Electronic Supplementary Material (ESI) for CrystEngComm.

White-light emission based on a single component Sm(III) complex and enhanced optical properties by doping methods

Yuan-Yi Xu,[a] Peng Chen,[a] Ting Gao,*[a] Hong-Feng Li,*[a] and Peng-Fei Yan[a]

[a] *Key Laboratory of Functional Inorganic Material Chemistry (MOE), School of Chemistry and Materials Science, Heilongjiang University, No. 74, Xuefu Road, Nangang District, Harbin 150080, P.R. China; Email: gaotingmail@sina.com ;lhf4612@163.com*

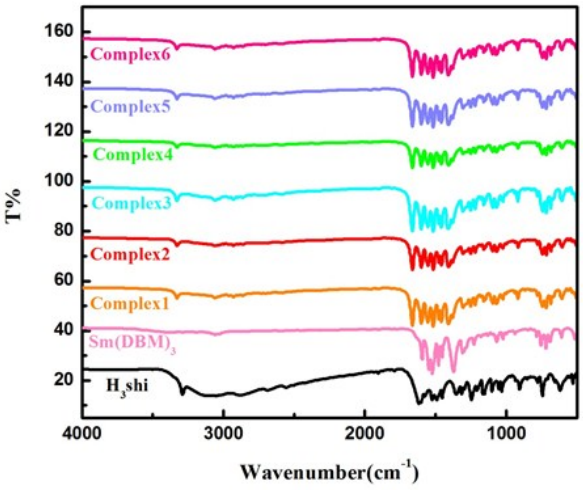

Fig.S1 IR spectra of H_3shi, $Sm(DBM)_3$ and complex **1**-**6**.

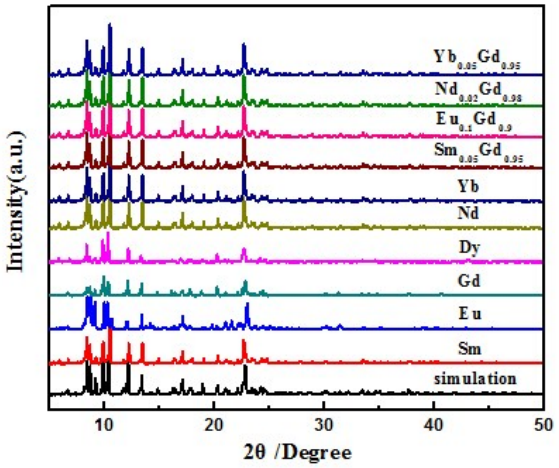

Fig.S2 PXRD patterns for simulation, Sm, Eu, Gd, Dy, Nd, Yb, $Sm_{0.05}Gd_{0.95}$, $Eu_{0.1}Gd_{0.9}$, $Nd_{0.02}Gd_{0.98}$ and $Yb_{0.05}Gd_{0.95}$.

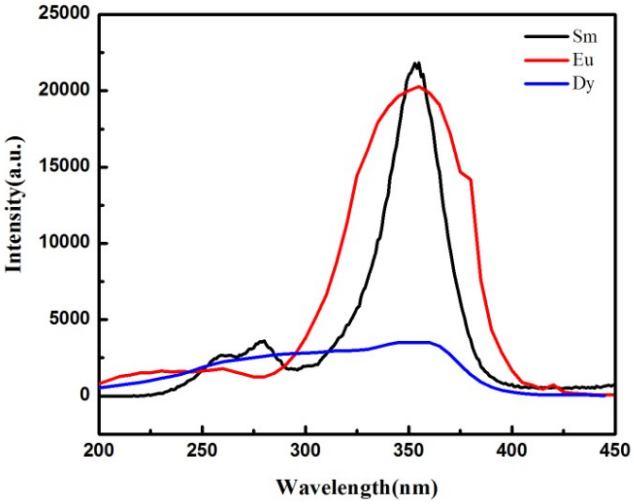

Fig.S3 The excitation spectra of complexes **1** - **3**.

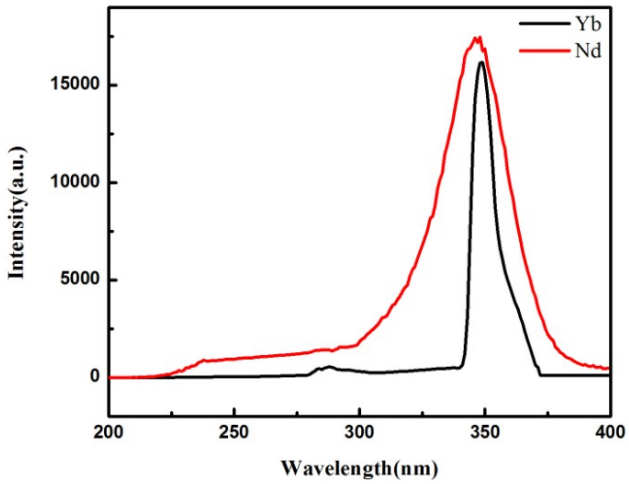

Fig.S4 The excitation spectra of complexes **5** and **6**.

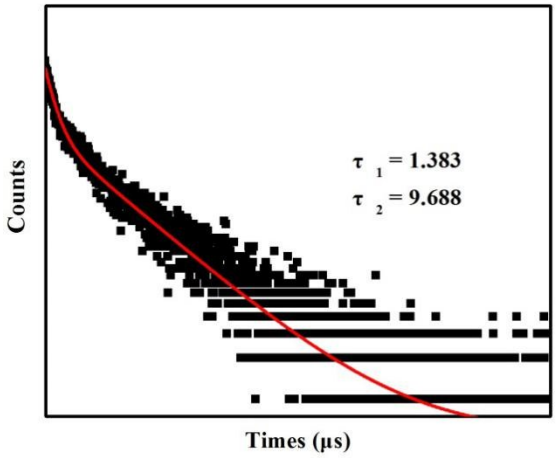

Fig.S5 Luminescence decay profile for complex **1** in solid state.

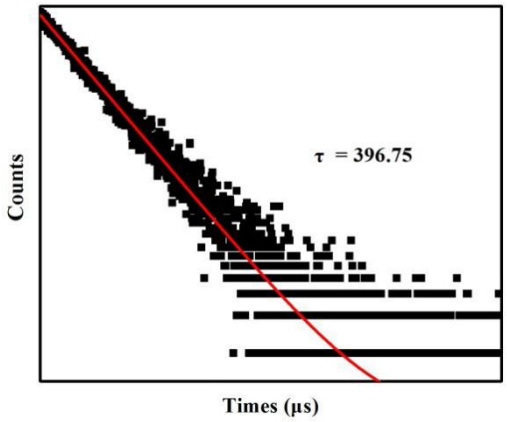

Fig.S6 Luminescence decay profile for complex **2** in solid state.

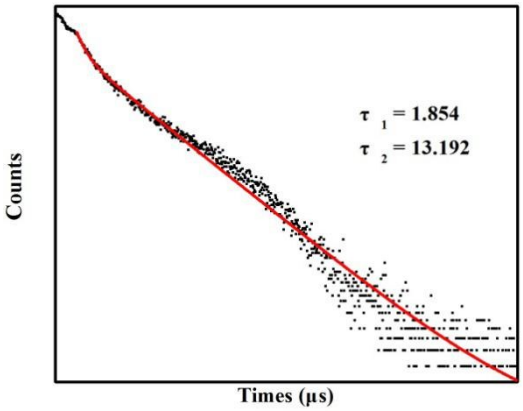

Fig.S7 Luminescence decay profile for complex **5** in solid state.

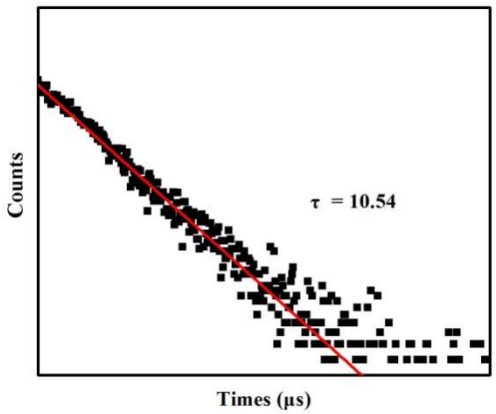

Fig.S8 Luminescence decay profile for complex **6** in solid state.

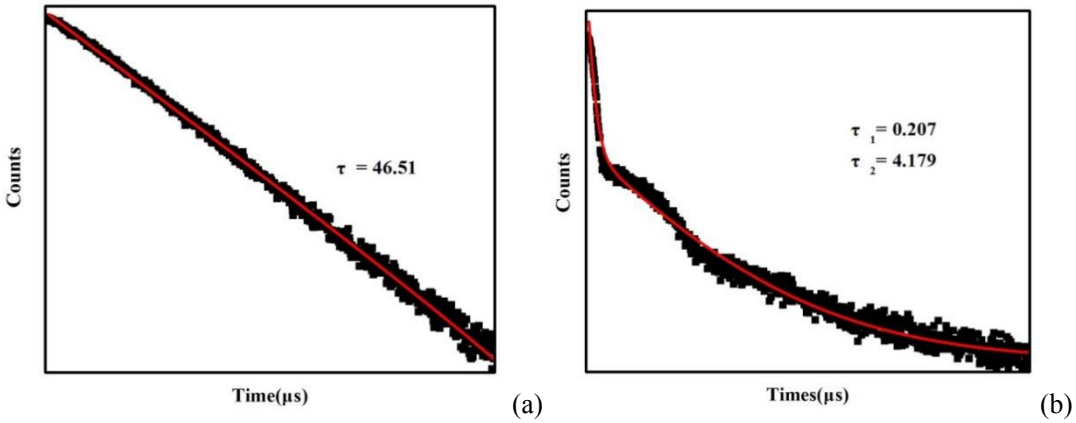

Fig.S9 Luminescence decay profile for doped Sm^{3+}/Gd^{3+} complex (a) and mixture Sm^{3+}/Gd^{3+} complex (b) in solid state.

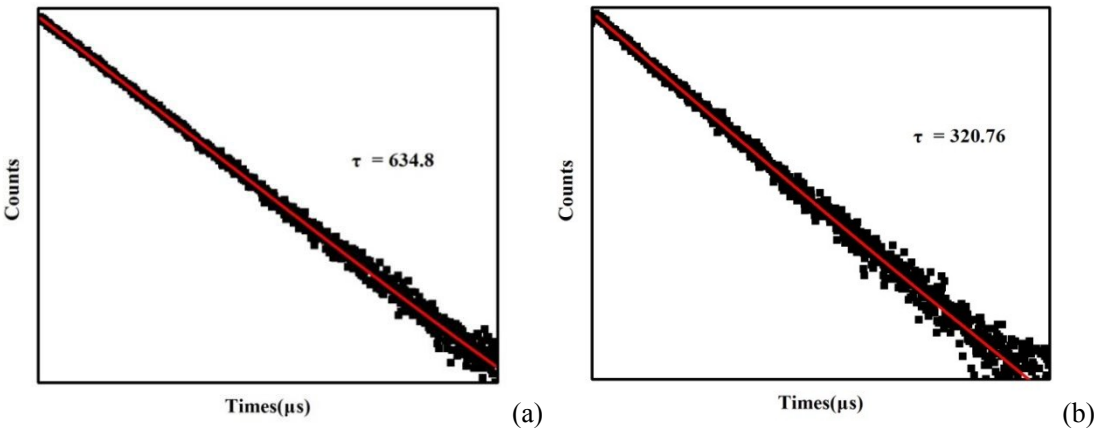

Fig.S10 Luminescence decay profile for co-doped Eu^{3+}/Gd^{3+} complex (a) and mixture Eu^{3+}/Gd^{3+} complex (b) in solid state.

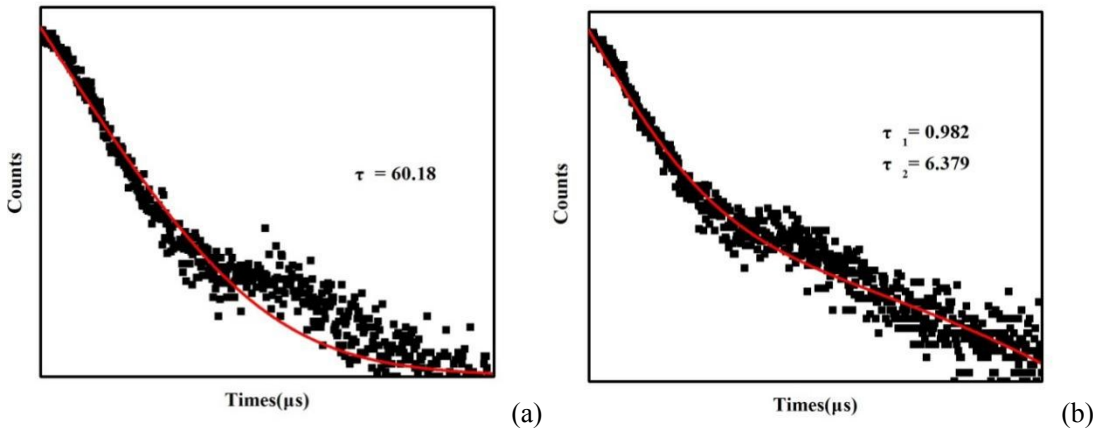

Fig.S11 Luminescence decay profile for co-doped Nd^{3+}/Gd^{3+} complex (a) and mixture Nd^{3+}/Gd^{3+} complex (b) in solid state.

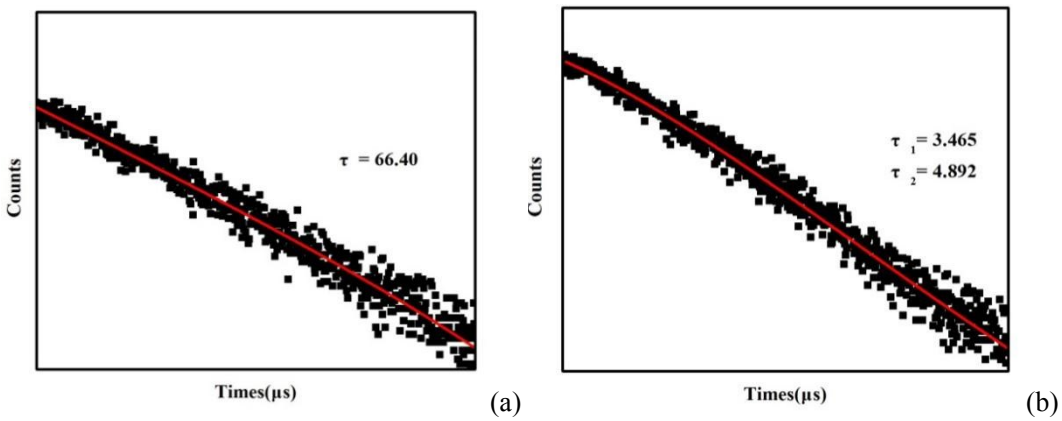

Fig.S12 Luminescence decay profile for co-doped Yb^{3+}/Gd^{3+} complex (a) and mixture Yb^{3+}/Gd^{3+} complex (b) in solid state.

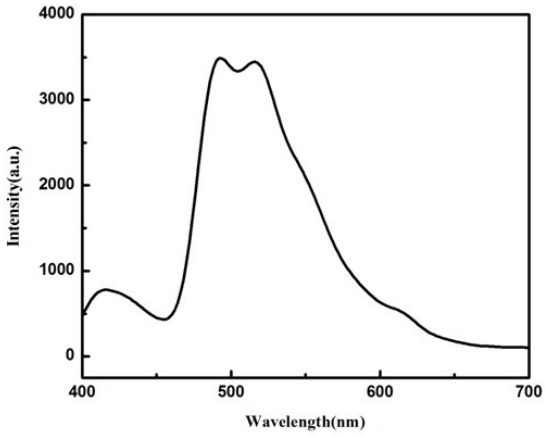

Fig.S13 Phosphorescence spectrum of $[Gd_2(Hshi)_2DBM_4{\cdot}2DMF]$ (**3**) at 77K.

Table.S1 Elemental analysis of lanthanide ions by ICP for doped complexes

Complex	$Sm_{0.05}Gd_{0.95}$		$Eu_{0.10}Gd_{0.90}$		$Nd_{0.02}Gd_{0.98}$		$Yb_{0.05}Gd_{0.95}$	
	Sm	Gd	Eu	Gd	Nd	Gd	Yb	Gd
Wt % (Found)	4.9	95.1	10.1	89.9	2.2	97.8	5.1	94.9
Mol%	5	95	10	90	2	98	5	95