Supporting Information

Ratiometric detection of the biomarker Ap5A for dry eye and physiological temperature by a rare trinuclear lanthanide metal-organic framework

Tifeng Xia,[a] Yating Wan,[b] Xiayan Yan,[a] Li Hu,[a] Zhigang Wu[a] and Jun Zhang[a]

[a]Institute of Materials, China Academy of Engineering Physics, Mianyang 621907, P. R. China

[b]Shanghai Institute of Laser Plasma, China Academy of Engineering Physics, Shanghai 201800, China

Corresponding authors:
xiatifeng@caep.cn, j-zhang@caep.cn.

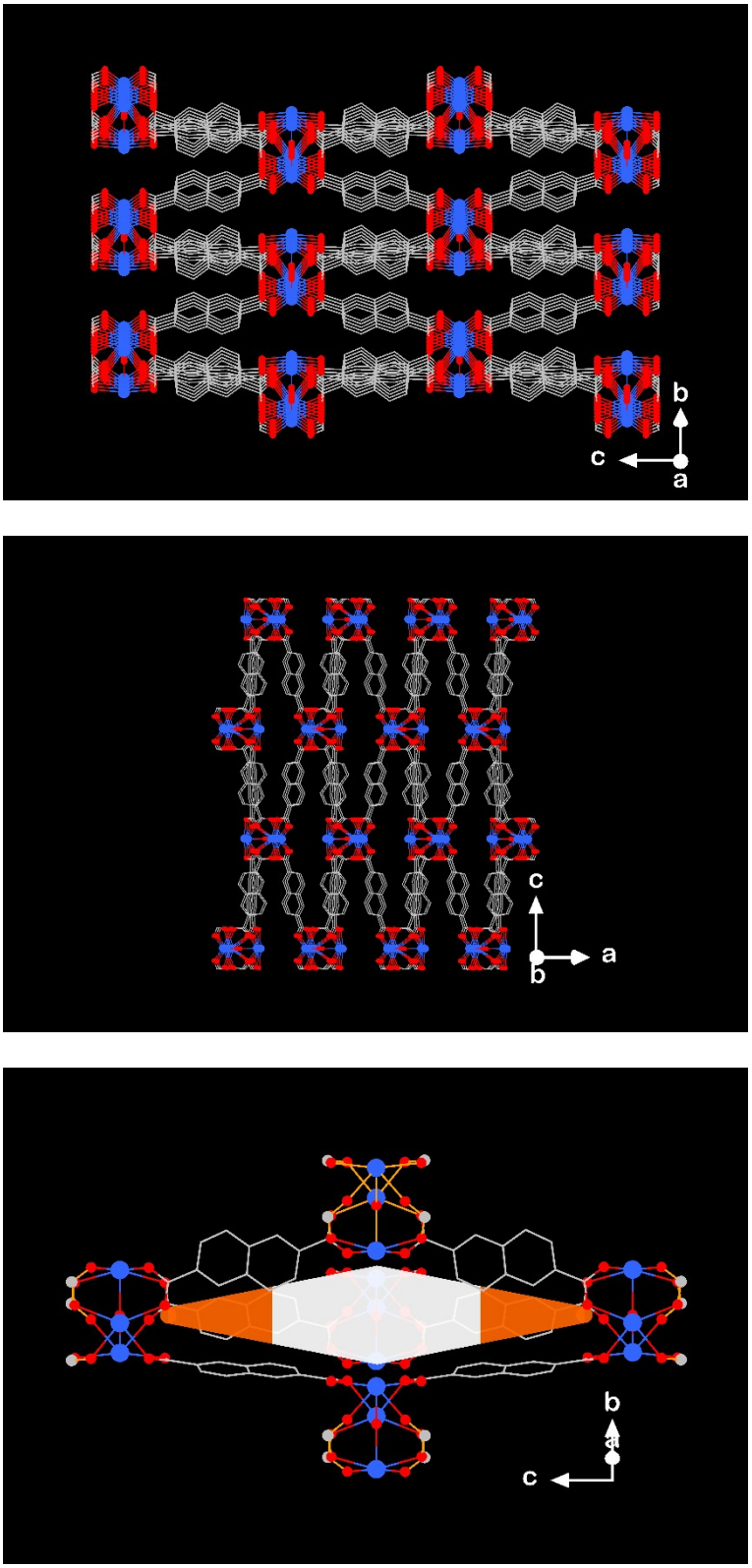

Figure S1. The crystal structure of Eu(2,6-NDC) view along *a*, *b* axis, and the rugby shaped cavity.

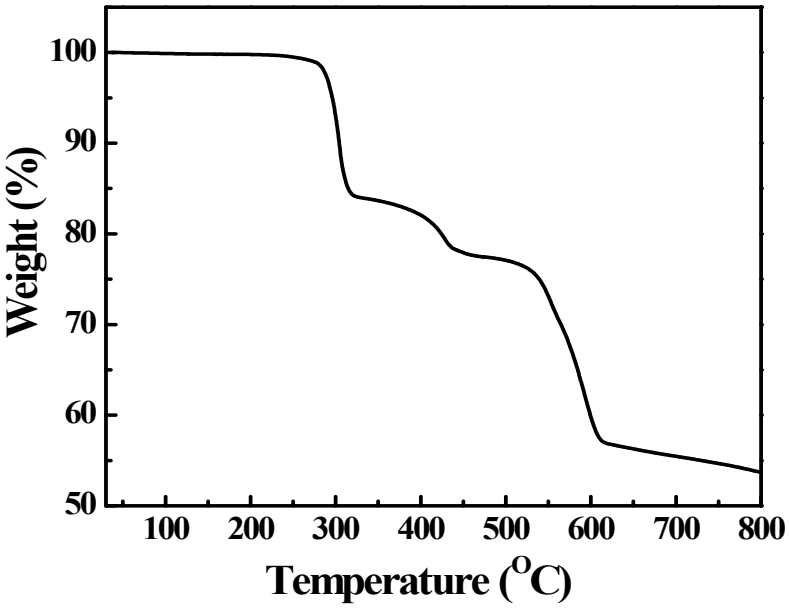

Figure S2. The TGA curve of Eu(2,6-NDC).

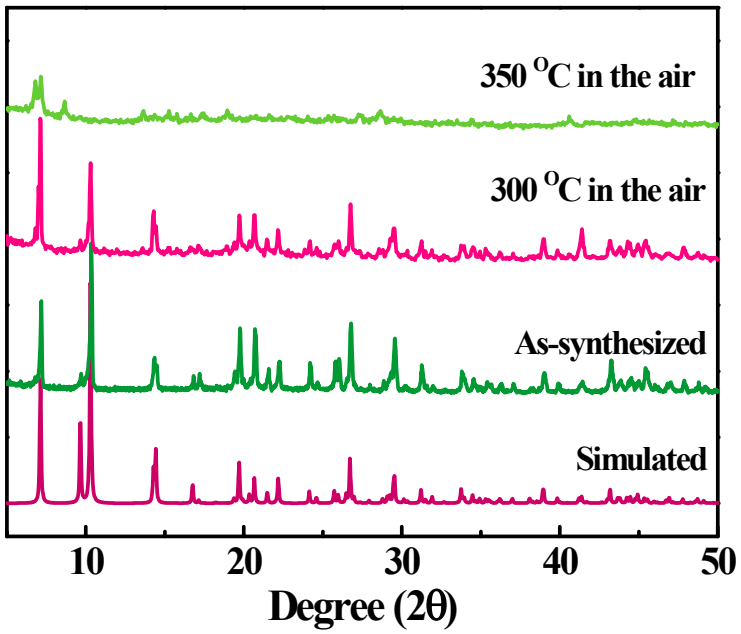

Figure S3. The PXRD pattern of Eu(2,6-NDC) after different temperature treatment.

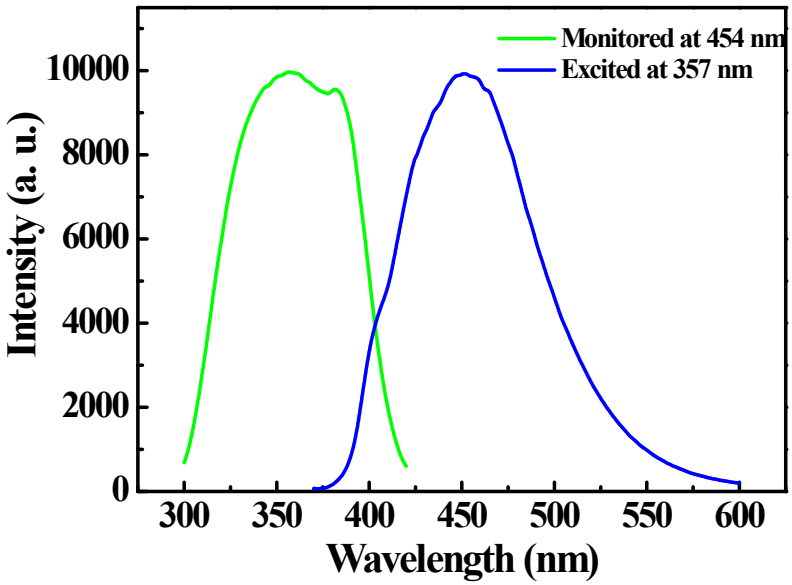

Figure S4. Excitation and emission spectra of free 2,6-H_2NDC.

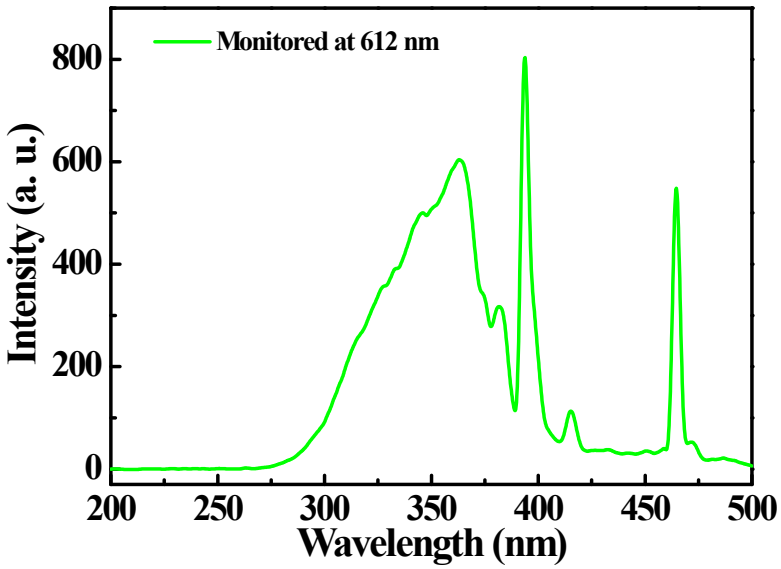

Figure S5. Excited spectrum of Eu(2,6-NDC) in solid state monitored at 612 nm.

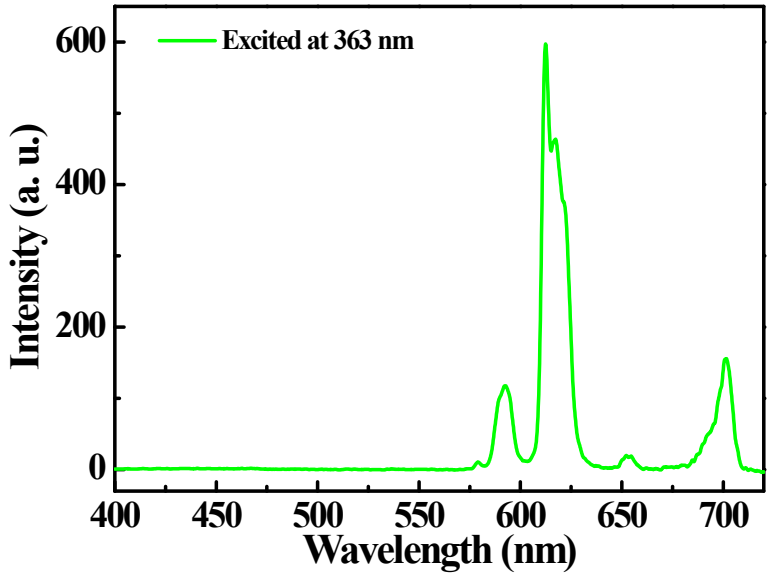

Figure S6. Emission spectrum of Eu(2,6-NDC) in solid state excited at 363 nm.

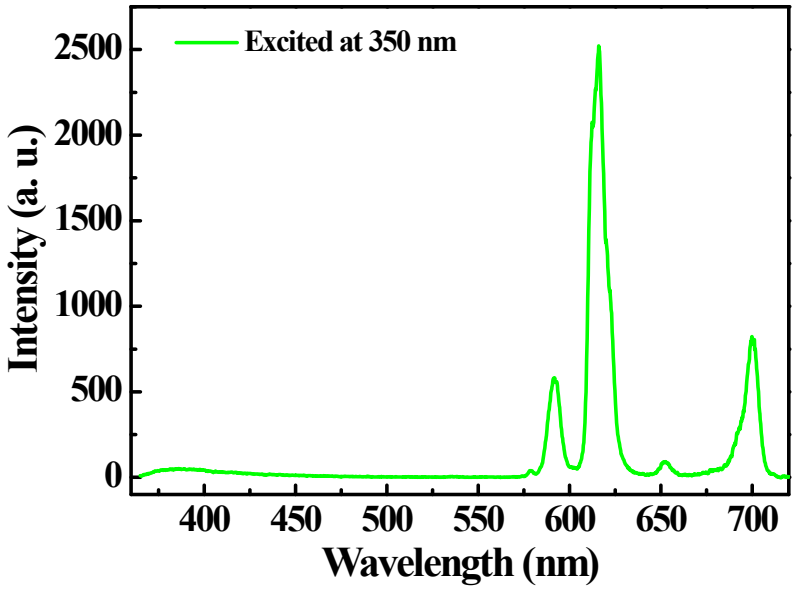

Figure S7. Emission spectrum of Eu(2,6-NDC) in water excited at 350 nm.

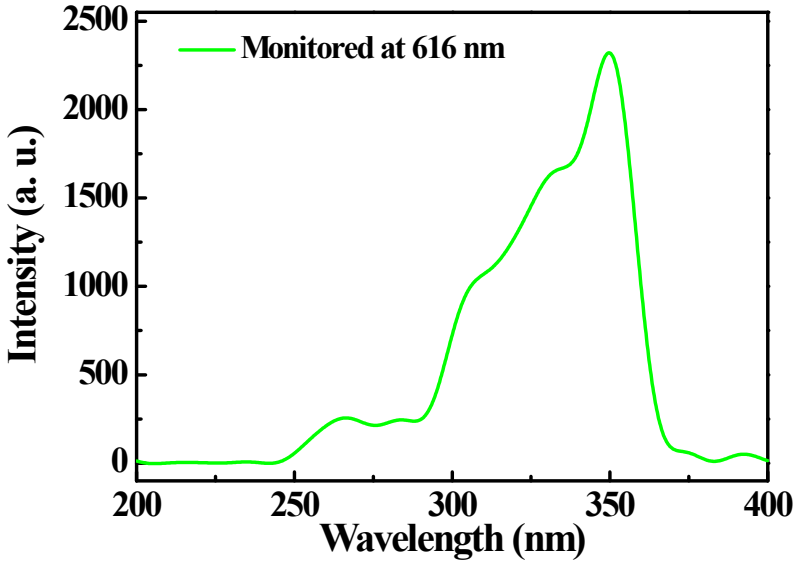

Figure S8. Excited spectrum of Eu(2,6-NDC) in water monitored at 616 nm.

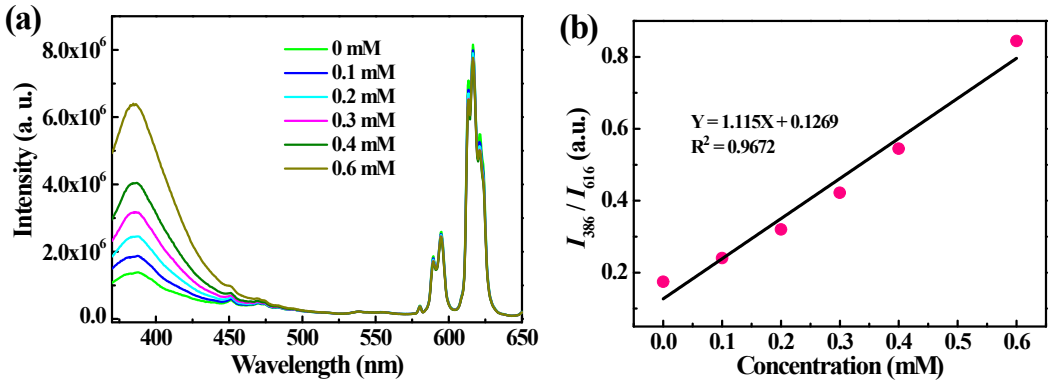

Figure S9. (a) Emission spectra of Eu(2,6-NDC) suspension upon gradual addition of Ap4A from 0 to 0.6 mM. (b) Luminescence intensity ratio (I_{386}/I_{616}) of Eu(2,6-NDC) suspension versus the concentration of Ap4A. Inset: The linear calibration plot for Ap4A detection.

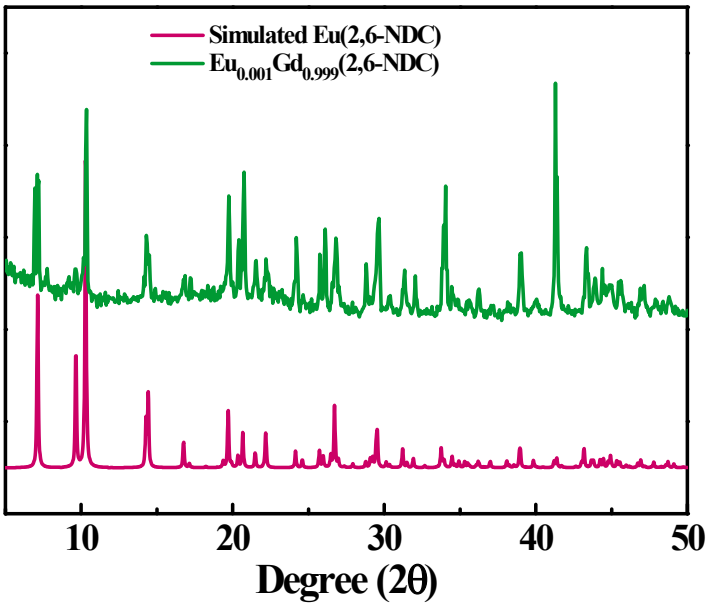

Figure S10. PXRD patterns of $Eu_{0.001}Gd_{0.999}$(2,6-NDC) and simulated Eu(2,6-NDC).

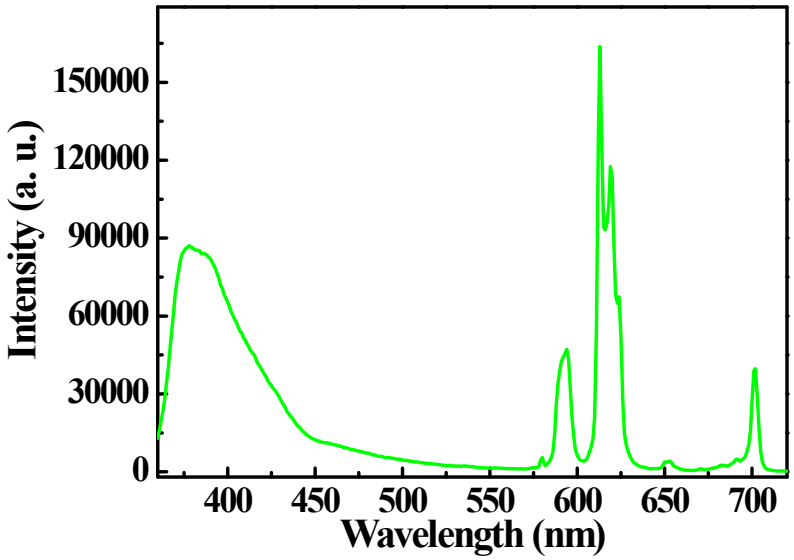

Figure S11. Emission spectrum of $Eu_{0.001}Gd_{0.999}$(2,6-NDC) in solid state at 20 °C excited at 340 nm.

Table S1. Crystallographic Data Collection and Refinement Results of Eu(2,6-NDC).

	Eu(2,6-NDC)
Chemical formla	$C_{39}H_4Eu_{22}O_{19}$
Formula weight	1250.54
Temperature (K)	293(2)
Wavelength (Å)	0.71073
Crystal system	Hexagonal
Space group	$P\,6_3/m$
a (Å)	10.5738(4)
b (Å)	10.5738(4)
c (Å)	24.7974(10)
α (°)	90
β (°)	90
γ (°)	120
V (Å^3)	2401.0(2)
Z	2
Density (calculated g·cm^{-3})	1.776
Absorbance coefficient (mm^{-1})	3.944
F(000)	1231
Crystal size (mm^3)	0.4X0.4X0.2
R(int)	0.0309
Goodness of fit on F_2	1.175
R_1, wR_2 [I>2σ(I)][a]	0.0405, 0.1031
R_1, wR_2 (all data)[a]	0.0428, 0.1043
Largest difference peak and hole (e·Å^{-3})	1.285, -1.621

[a] $R1 = \sum\left(|F_o| - |F_c|\right)/\sum|F_o|; wR2 = \left[\frac{\sum w\left(|F_o| - |F_C|^2\right)}{\sum wF_o^2}\right]^{1/2}$