**Phenanthroline-based fluorescence sensors for Eu3+ ion**

**and subsequent enantioselective discriminating of malate**

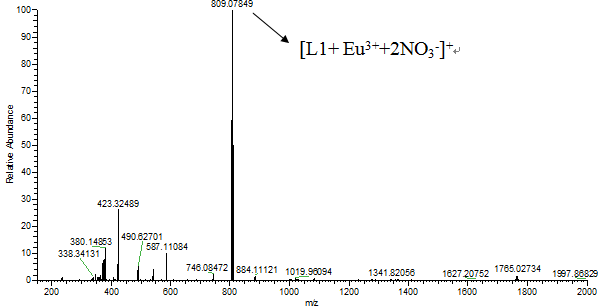
Xiaoyan Liua, Jiaxin Fua, Kun Yaoa, Yongxin Changa, Kuoxi Xua, b[[1]](#footnote-1)\*, Li Yanga, b\*

a Institute of Functional Organic Molecular Engineering, College of Chemistry and Chemical Engineering, Henan University, Kaifeng, 475004, China;

b Engineering Laboratory for Flame Retardant and Functional Materials of Hennan Province, College of Chemistry and Chemical Engineering, Henan University, Kaifeng, 475004, China



**Figure S1.** Job's plot for the determination of stoichiometry of [**L1**–Eu3+] system in DMSO-H2O solution (v/v = 1:5, 10 mM HEPES, pH=7.4).



**Figure S2.** HRMS of **L1**–Eu3+



**Figure S3.** Fluorescence intensity of **L1** (3.33× 10−5 M) in the absence and presence of Eu3+ (2.0 equiv.) in different pH (2.3-12.3) buffer solution.



**Figure S4.** Fluorescence spectroscopy of **D1** (3.33×10−5 M) upon addition of different metals (3.0 equiv. Li+, Na+, K+, Ag+, Mg2+, Ba2+, Ca2+, Mn2+, Pb2+, Cu2+, Ni2+, Co2+, Zn2+, Cd2+, Fe2+, Cr3+, Fe3+ Al3+ and Eu3+) in DMSO-H2O solution (v/v = 1:5, 10 mM HEPES, pH=7.4).

**Figure S5.**(A) Fluorescence spectra of **D1**(3.3× 10−5 M) upon addition of Eu3+ (0-1.3 equiv) in DMSO-H2O solution(v/v = 1:5, 10 mM HEPES, pH=7.4, λex=358 nm).(B) The line shown was a line-fitted curve by Benesi-Hildebrand equation. The correlation coefficient (R) was0.9900. K=(0.38±0.01)×104, λex= 358 nm, λem=431 nm.



**Figure S6.** Job's plot for the determination of stoichiometry of [**D1**–Eu3+] system in DMSO-H2O solution(v/v = 1:5, 10 mM HEPES, pH=7.4, λex=358 nm).



**Figure S7.** Fluorescence intensity of **D1**(3.3× 10−5 M) in the absence and presence of Eu3+ (2.0 equiv) in different pH(2.3-12.3) buffer solution. (λex = 358 nm).



**Figure S8.** Fluorescence spectra of **D1**-Eu3+(3.3× 10−5 M) upon addition of different chiral carboxylic acid anion (50 equiv.) (A= **D1**-Eu3+, B= *L*-dibenzoyl tartrate, C= *D*-dibenzoyltartrate, D= *L*- benzene lactate, E= *D*- benzene lactate, F= *L*- methoxyphenylacetate, G= *D*- methoxyphenylacetate, H= *L*-alanine salts, I=*D*-alanine salts, J= *L*- glutamate, K= *D*-glutamate, L= *L*-mandelate, M= *D*-mandelate, N= *L*-phenylalanine salts, O= *D*-phenylalanine salts, P= *L*-tartrate, Q=*D*-tartrate, R= *L*-malate, S= *D*-malate)in DMSO-H2O solution (v/v = 1:5, 10 mM HEPES, pH=7.4, λex=358 nm).



**Figure S9.** Fluorescent spectra of **D1**-Eu3+ (3.3× 10−5 M) with 50 equiv. of *D*- and *L*-MA in DMSO-H2O solution (v/v = 1:5, 10 mM HEPES, pH=7.4, λex=358 nm).

1. Corresponding author: E-mail: xukx@henu.edu.cn. [↑](#footnote-ref-1)