Supporting Information

Silver-alkynyl cluster encapsulating a fluorescent polyoxometalate core: enhanced emission and fluorescent modulation

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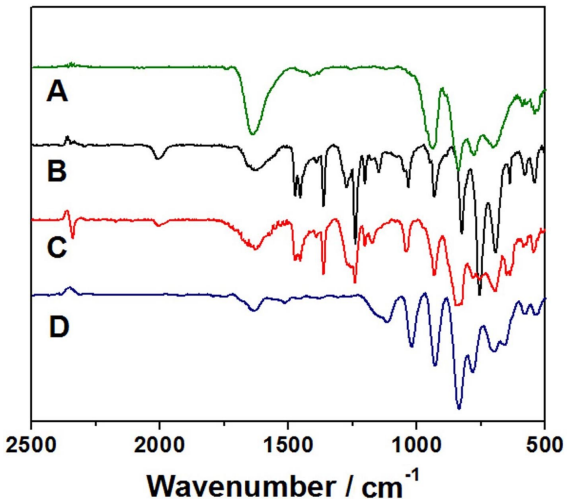

Fig. S1 FTIR spectra of (A) $Na_9Eu(W_5O_{18})_2$; (B) **1**; (C) **1** after high-energy UV irradiation (2 kW) for 30 min; (D) **1** upon addition of 10^{-3} mol·L^{-1} S^{2-} ions.

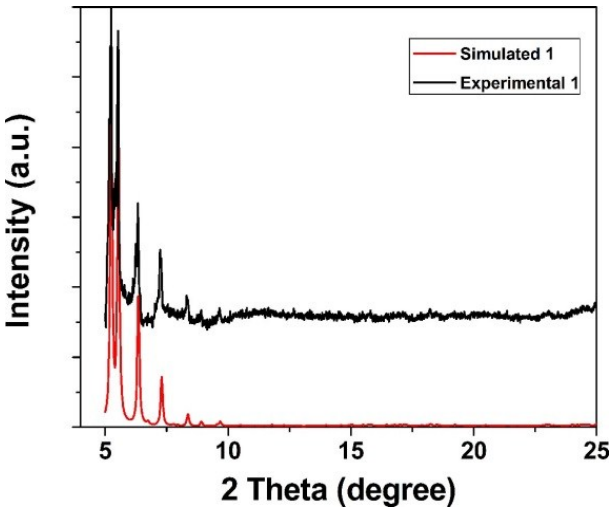

Fig. S2 The measured and simulated X-ray powder diffraction patterns of **1**.

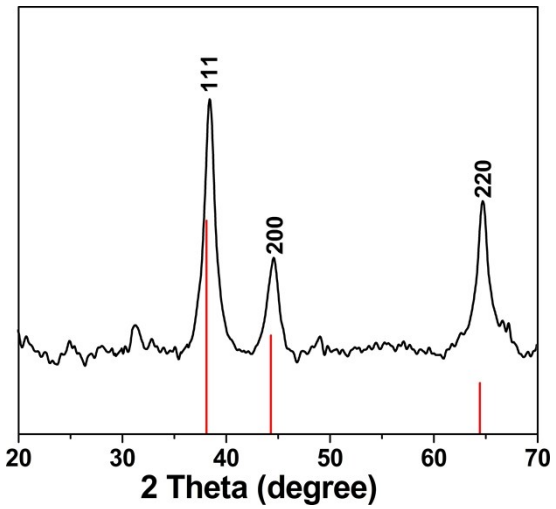

Fig. S3 X-ray powder diffraction patterns of **1** upon high energy UV irradiation (black, measured; red, simulated).

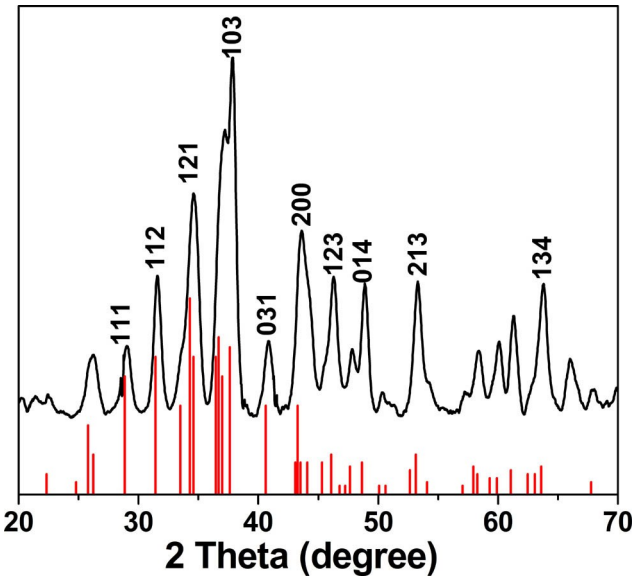

Fig. S4 X-ray powder diffraction patterns of **1** upon addition of S^{2-} ions (black, measured; red, freshly prepared Ag_2S).

Table S1. Crystallographic data for compound **1**

Parameters	**1**
Empirical formula	$C_{168}H_{255}O_{38}Cl_4Ag_{42}EuW_{10}$
Formula weight	9545.49
Crystal system	monoclinic
Space group	$P\,2_1/n$
a, Å	22.7850(5)
b, Å	27.3331(5)
c, Å	39.2083(10)
β, °	99.209(2)
V, Å^3	24103.6(9)
Z	4
T, K	123
λ, Å	0.71073
μ, mm^{-1}	8.419
F(000)	30737
Limiting indices	$-25 \le h \le 29$
	$-24 \le k \le 35$
	$-45 \le l \le 48$
ρ_{calcd}, mg/m^3	2.630
Measured reflections	111811
Independent reflections	47137
$R_{(int)}$	0.0399
Data/restraints/parameters	47137/12/2181
Goodness-of-fit on F^2	1.080
$R_1{}^a$, w$R_2{}^b$ [$I > 2\sigma(I)$]	0.0575, 0.1256
$R_1{}^a$,w$R_2{}^b$ (all data)	0.0903, 0.1457

$^aR_1=\Sigma||F_o| - |F_c||/\Sigma|F_o|$, $^bwR_2=[\Sigma[w(F_o^2 - F_c^2)^2]/\Sigma w(F_o^2)^2]^{1/2}$

Table S2. The assignments of FTIR spectra of **1** in its solid state and the as-synthesized EuW_{10} (the unit of wavenumber is cm^{-1}).

Assignments	EuW_{10}	**1**	UV-irradiated **1**	S^{2-} titrated **1**
$W = O_d$	942	929	932	930
$W\text{-}O_b\text{-}W$	836	825	838	836
$W\text{-}O_c\text{-}W$	781	755	755	786
	701	690	695	701