

## Supplementary Information

### A facile chemiluminescence strategy for copper (II) ion detection utilizing azothiacalix[4]arene functionalized carboxymethylcellulose polymeric ligand

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#### S1. <sup>1</sup>H NMR spectra

S1.1. <sup>1</sup>H NMR of *p*-tert-butyl thiacalix[4]arene (TTCA)

S1.2. <sup>1</sup>H NMR of thiacalix[4]arene (TCA)

S1.3. <sup>1</sup>H NMR of azothiacalix[4]arene (AC)

S1.4. <sup>1</sup>H NMR of deoxy-azido carboxymethyl cellulose (DACMC)

#### S2. <sup>13</sup>C NMR spectra

S2.1 <sup>13</sup>C NMR of TTCA

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S2.2.  $^{13}\text{C}$  NMR of TCA

S2.3.  $^{13}\text{C}$  NMR of AC

S2.4.  $^{13}\text{C}$  NMR of DACMC

## S1. $^1\text{H}$ NMR spectra

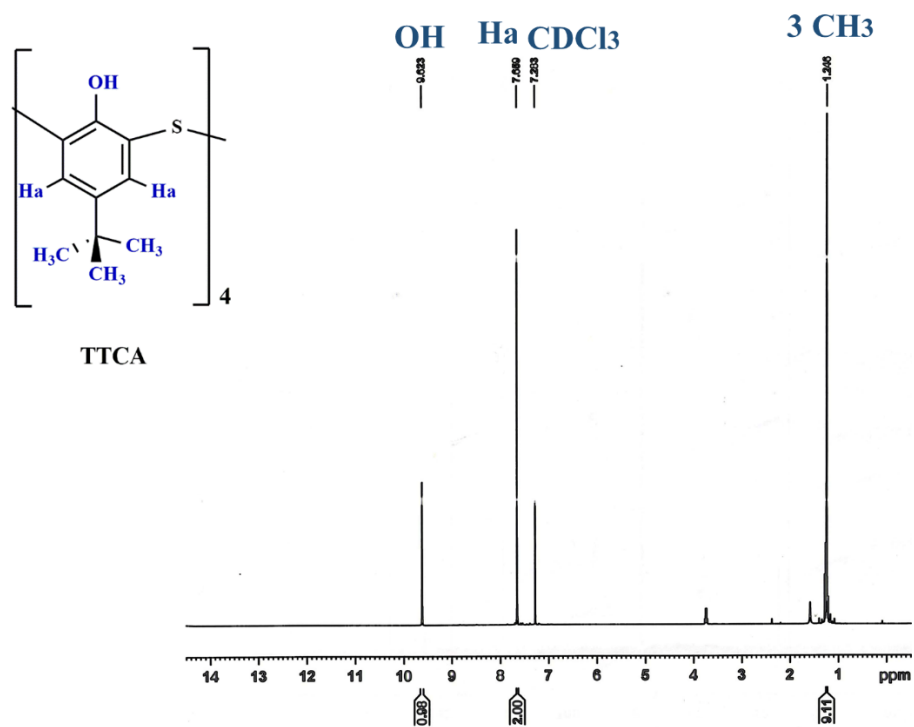


Fig S1.1  $^1\text{H}$  NMR spectrum of TTCA in  $\text{CDCl}_3$

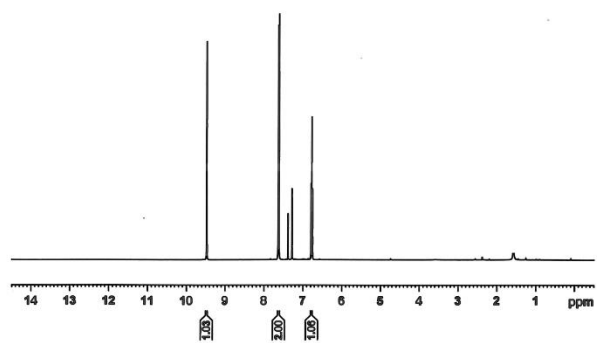
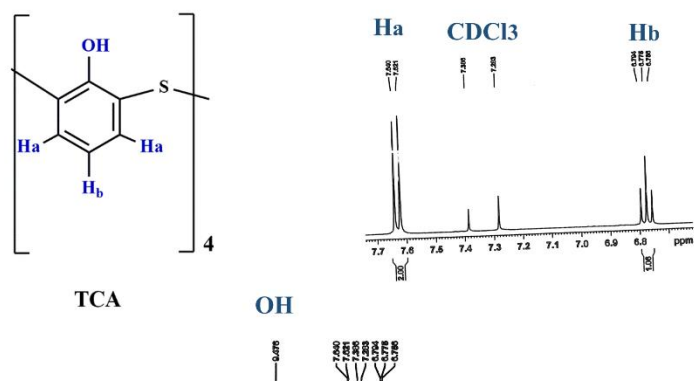
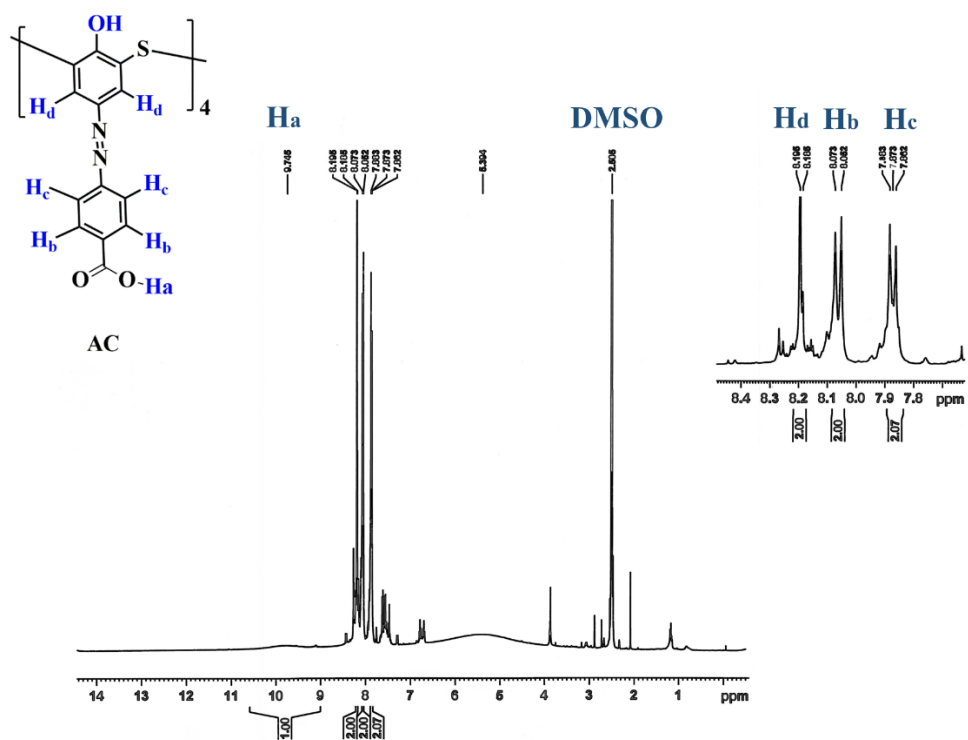
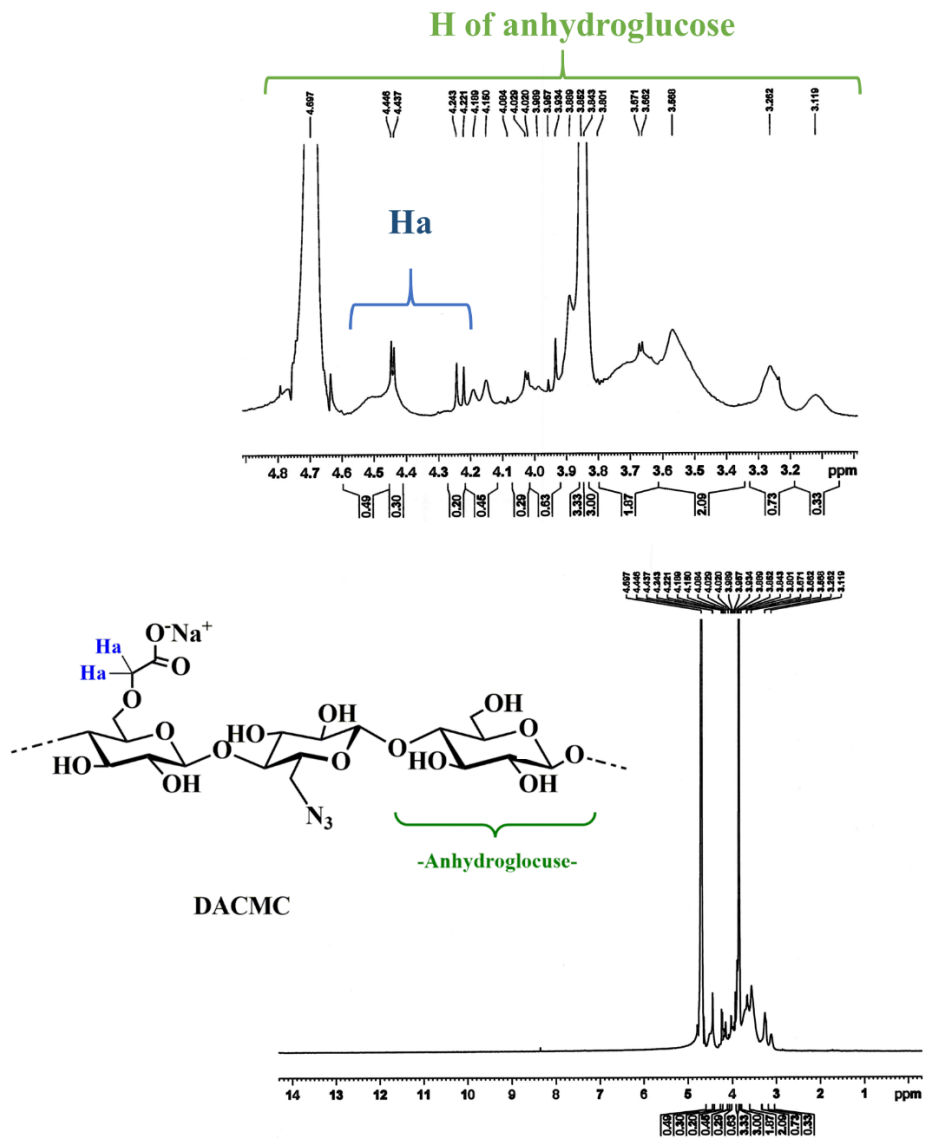


Fig S1.2  $^1\text{H}$  NMR spectrum of TCA in  $\text{CDCl}_3$

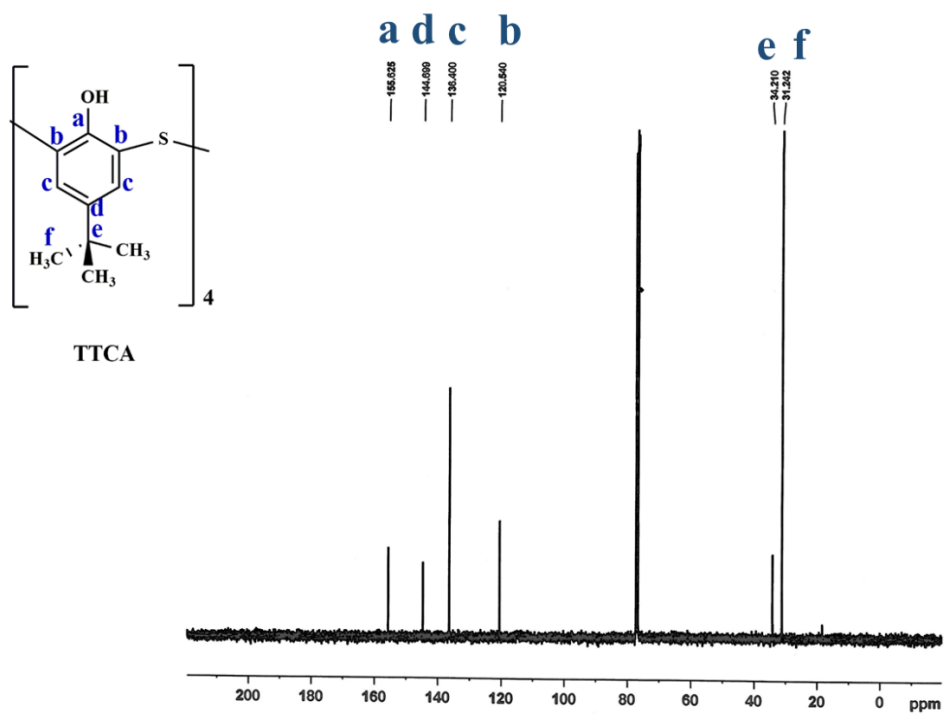


**Fig S1.3**  $^1\text{H}$  NMR spectrum of AC in  $\text{DMSO-d}_6$

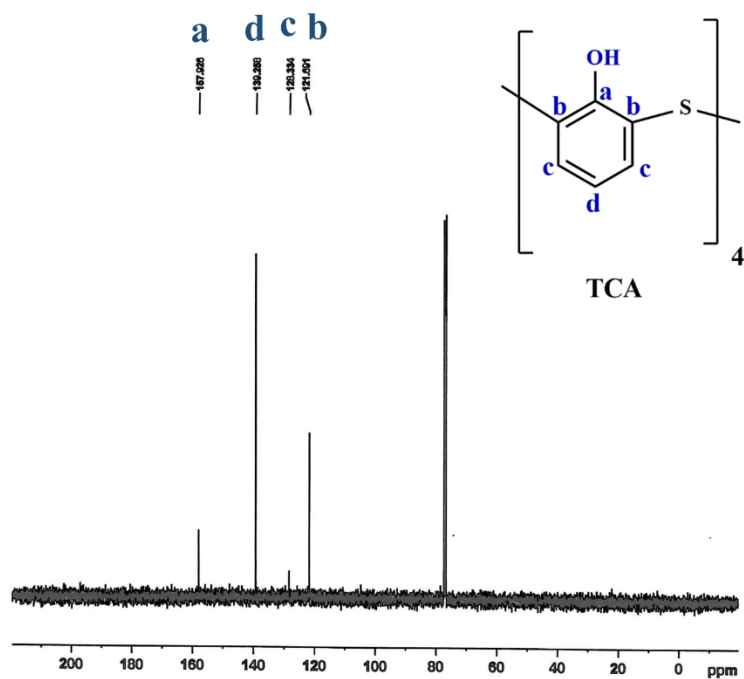


**Fig S1.4**  $^1\text{H}$  NMR spectrum of DACMC in  $\text{D}_2\text{O}$

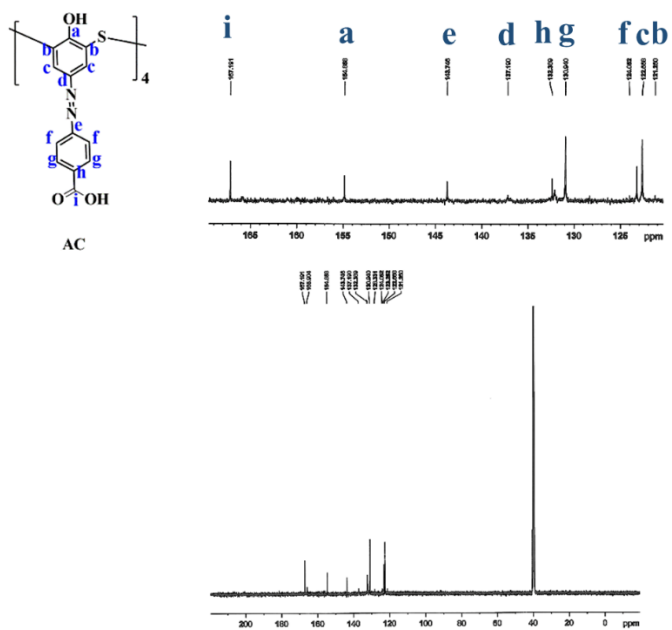
## S2. $^{13}\text{C}$ NMR spectra



S2.1  $^{13}\text{C}$  NMR spectrum of TTCA in  $\text{CDCl}_3$

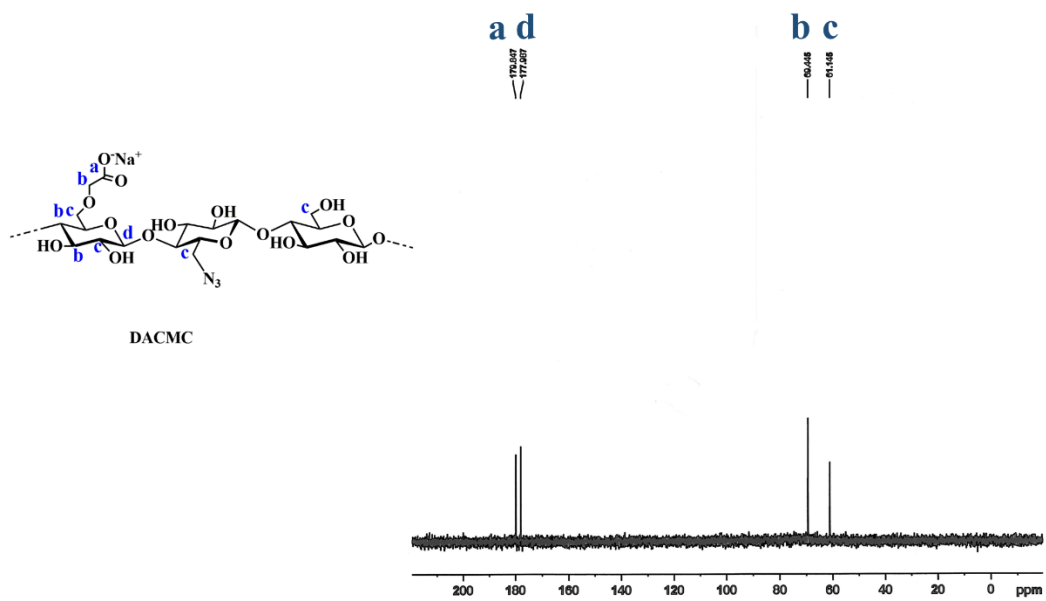


S2.2  $^{13}\text{C}$  NMR spectrum of TCA in  $\text{CDCl}_3$



**S2.3**  $^{13}\text{C}$  NMR spectrum of AC in DMSO- $d_6$





S2.4 <sup>13</sup>C NMR spectrum of DACMC in D<sub>2</sub>O