Supplementary Information

Facile synthesis of high monodispersed EuSe nanocubes with size-dependent optical/magnetic properties and their electrochemiluminescence performance

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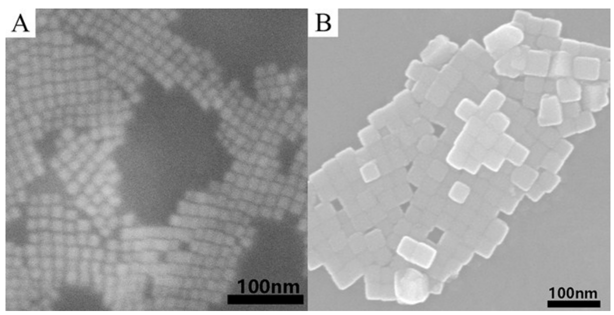

Fig. S1 SEM images of (A) 17 and (B) 38 nm EuSe nanocubes dispersed in cyclohexane.

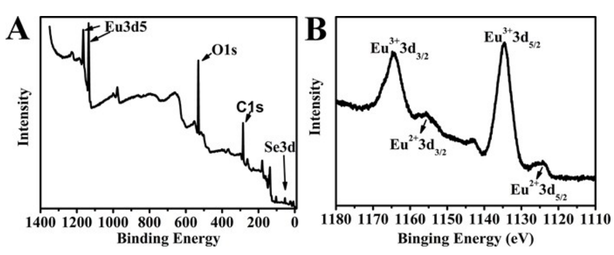

Fig. S2 (A) XPS survey spectrum of 17 nm EuSe nanocubes. (B) High-resolution XPS spectra at Eu 3 d position of 17 nm EuSe nanocubes. EuSe nanocubes put in air for two weeks.

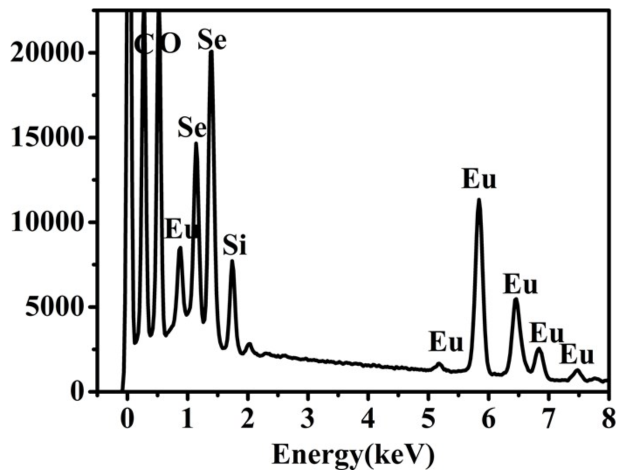

Fig. S3 EDX spectrum of EuSe nanocubes with edge lengths of 17 nm.

Table S1. Monodispersity and magnetic properties of EuSe nanocubes.

EuSe nanocubes	± 1 nm[a]	T_N/K	M_S/μB[b]	H_C/Oe[b]
8 nm	67.5 %	2.9	2.3	5
13 nm	70.1 %	3.5	2.2	3
17 nm	49.9 %	3.8	3.7	50

[a] Crystal size from TEM. [b] Obtained from Magnetic hysteresis loops of EuSe nanocubes at 2 K.

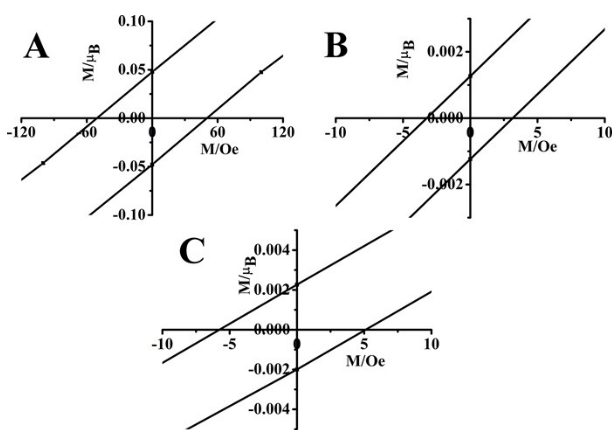

Fig. S4 Enlarged view of the hysteresis loops (A) 17, (B) 13, and (C) 8 nm EuSe nanocubes, respectively.

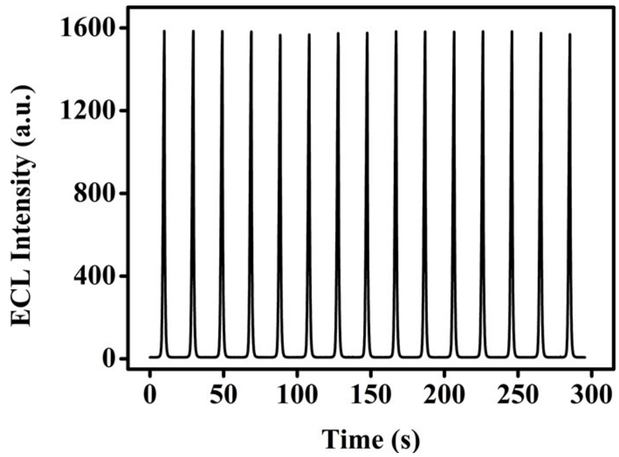

Fig. S5 Stability detection of ECL signal with scanning for 15 laps under potential scans from 0 to -1.8 V. GCE electrode was modified by 50 nm EuSe NCs in PBS (pH=7.4)
containing 0.1M KCl and 0.1 M $K_2S_2O_8$.

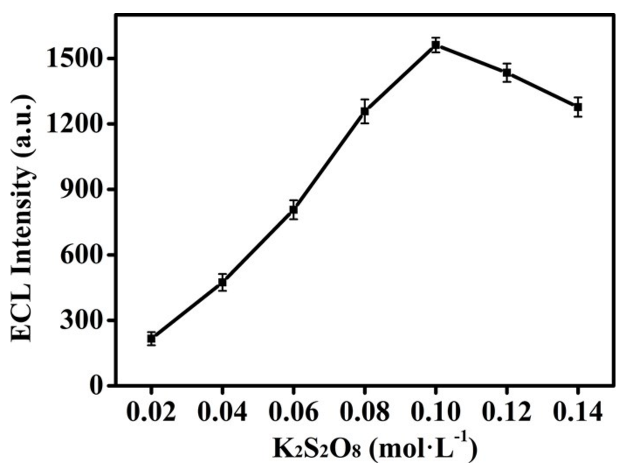

Fig. S6 Effect of $K_2S_2O_8$ concentration on the ECL intensity of the EuSe modified GCE electrode.

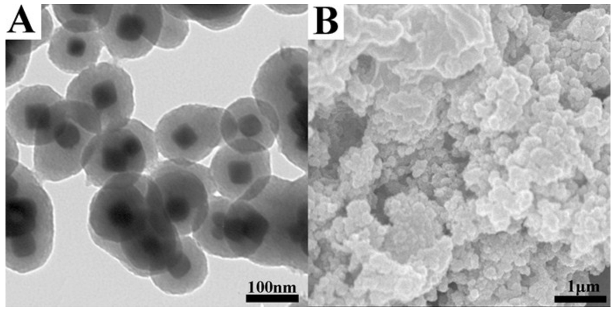

Fig. S7 TEM and SEM images of (A) EuSe@CTAB@SiO_2@FA NPs, and (B) EuSe@CTAB@SiO_2@FA NPs/3D-GR@Au NPs.