

## Supporting Information

# Cationic AIEgen micelle-improved chemiluminescent H<sub>2</sub>O<sub>2</sub> assay by integrating reactant approach and CRET

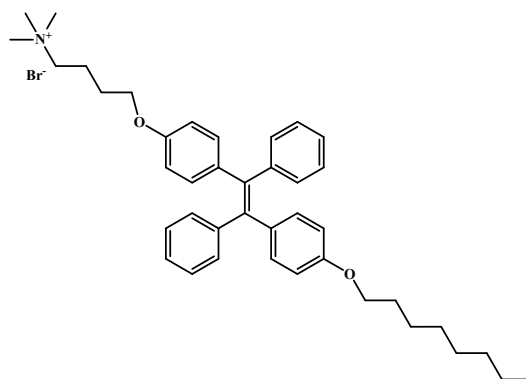
Youkai Yu,<sup>a</sup> Weijiang Guan,<sup>a</sup> Zhiqin Yuan\*<sup>a</sup> and Chao Lu\*<sup>ab</sup>

<sup>a</sup> State Key Laboratory of Chemical Resource Engineering, College of Chemistry, Beijing University of Chemical Technology, Beijing 100029, China.

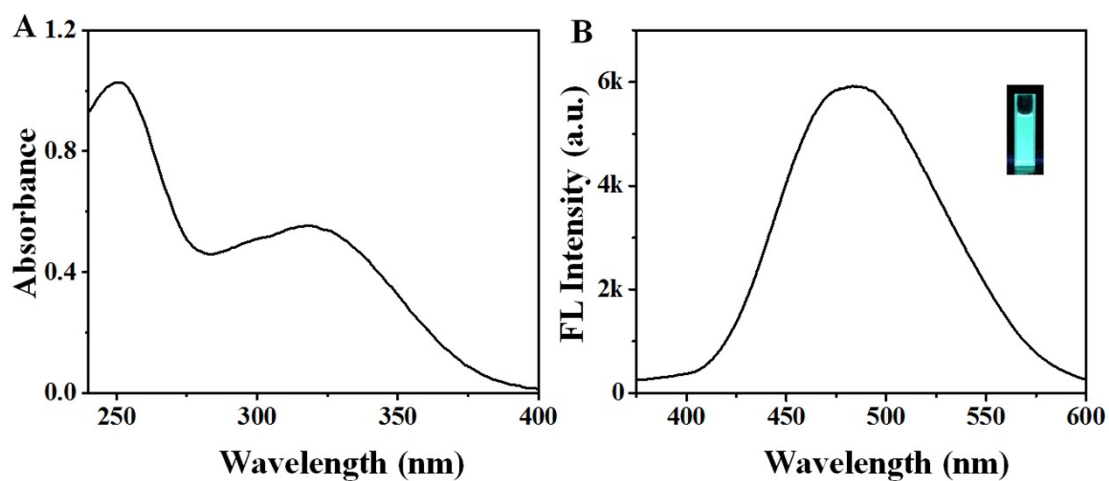
<sup>b</sup> Green Catalysis Center, College of Chemistry, Zhengzhou University, Zhengzhou 450001, China.

E-mail: yuanzq@mail.buct.edu.cn (Z. Yuan)

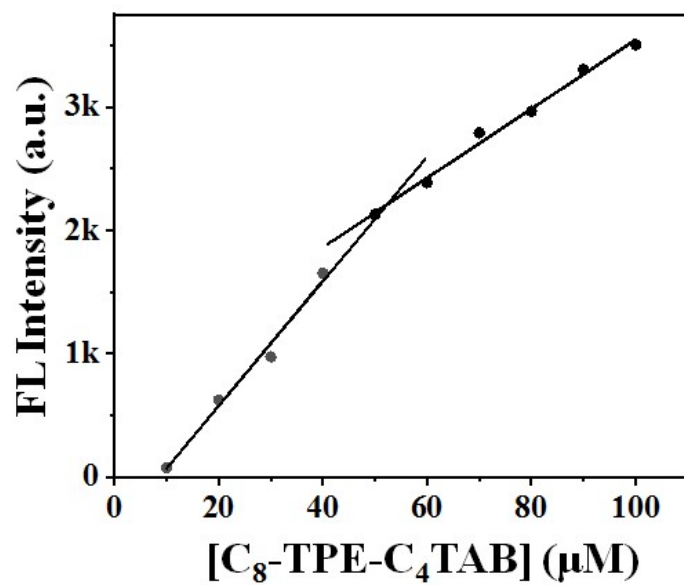
E-mail: luchao@mail.buct.edu.cn (C. Lu)



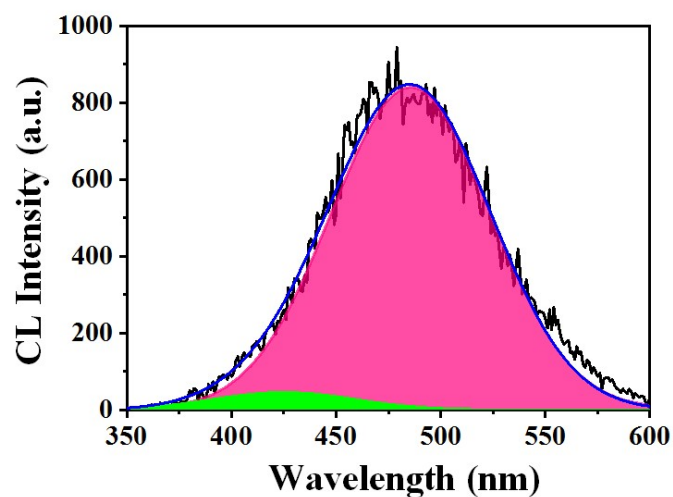
**Fig. S1** Molecular structure of C<sub>8</sub>-TPE-C<sub>4</sub>TAB.



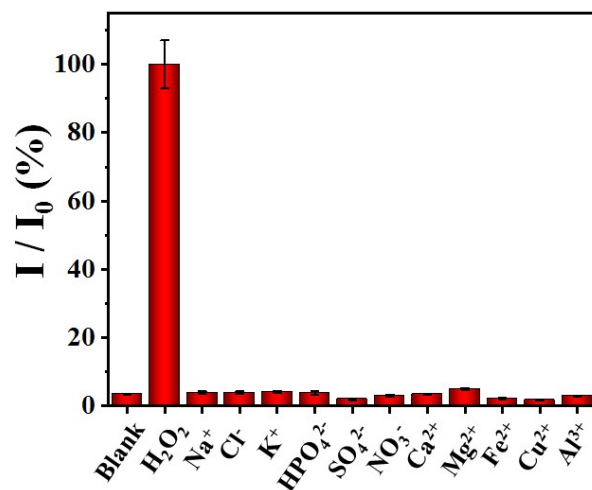
**Fig. S2** Absorption and fluorescence emission spectra of the C<sub>8</sub>-TPE-C<sub>4</sub>TAB aqueous solution (80 μM), the inset is the photograph of C<sub>8</sub>-TPE-C<sub>4</sub>TAB aqueous solution under ultraviolet irradiation at 365 nm.



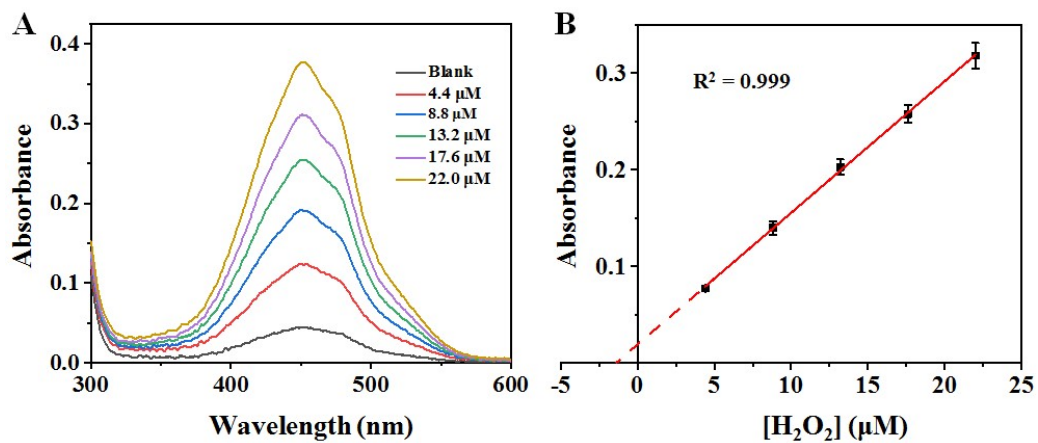
**Fig. S3** Plots of fluorescence intensity versus the concentration of C<sub>8</sub>-TPE-C<sub>4</sub>TAB from 10 to 100 μM.



**Fig. S4** Peak fitting of CL spectra of C<sub>8</sub>-TPE-C<sub>4</sub>TAB micelle-HRP-luminol-H<sub>2</sub>O<sub>2</sub> system. The black line, green curve, purple curve and blue line represent for original CL spectra, fitted emission of luminol, fitted emission of TPE acceptor and fitted CL spectra, respectively.



**Fig. S5** Relative CL signals of HRP-luminol system upon adding possible interferents.



**Fig. S6** Measurements of  $\text{H}_2\text{O}_2$  in thawing water samples using a standard UV-vis absorption technique with external addition method.