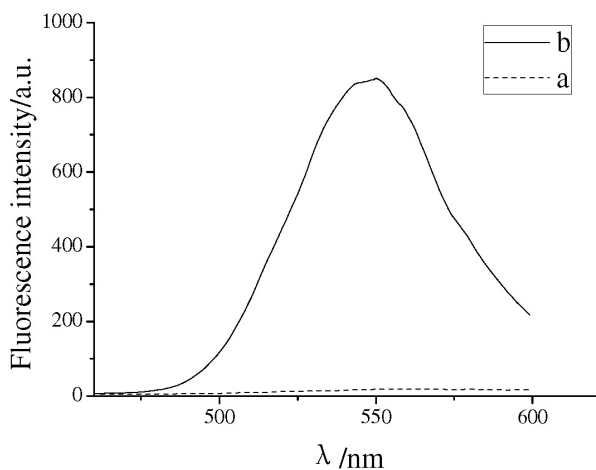
For Fluorescence emission of **3a-3f** in buffer, in the presence of DNA see Figure S1-S6. For <sup>1</sup>H NMR, <sup>13</sup>C NMR and IR see Figure S6-S24.



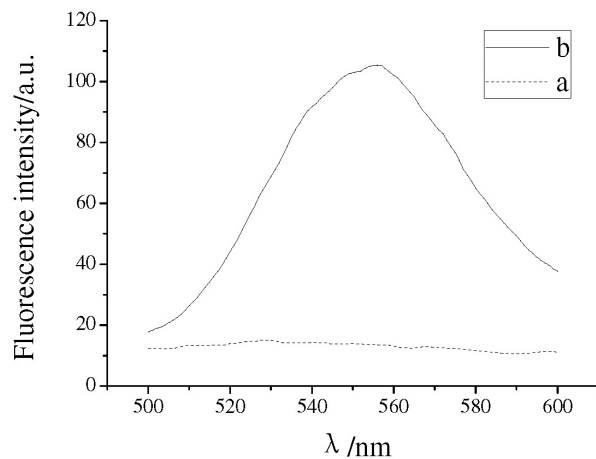
**Figure S1.** Fluorescence emission of **3a** in buffer, in the presence of DNA. a: **3a** in buffer. b: **3a** in the presence of DNA.



**Figure S3.** Fluorescence emission of **3c** in buffer, in the presence of DNA. a: **3c** in buffer. b: **3c** in the presence of DNA.

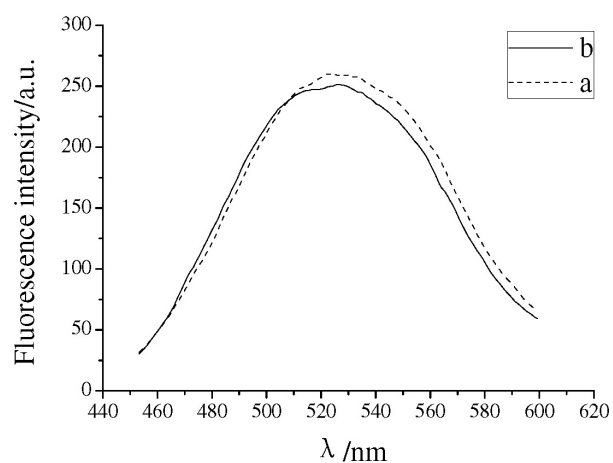


**Figure S2.** Fluorescence emission of **3b** in buffer, in the presence of DNA. a: **3b** in buffer. b: **3b** in the presence of DNA.

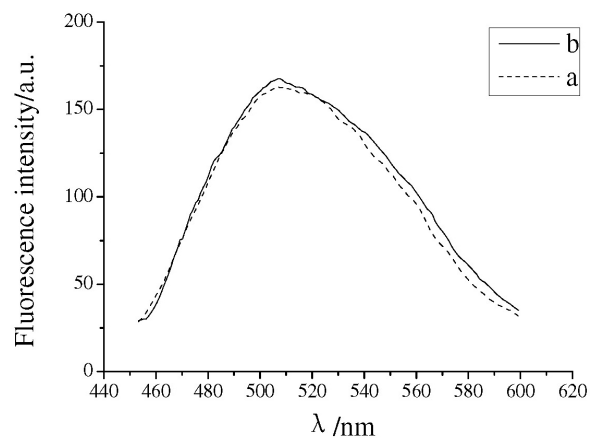


**Figure S4.** Fluorescence emission of **3d** in buffer, in the presence of DNA. a: **3d** in buffer. b: **3d** in the presence of DNA.

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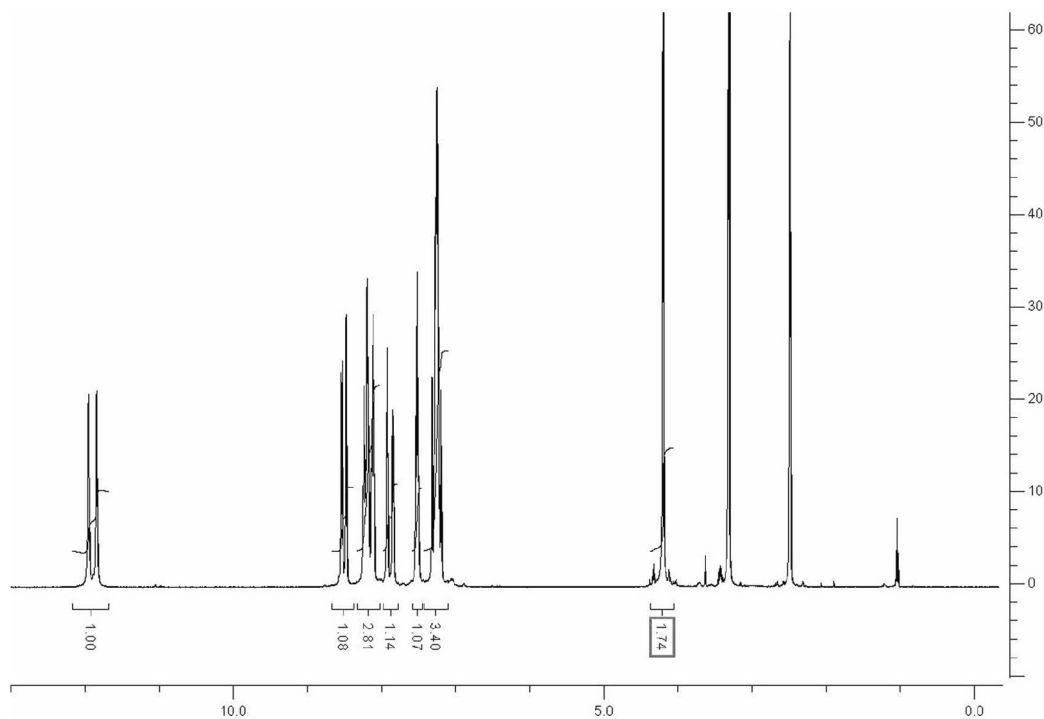


**Figure S5.** Fluorescence emission of **3e** in buffer, in the presence of DNA. a: **3e** in buffer. b: **3e** in the presence of DNA.



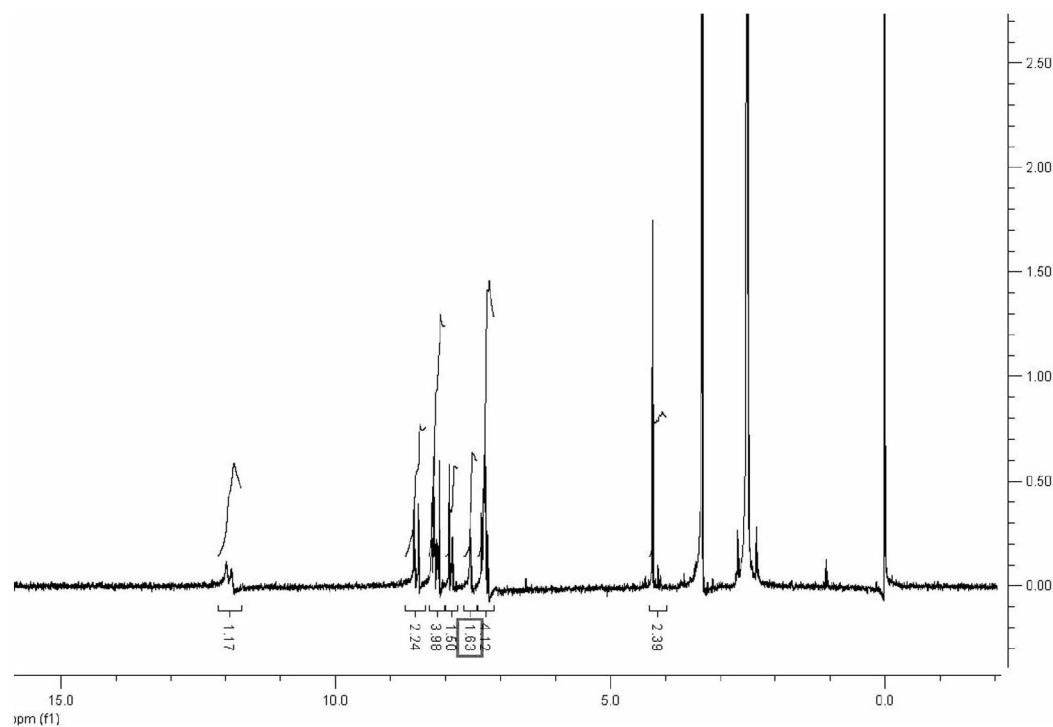
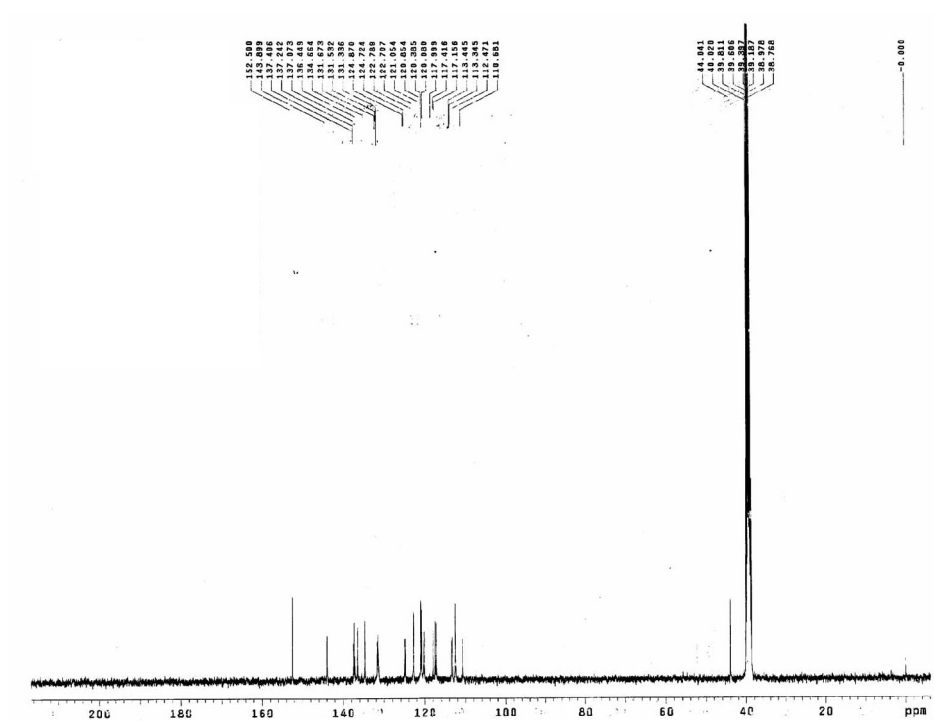
**Figure S6.** Fluorescence emission of **3f** in buffer, in the presence of DNA. a: **3f** in buffer. b: **3f** in the presence of DNA.

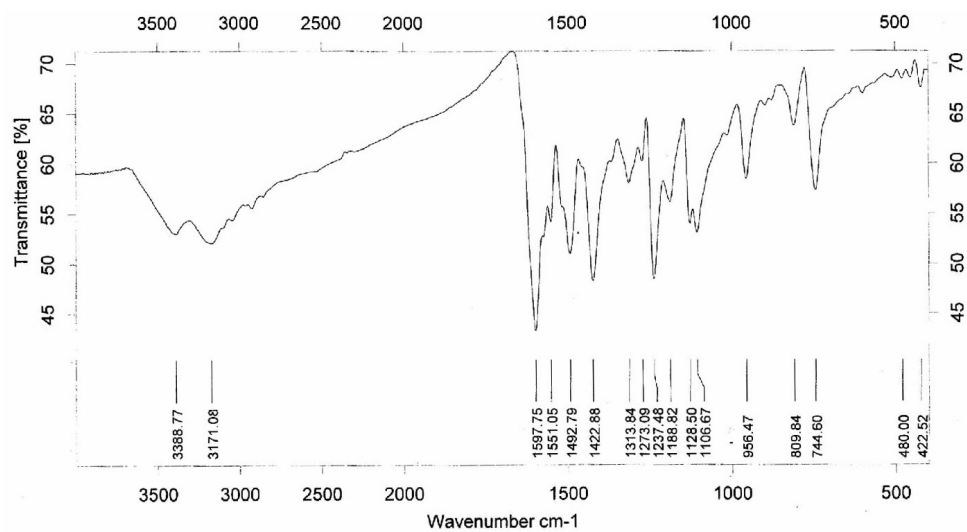
*Trinucleus dimethine cyanine dye 3a*



**Figure S7.**  $^1\text{H}$  NMR spectrum of **3a**.

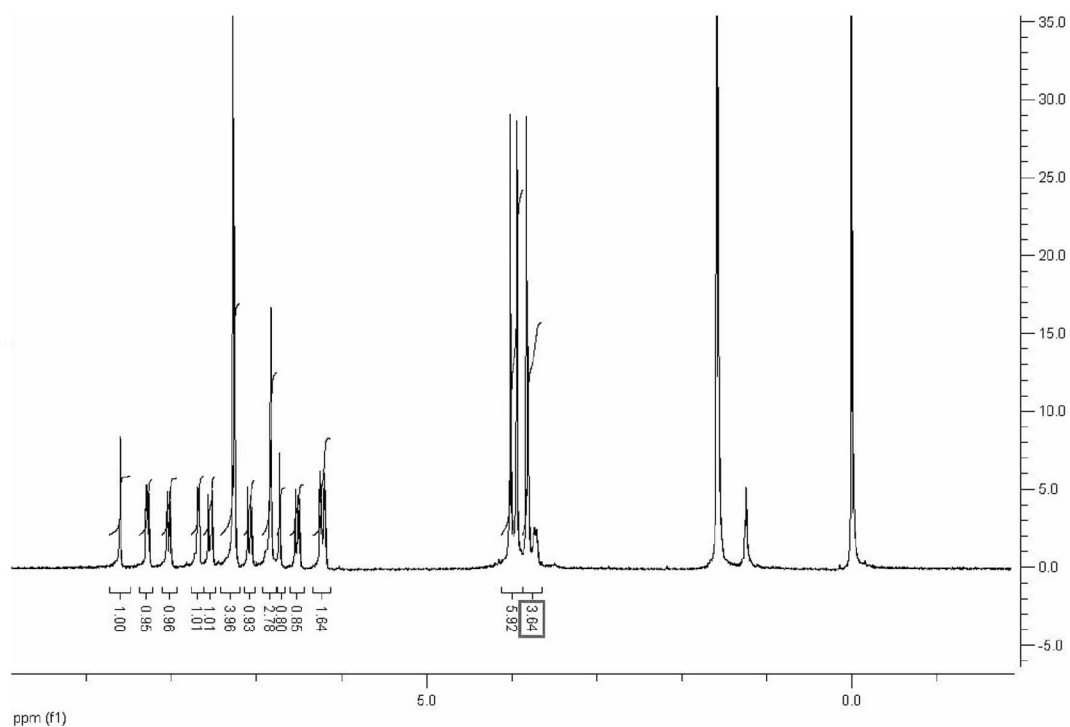


*Trinucleus dimethine cyanine dye 3b***Figure S10.** <sup>1</sup>H NMR spectrum of 3b.

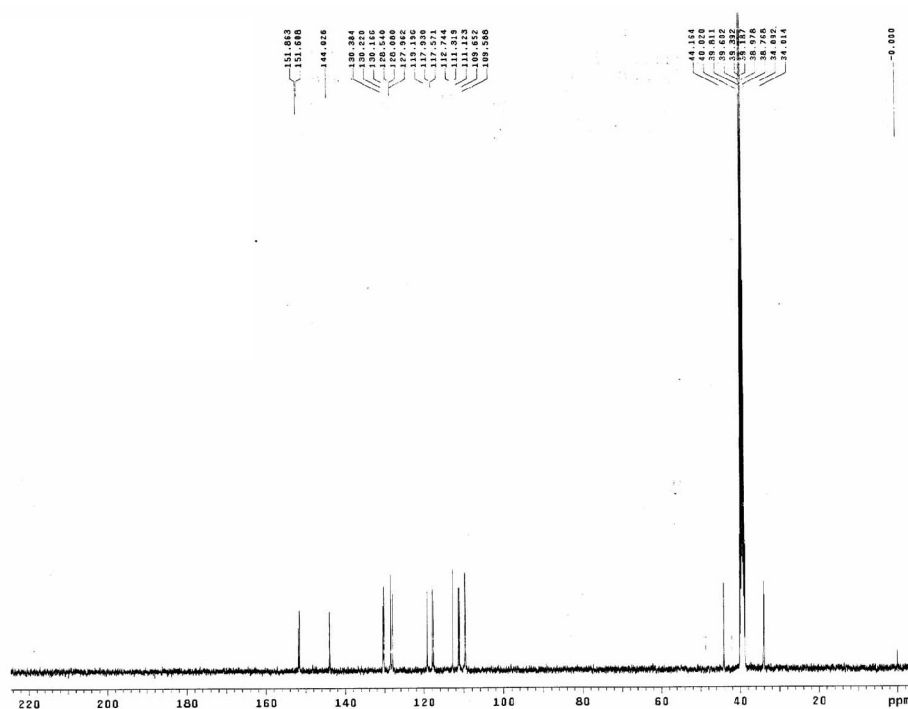


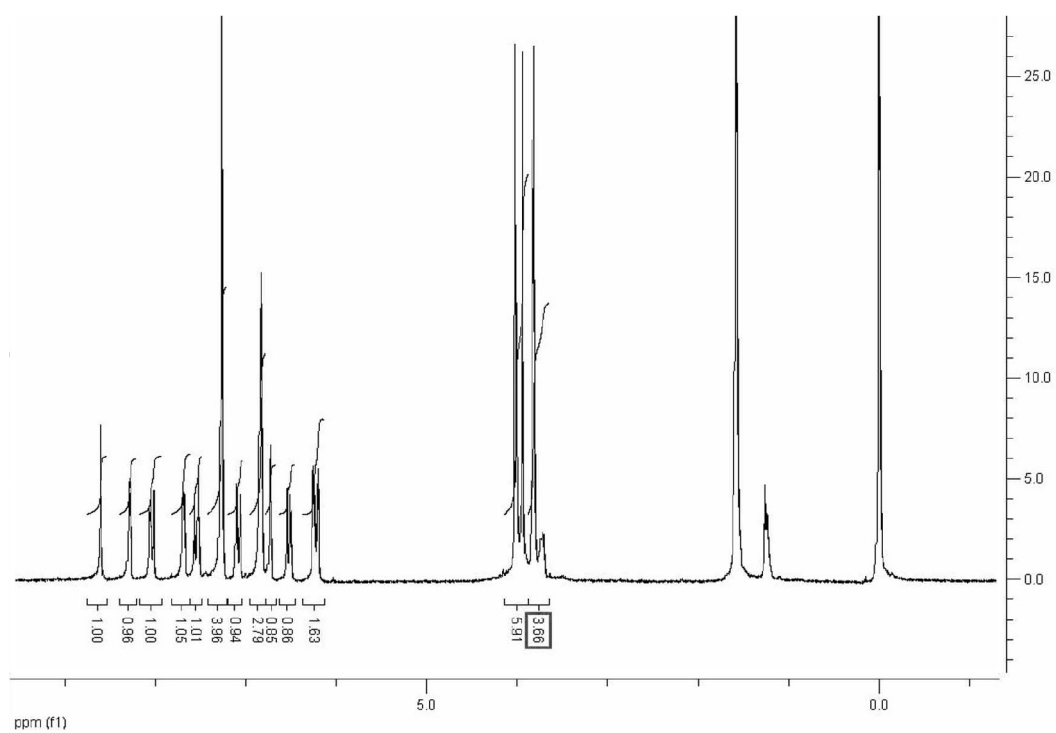
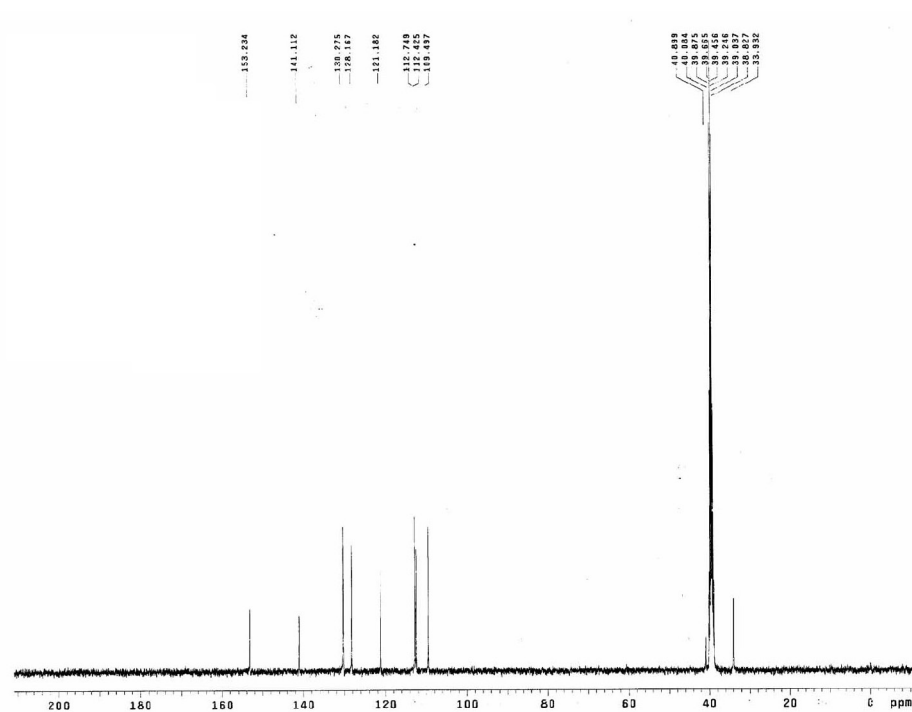
**Figure S12.** IR spectrum of **3b**.

*Trinucleus dimethine cyanine dye 3c*



**Figure S13.**  $^1\text{H}$  NMR spectrum of **3c**.



*Trinucleus dimethine cyanine dye 3d***Figure S16.**  $^1\text{H}$  NMR spectrum of **3d**.**Figure S17.**  $^{13}\text{C}$  NMR spectrum of **3d**.

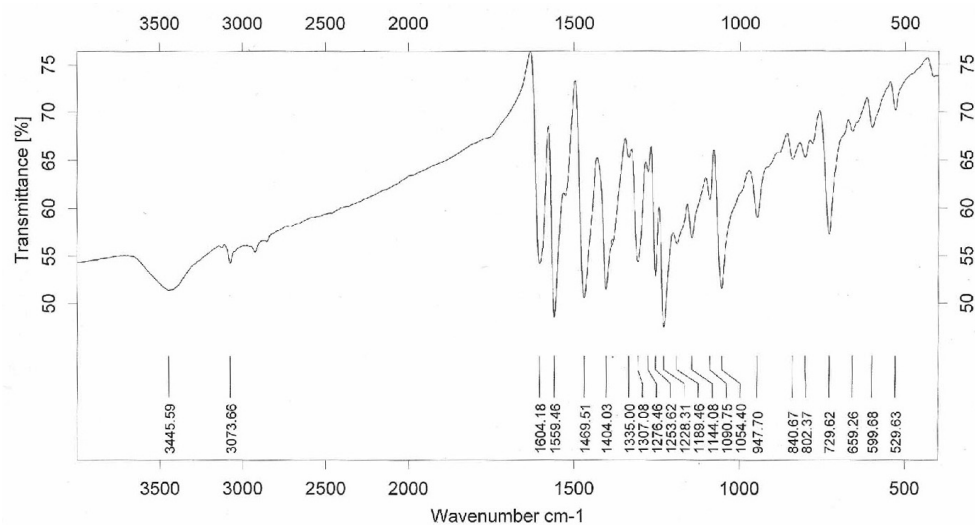


Figure S18. IR spectrum of 3d.

*Trinucleus dimethine cyanine dye 3e*

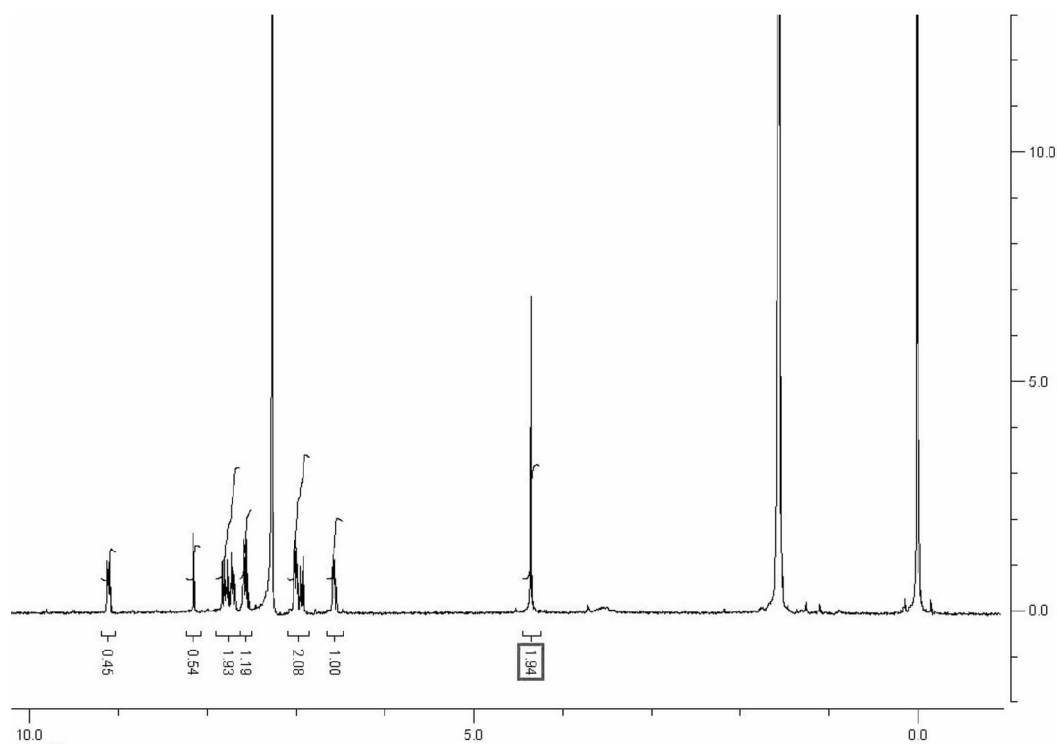
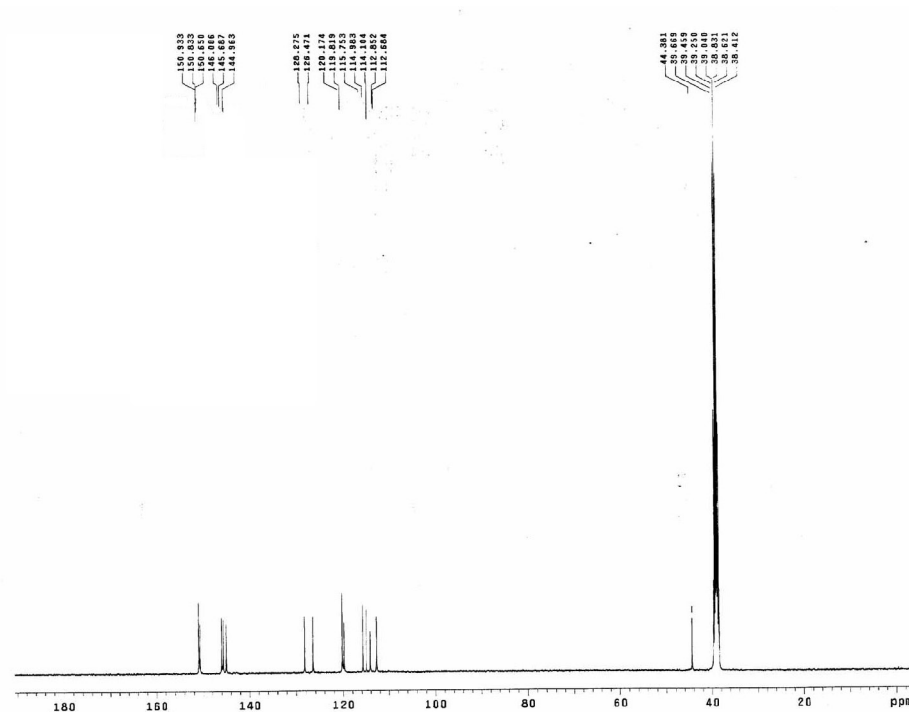
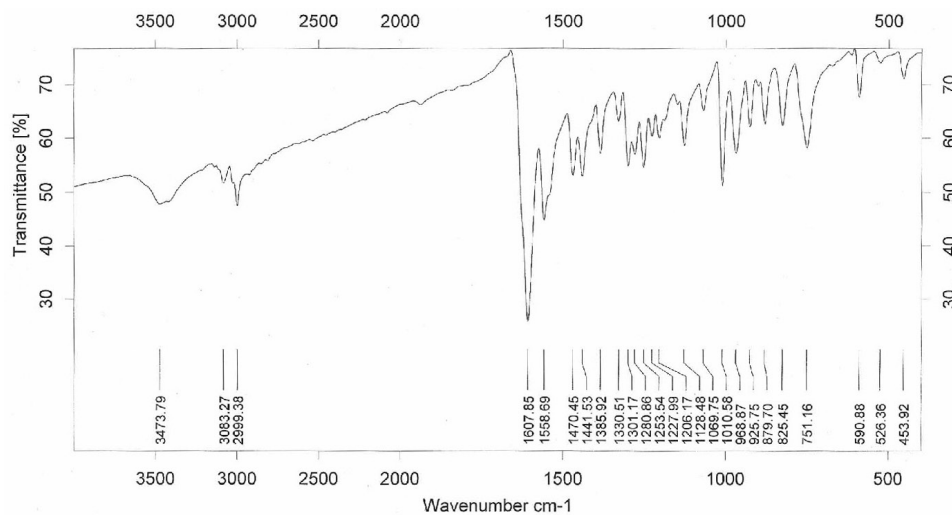
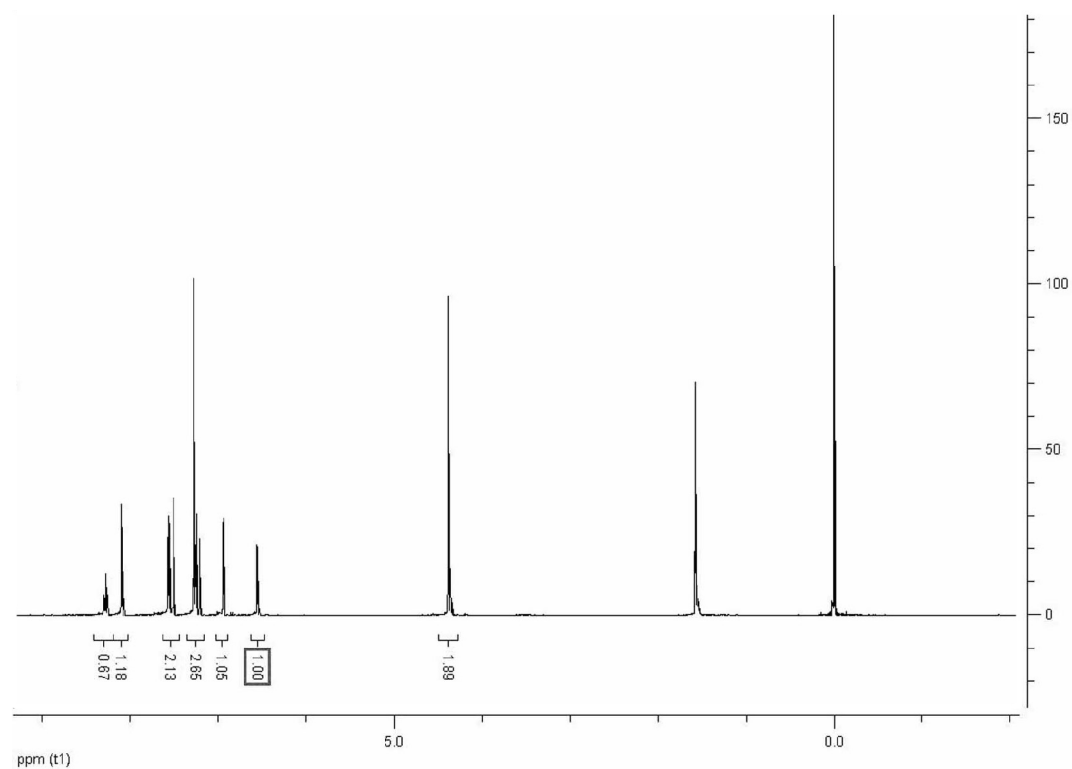
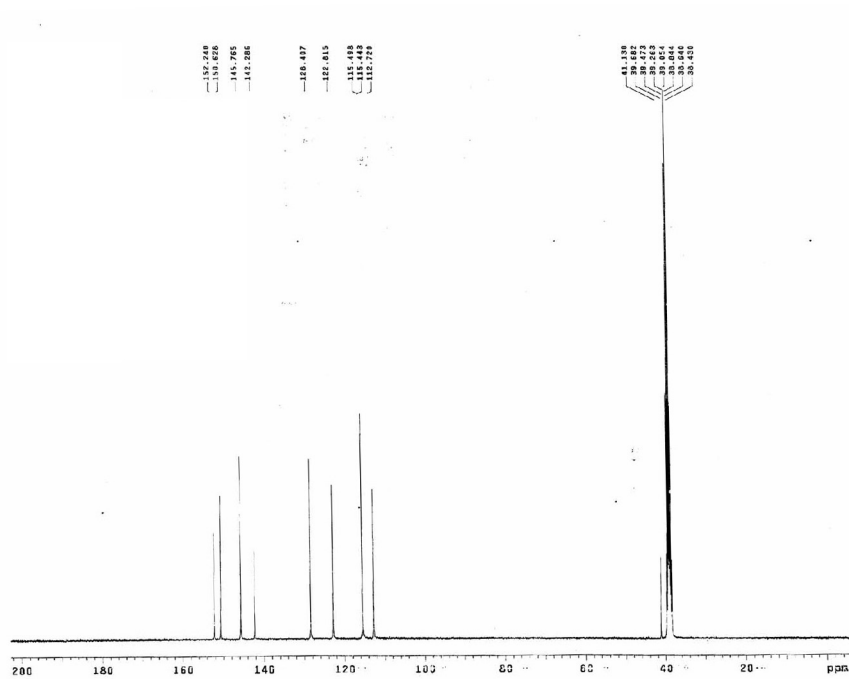
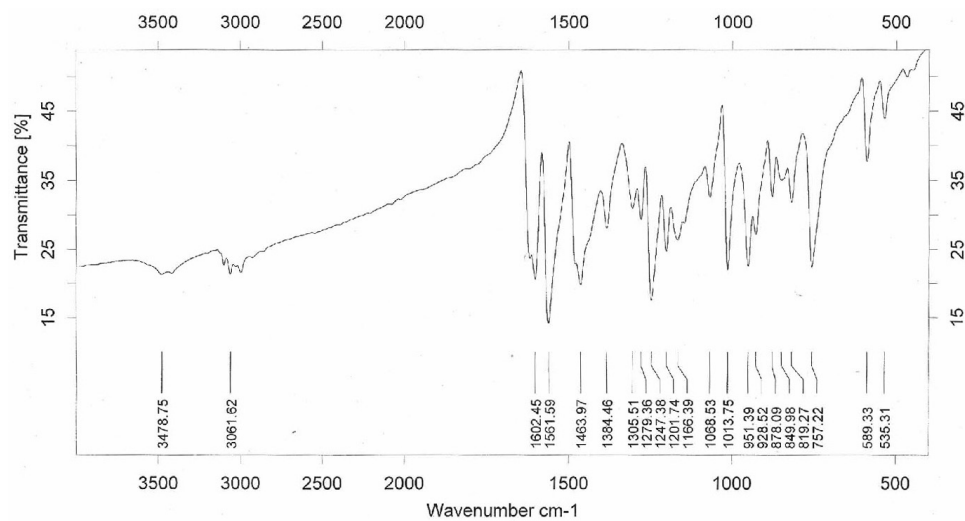


Figure S19. <sup>1</sup>H NMR spectrum of 3e.



**Figure S20.** <sup>13</sup>C NMR spectrum of 3e.**Figure S21.** IR spectrum of 3e.

*Trinucleus dimethine cyanine dye 3f***Figure S22.**  $^1\text{H}$  NMR spectrum of **3f**.**Figure S23.**  $^{13}\text{C}$  NMR spectrum of **3f**.

**Figure S24.** IR spectrum of **3f**.