

Electronic Supplementary Information (ESI)

Field Amplification Enhanced Paper-Based Analytical Device with Robust Chemiluminescence Detection Module

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Optical detection module



Fig.S1 Display of the optical detection module.

Paper-based device with optical detection module

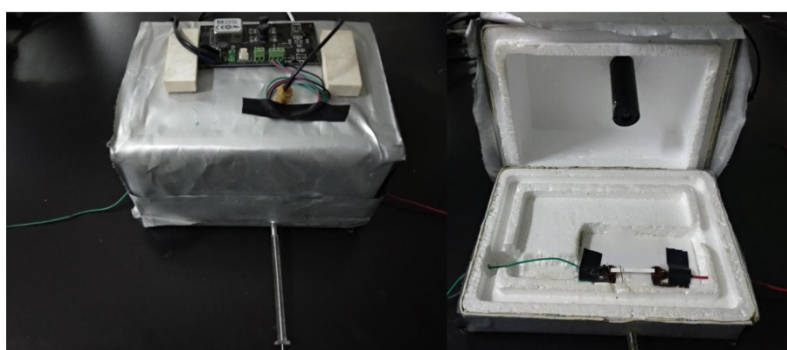


Fig.S2 Display of paper-based device with optical detection module.

Effects of light in the environment

In order to eliminate the effects of light in the environment, a contrast assay was conducted in this work. Fig.S3 shown the signal intensity of ambient singal and hemin CL.

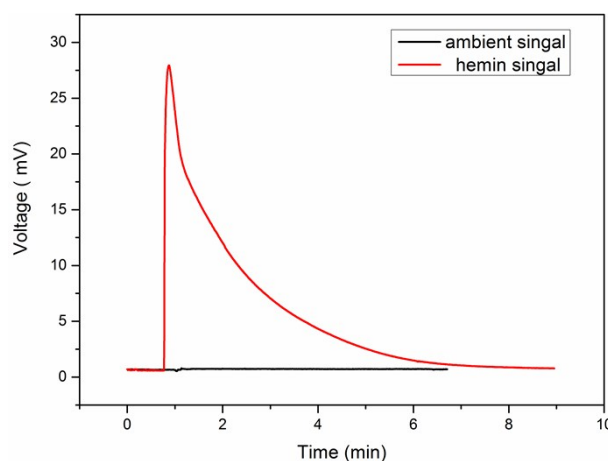


Fig.S3 Interference of light in the environment. The red curve represents the hemin singal curve. The dark curve represents the ambient singal curve. The concentration of hemin is 1×10^{-5} M.

Luminol chemiluminescence mechanism

In the CL system, luminol was excited to the excited state of 3-aminophthalate dianion (3-APA*) under alkaline conditions, and then released energy as light when returning to the ground state (3-APA). Hemin, as a catalyst, can catalyze the progress of chemiluminescence reaction, as can be seen in Fig.S3.

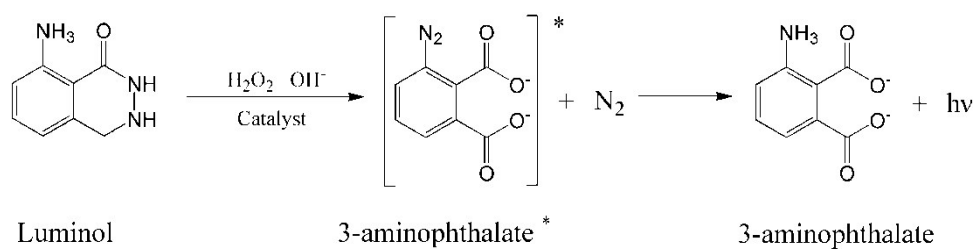


Fig.S4 Luminol chemiluminescence reaction scheme.

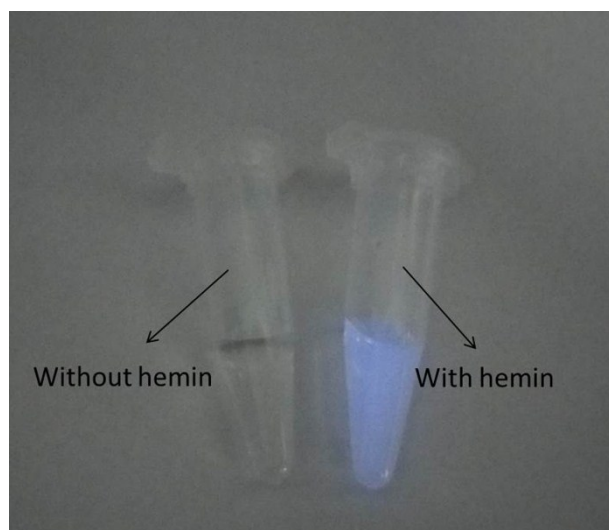


Fig.S5 Comparative chart with or without hemin catalysis.