

## **Electronic Supplementary Information**

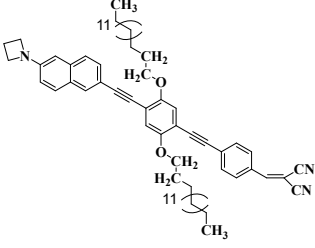
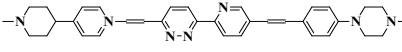
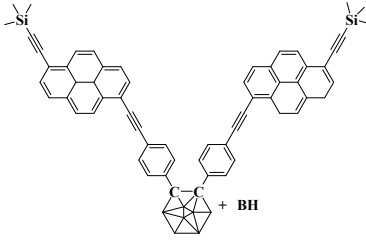
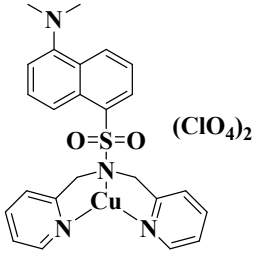
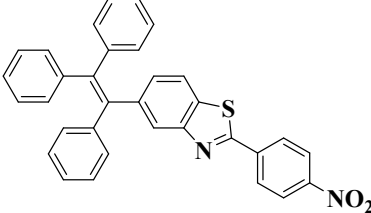
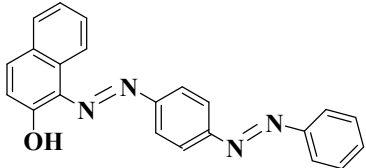
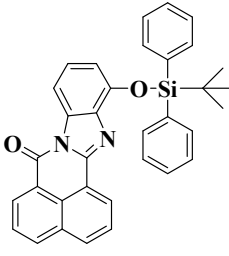
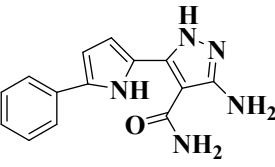
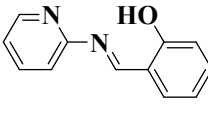
### **All-in-one type fluorescent emitters achieving detections of volatile organic compound, water in organic solvent and anion, and their data protection applications**

Jianglan Wu, Chencheng Li, Qiaobin Chen, Lihua Xu, Maoyang Jian , Jiang Zhao\*

School of Chemistry and Chemical Engineering, Guizhou University, Guiyang 550025, P. R. China.

\*Corresponding Author E-mail: [jiangzhao@gzu.edu.cn](mailto:jiangzhao@gzu.edu.cn). (J. Zhao)

**Table S1.** Selected examples organic emitters applied in the VOCs, the content water in organic solvents, and the F<sup>-</sup> detections fields, the number of the sensors corresponded to the literatures number.

<p>VOCs detection</p>	 <p>1</p>	 <p>2</p>	 <p>3</p>
<p>the content water in organic solvents detection</p>	 <p>4</p>	 <p>5</p>	 <p>6</p>
<p>F<sup>-</sup> detection</p>	 <p>7</p>	 <p>8</p>	 <p>9</p>

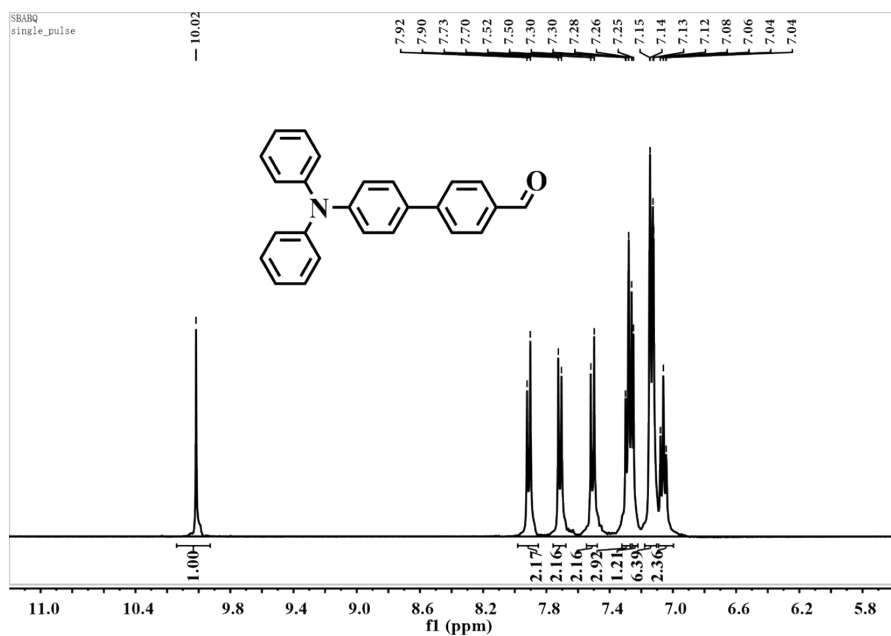
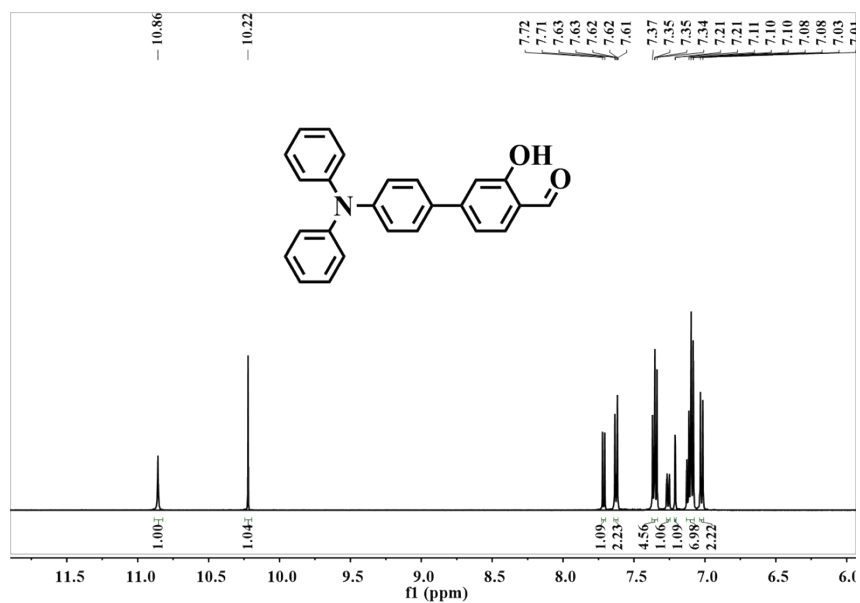


Fig. S1 <sup>1</sup>H NMR spectra of TPA-SYQ and TPA-BQ.

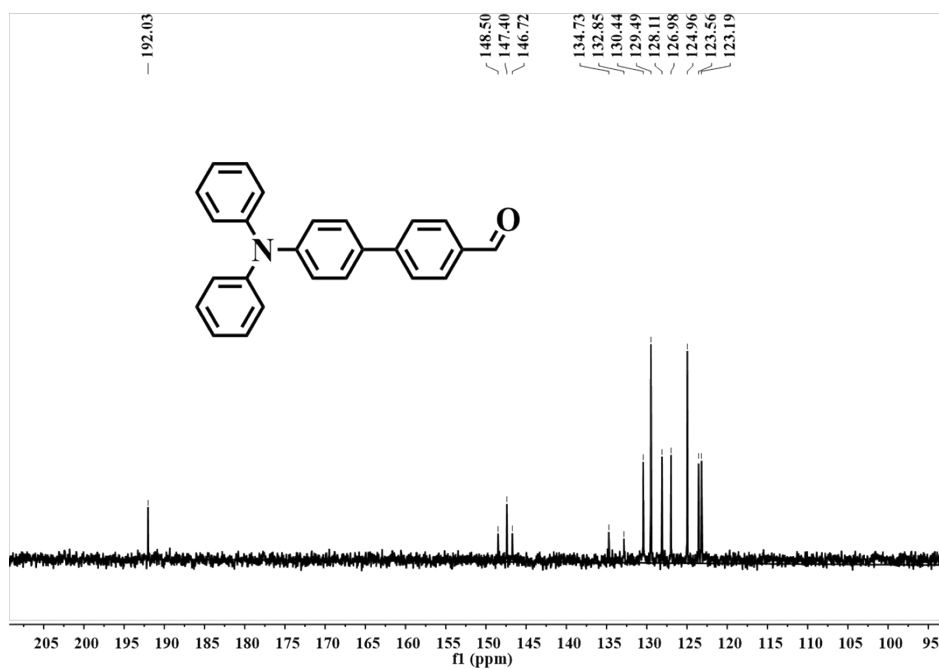
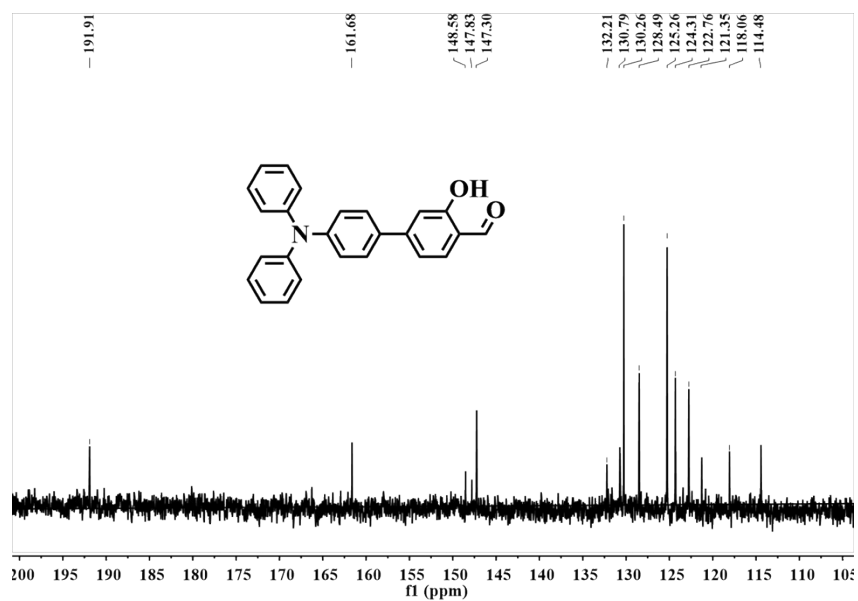
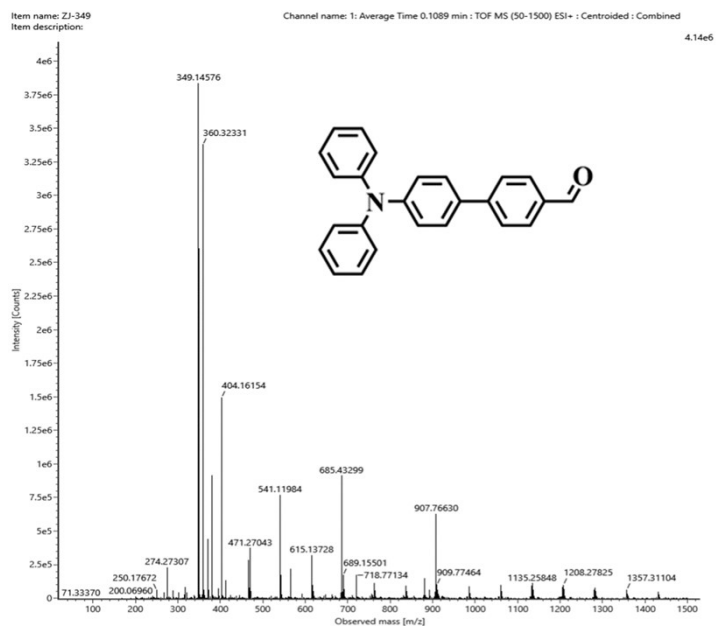
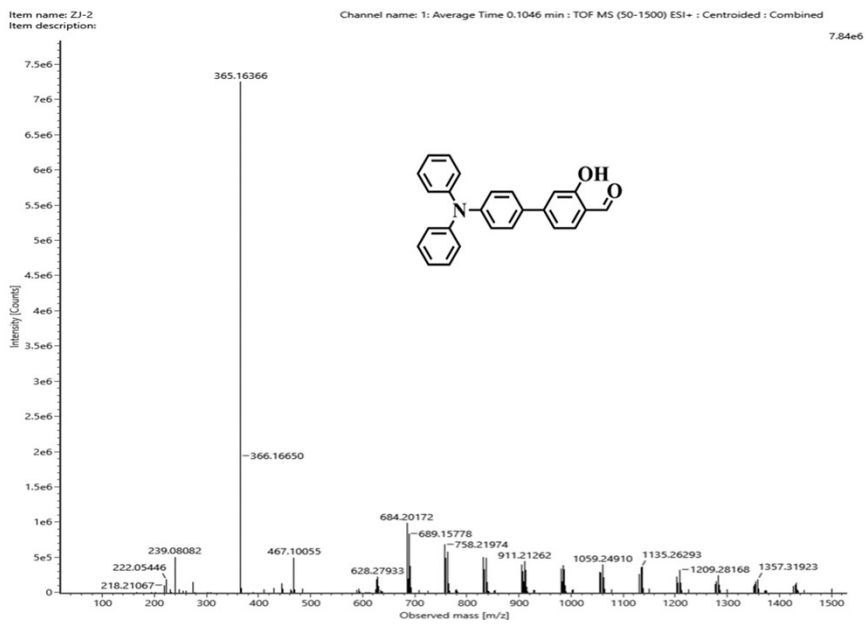


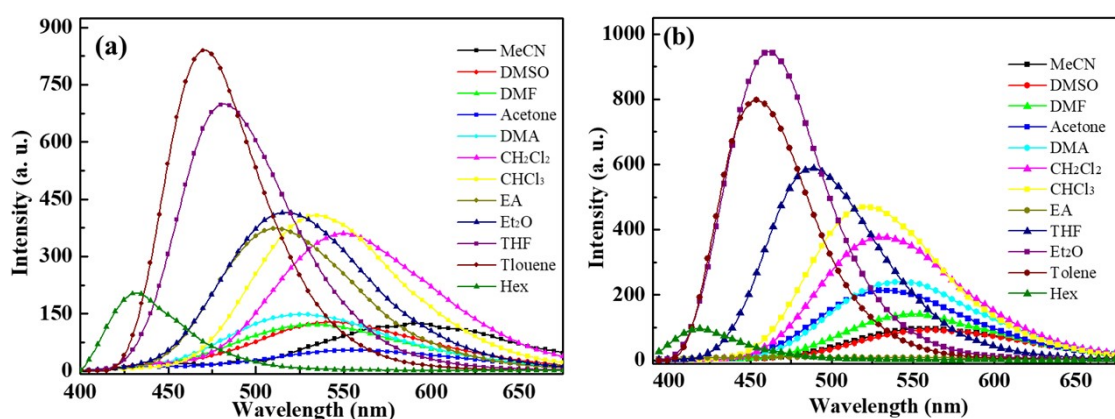
Fig. S2  $^{13}\text{C}$  NMR spectra of TPA-SYQ and TPA-BQ.



**Fig. S3** Mass spectra of TPA-SYQ and TPA-BQ

**Table S2.** Single crystal data for the two sensors of TPA-SYQ and TPA-BQ

Parameters	TPA-SYQ	TPA-BQ
Empirical formula	C <sub>25</sub> H <sub>19</sub> N O <sub>2</sub>	2(C <sub>25</sub> H <sub>19</sub> N O)
Formula weight	365.41	698.82
Temperature, K	273.15	273.15
Crystal system	monoclinic	monoclinic
space group	P 21/c	P c a 21
a, Å	13.9415(14)	15.914(4)
b, Å	15.0759(13)	18.011(5)
c, Å	9.5585(8)	13.447(3)
α, °	90	90
β, °	108.584	90
γ, °	90	90
volume, Å <sup>3</sup>	1904.3(3)	3854.5(17)
Z	4	8
Mg/m <sup>3</sup>	1.275	1.204
R (reflections)	0.0694	0.0669
Wavelength	0.71073	0.71073
F(000)	768	1472
CCDC	2163836	2163825

**Fig. S4** (a) and (b) fluorescence emission spectra of TPA-SYQ and TPA-BQ in different solvents.

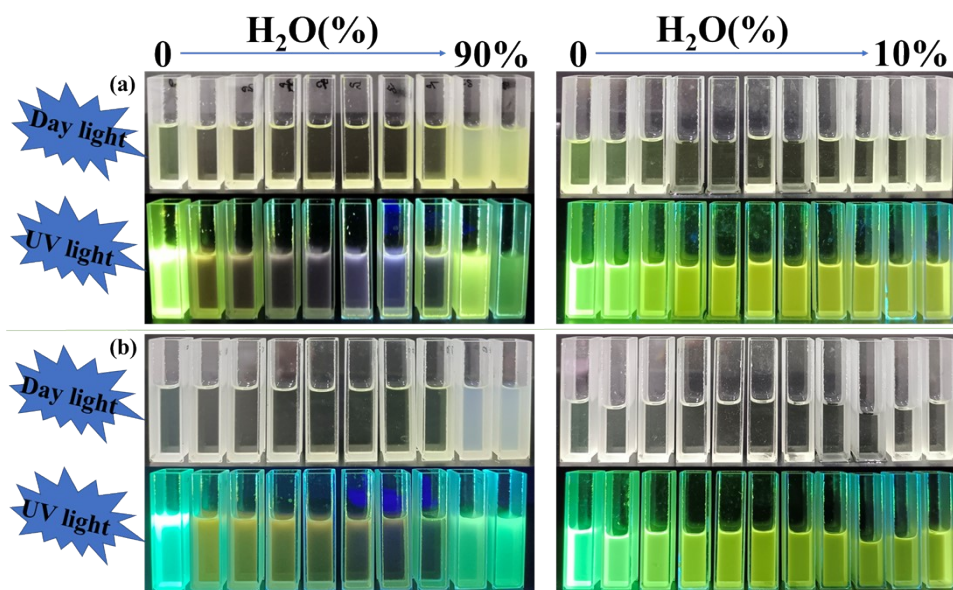


Fig. S5 Photographs of the solution of (a) TPA-SYQ and (b) TPA-BQ in in THF with different water content.

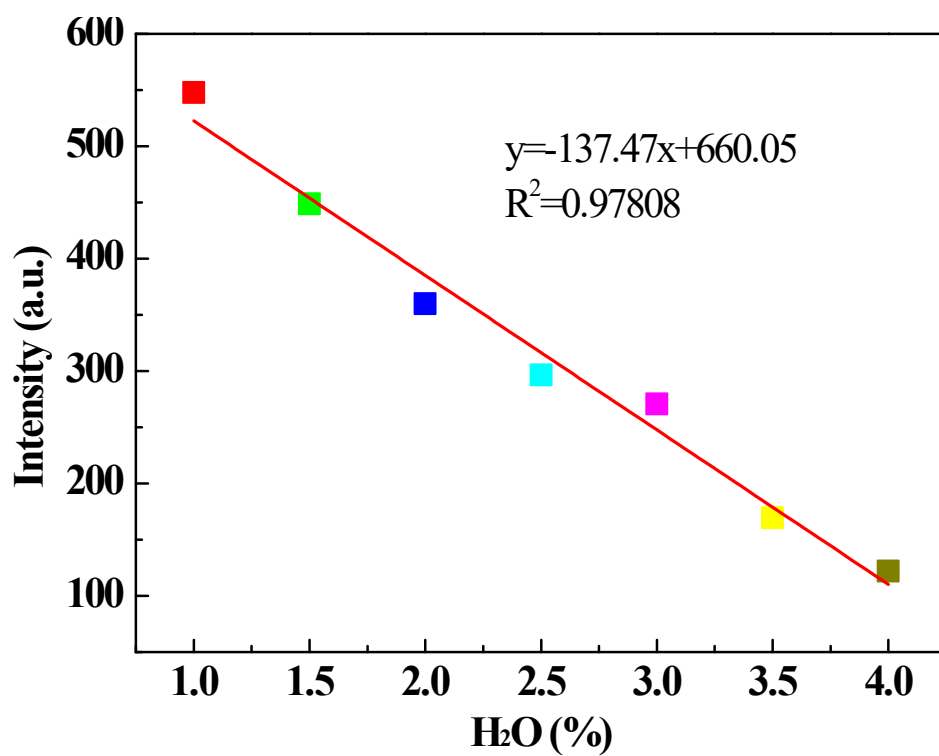


Fig. S6 Plotting for determination of detection limits for TPA-SYQ (detection limit =  $1.0 \times 10^{-6}$  M)

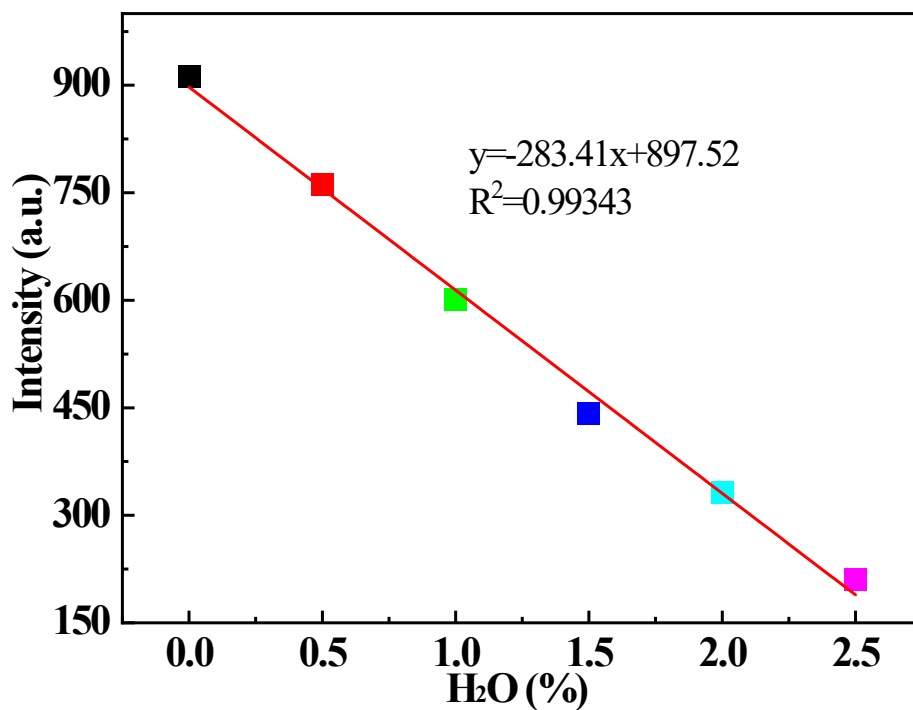


Fig. S7 Plotting for determination of detection limits for TPA-BQ (detection limit =  $5.1 \times 10^{-7}$  M)

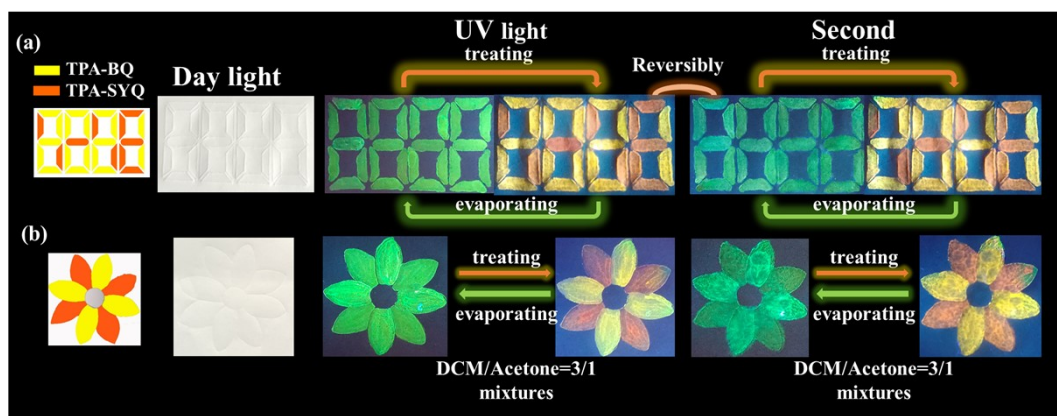


Fig. S8 Photographs of the encryption and anti-counterfeiting applications based on the related materials.



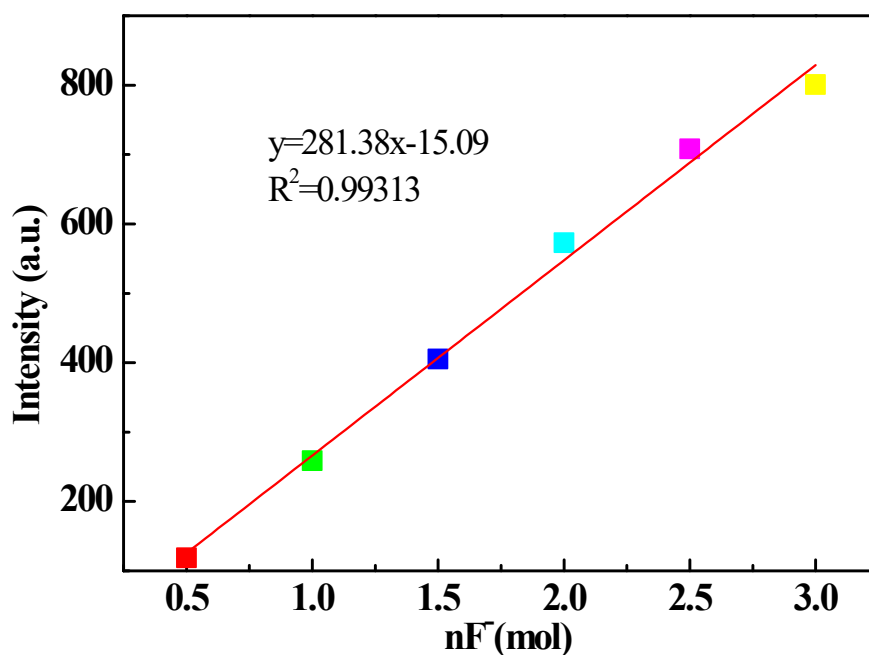


Fig. S9 Plotting for determination of detection limits for TPA-SYQ toward F<sup>-</sup> (detection limit =  $5.1 \times 10^{-7}$  M)

#### Reference:

1. H. Liu, X. Xu, Z. Shi, K. Liu and Y. Fang, *Analytical Chemistry*, 2016, **88**, 10167-10175.
2. J. Do, J. Huh and E. Kim, *Langmuir*, 2009, **25**, 9405-9412.
3. W. Fang, K. Liu, G. Wang, Y. Liang, R. Huang, T. Liu, L. Ding, J. Peng, H. Peng and Y. Fang, *Anal. Chem*, 2021, **93**, 8501-8507.
4. P. Kumar, R. Kaushik, A. Ghosh and D. A. Jose, *Anal. Chem*, 2016, **88**, 11314-11318.
5. H. Sun, X.-X. Tang, B.-X. Miao, Y. Yang and Z. Ni, *Sens. Actuator B-Chem*, 2018, **267**, 448-456.
6. P. Kumar, R. Sakla, A. Ghosh and D. A. Jose, *ACS Appl. Mater. Interfaces*, 2017, **9**, 25600-25605.
7. D. Li, Z. Zhong, G. Zheng and Z. Tian, *Spectroc. Acta. A-Mol Biomol. Spectr*, 2017, **185**, 173-178.
8. Z. Yang, K. Zhang, F. Gong, S. Li, J. Chen, J. S. Ma, L. N. Sobenina, A. I. Mikhaleva, B. A. Trofimov and G. Yang, *J. Photochem. Photobiol. A-Chem*, 2011, **217**, 29-34.
9. P. Alam, V. Kachwal and I. Rahaman Laskar, *Sens. Actuator. B-Chem*, 2016, **228**, 539-550.