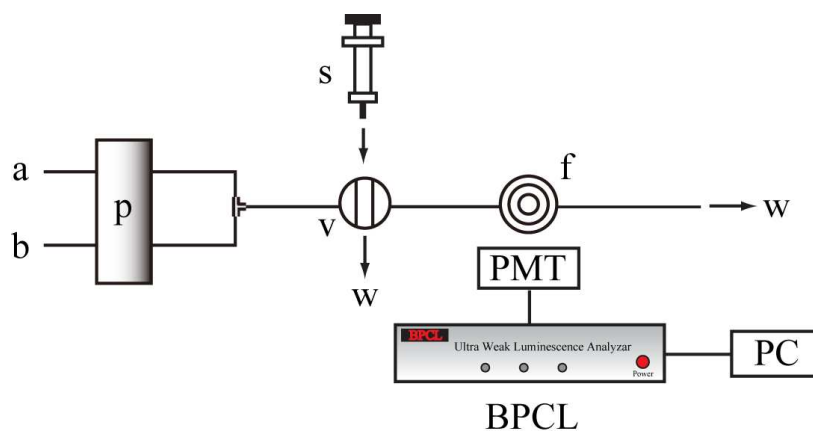


## **Supporting Information:**

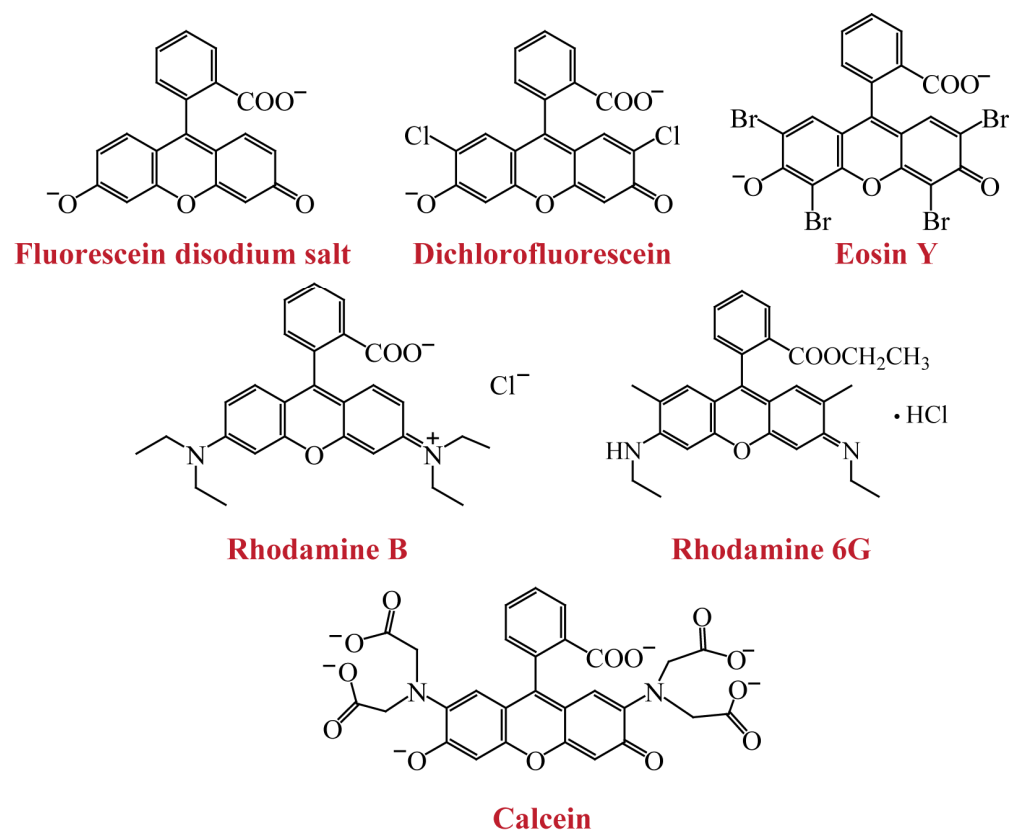
### Universal Chemiluminescence Flow-Through Device Based on Directed Self-Assembly of Solid-State Organic Chromophores on Layered Double Hydroxide Matrix

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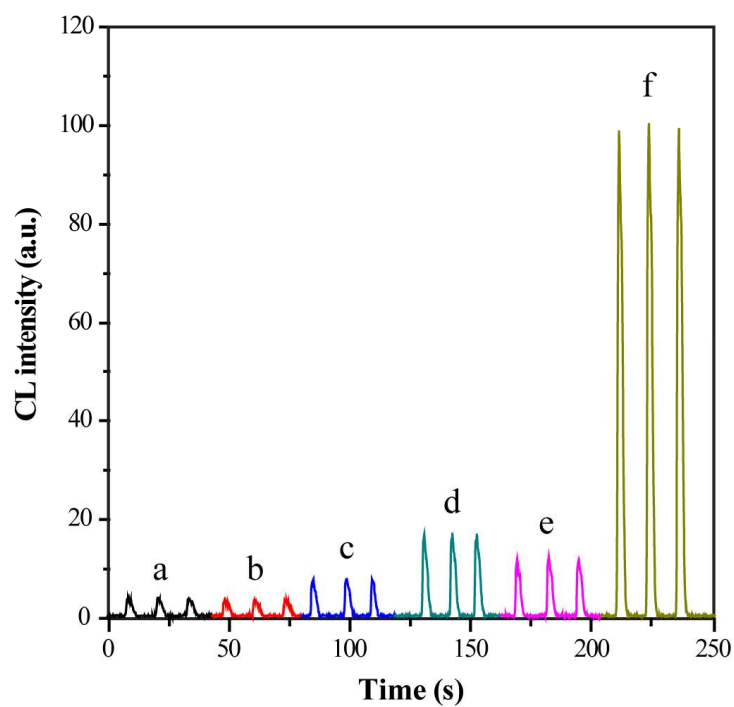
State Key Laboratory of Chemical Resource Engineering, Beijing University of Chemical Technology,  
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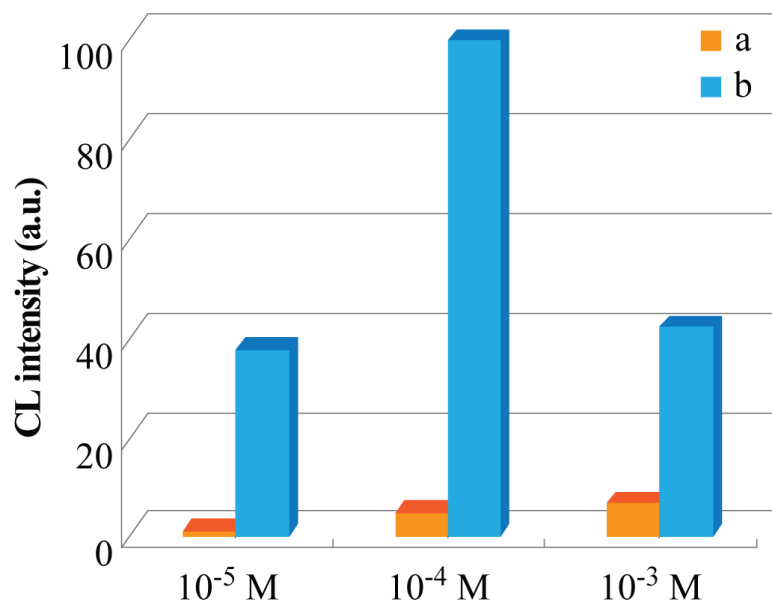
**Figure S1.** Schematic diagram of CL detection by flow injection system. a, 0.03 M H<sub>2</sub>O<sub>2</sub>–0.05 M HCl at 2.8 mL/min; b, 0.01 M NaNO<sub>2</sub> at 2.8 mL/min; p, peristaltic pump; v, six-way injection valve; s, sample; w, waste; f, PTFE flow cell; PMT, photomultiplier tube; BPCL, Biophysics Chemiluminescence; PC, personal computer.



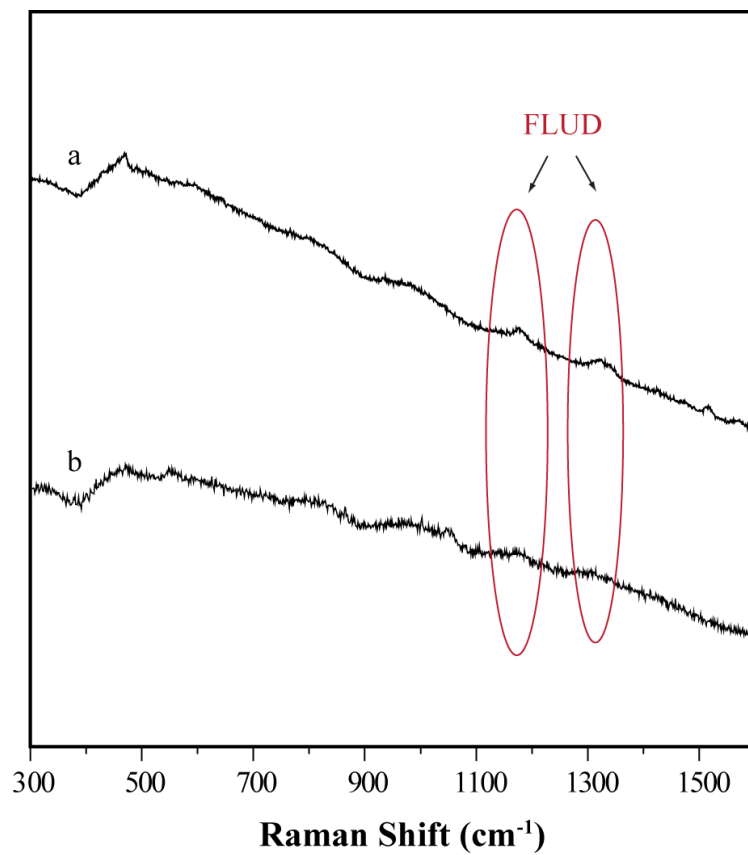
**Figure S2.** Structures of organic chromophores assembled on the external surface of Mg-Al-CO<sub>3</sub> LDHs.



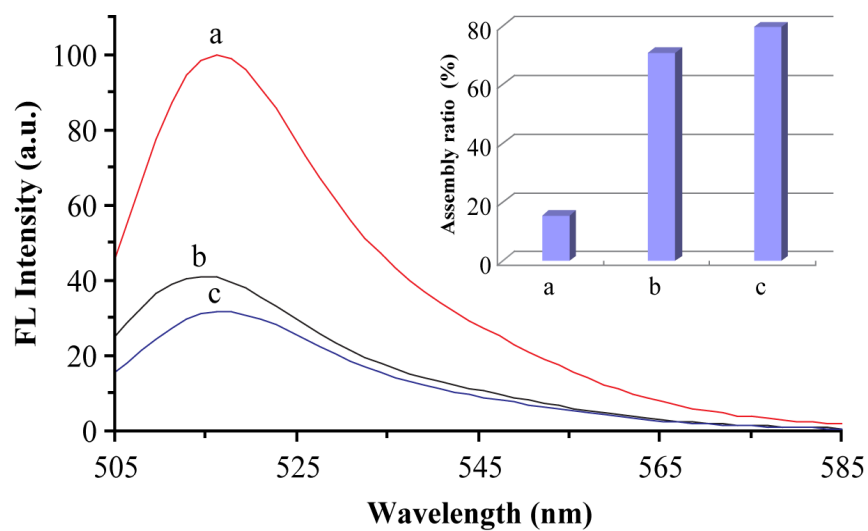
**Figure S3.** CL intensity of peroxynitrous acid system mixed with the assembly of organic chromophores onto the surface of Mg-Al-CO<sub>3</sub> LDHs. a, rhodamine B; b, rhodamine 6G; c, eosin Y; d, fluorescein dianion; e, dichlorofluorescein; f, calcein.



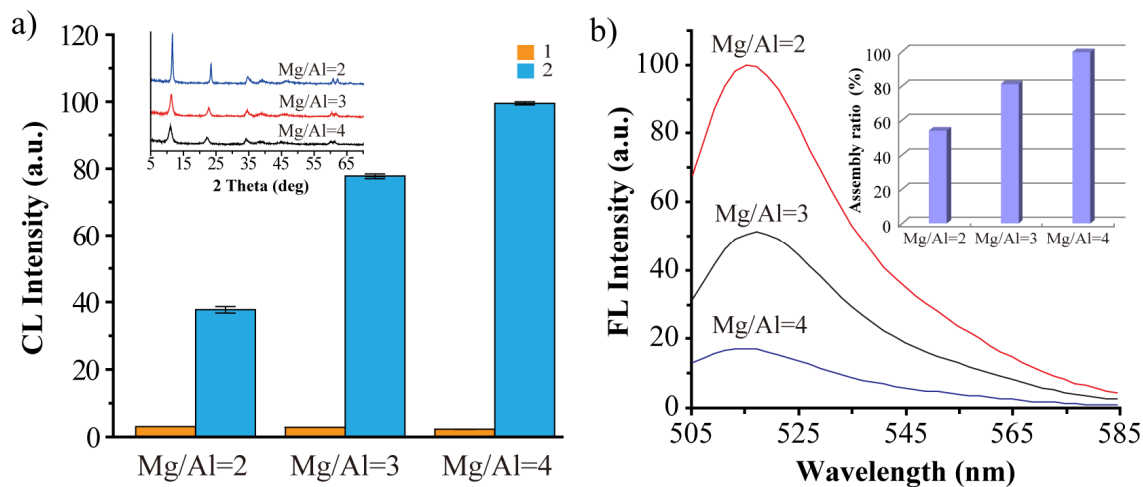
**Figure S4.** CL intensity of peroxynitrous acid system with different solutions: (a) Mg-Al-CO<sub>3</sub> LDHs, and (b) the assembly of  $1.0 \times 10^{-5}$  M FLUD onto the surface of Mg-Al-CO<sub>3</sub> LDHs.



**Figure S5.** Raman spectra of (a) FLUD; (b) the assembly of  $1.0 \times 10^{-4}$  M FLUD onto the surface of Mg-Al- $\text{CO}_3$  LDHs.

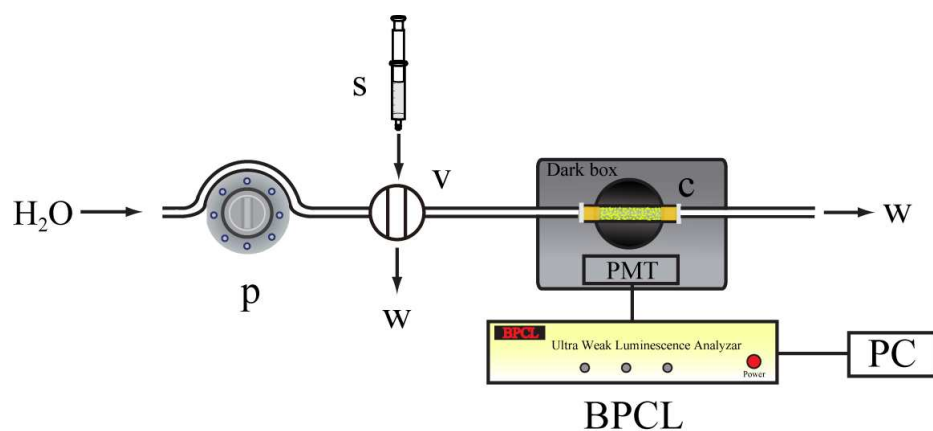


**Figure S6.** Emission spectra of supernatant liquid of FLUD-LDHs after one centrifugation. (a) Mg-Al-CO<sub>3</sub> LDHs synthesized by urea hydrolysis; (b) Mg-Al-CO<sub>3</sub> LDHs synthesized by variable pH coprecipitation; (c) Mg-Al-CO<sub>3</sub> LDHs synthesized by constant pH coprecipitation. Inset: assembly ratio of FLUD to Mg-Al-CO<sub>3</sub> LDHs.

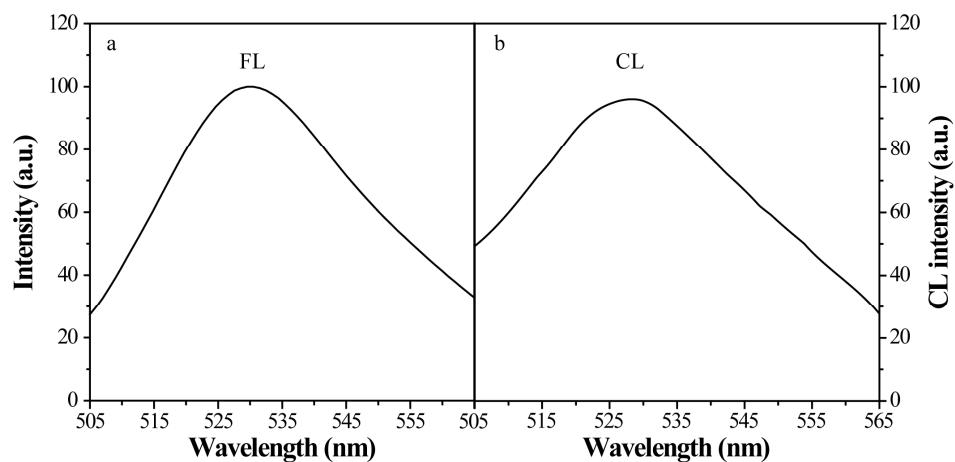


**Figure S7.** a) CL intensity of peroxynitrous acid system with different solutions: (1) Mg-Al-CO<sub>3</sub> LDHs with different synthesis methods, and (2) the assembly of  $1.0 \times 10^{-5}$  M FLUD onto the surface of Mg-Al-CO<sub>3</sub> LDHs with different Mg/Al ratios. Inset: Powder XRD patterns of Mg-Al-CO<sub>3</sub> LDHs with different synthesis methods; b) Emission spectra of supernatant liquid of FLUD-LDHs after one centrifugation. Inset: assembly ratio of FLUD to Mg-Al-CO<sub>3</sub> LDHs.

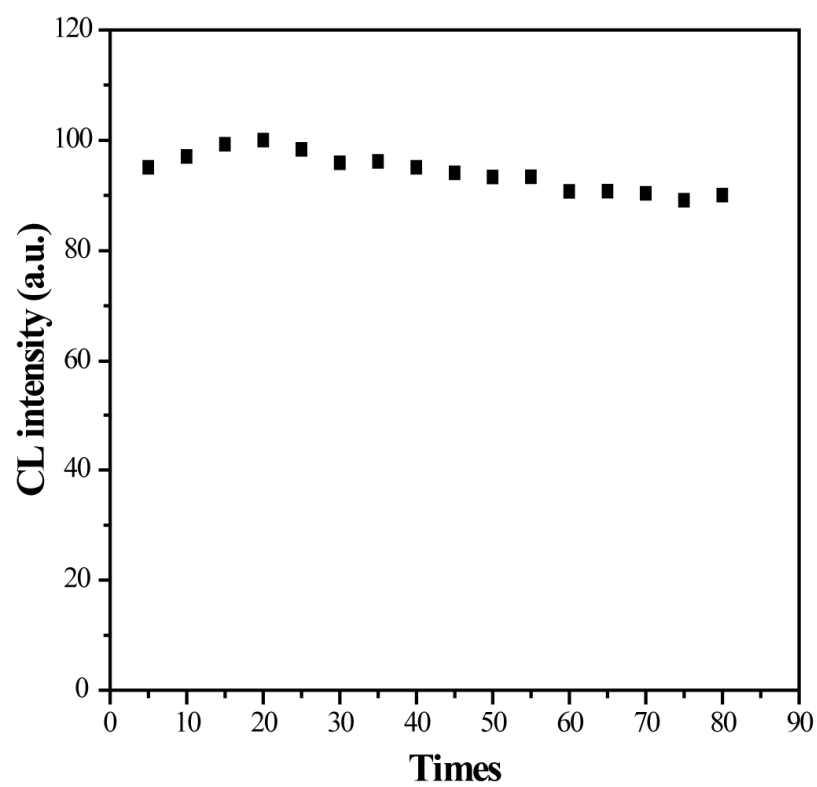




**Figure S8.** Schematic diagram of the CL flow-through device. p, peristaltic pump; v, six-way injection valve; s, sample; w, waste; PMT, photomultiplier tube; BPCL, Biophysics Chemiluminescence; PC, personal computer.



**Figure S9.** a) Emission spectra of the assembly of  $1.0 \times 10^{-5}$  M FLUD onto the surface of Mg-Al-CO<sub>3</sub> LDHs, and b) CL spectrum of peroxynitrous acid system mixed with the assembly of  $1.0 \times 10^{-5}$  M FLUD onto the surface of Mg-Al-CO<sub>3</sub> LDHs.



**Figure S10.** CL intensity for the repeated injections of  $1.0 \times 10^{-4}$  M peroxynitrous acid.

**Table S1** Tolerance Limit of Various Coexistent Substances on the Determination of 10  $\mu$ M Nitrite

Tolerance (M)	Coexistent substances
$1.0 \times 10^{-2}$	glucose, sucrose
$5.0 \times 10^{-3}$	$\text{H}_2\text{PO}_4^-$ , $\text{Ac}^-$ , $\text{Mg}^{2+}$ , $\text{K}^+$ , $\text{Ba}^{2+}$
$1.0 \times 10^{-3}$	$\text{Fe}^{3+}$ , $\text{HPO}_4^{2-}$ , $\text{SO}_4^{2-}$ , $\text{Ca}^{2+}$ , $\text{C}_2\text{O}_4^{2-}$ , $\text{Al}^{3+}$ , $\text{NO}_3^-$
$5.0 \times 10^{-4}$	$\text{Pb}^{2+}$ , $\text{Zn}^{2+}$ , $\text{F}^-$ , $\text{Ni}^{2+}$ , $\text{Br}^-$ , $\text{SO}_3^{2-}$ , $\text{I}^-$ , $\text{PO}_4^{3-}$
$1.0 \times 10^{-4}$	$\text{Co}^{2+}$ , $\text{Cr}^{3+}$ , $\text{Cd}^{2+}$ , $\text{Cu}^{2+}$