Electronic Supplementary Material (ESI) for RSC Advances.
This journal is © The Royal Society of Chemistry 2015

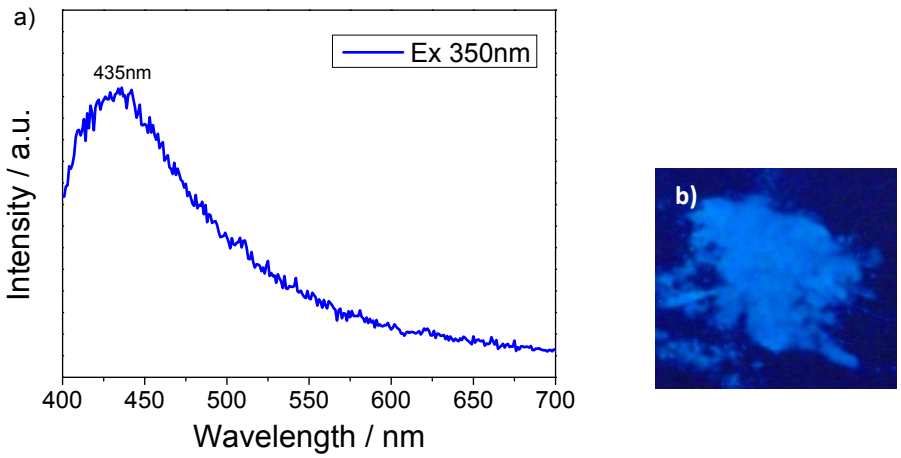
Supporting Information

Multi-colored Luminescent Light-harvesting Hybrids Based on Aminoclay and Lanthanide Complexes

*Tianren Wang, Xiaoyan Yu, Zhiqiang Li, Jin Wang and Huanrong Li**

School of Chemical Engineering and Technology, Hebei University of Technology, Tianjin, 300130, P. R. China, E-mail: lihuanrong@hebut.edu.cn

1. Emission spectra as well as digital photograph of AC-Bipy;
2. decay curves of $^5D_0$ state for Eu^{3+} in AC-Bipy-Eu and $^5D_4$ state for Tb^{3+} in AC-Bipy-Tb;
3. emission spectra of the luminescent films on quartz;
4. CIE 1931 chromaticity diagram within the co-ordinates of the luminescent films on quartz;
5. CIE co-ordinates of the materials;
6. photophysical data of AC-Bipy-Eu and AC-BTC-Eu.



Firure S1. a) Emission spectra of AC-Bipy excited at 350 nm (room temperature) and b) digital photograph of AC-Bipy under 365 nm UV lamp illumination.

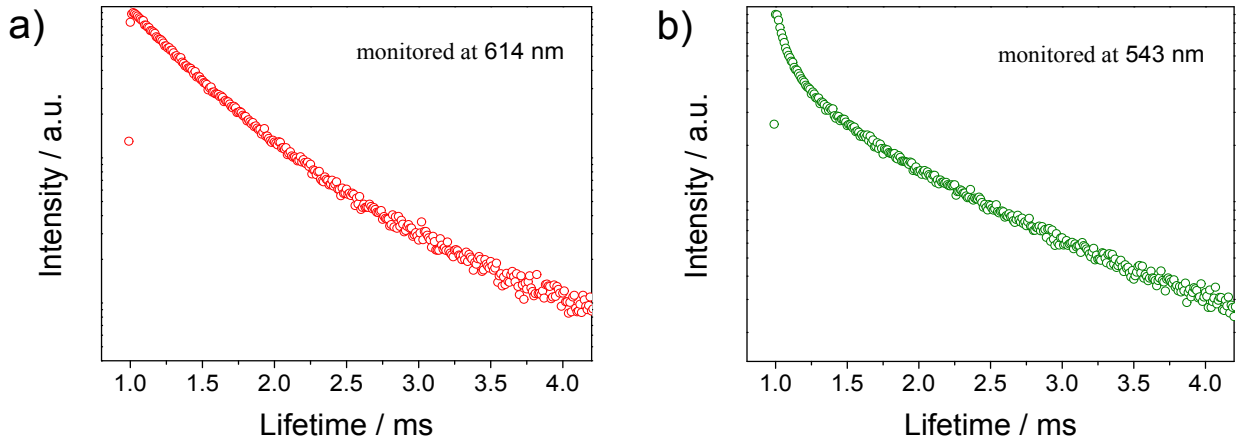


Figure S2. Decay curves of $^5D_0$ state for Eu^{3+} in AC-Bipy-Eu (a) and $^5D_4$ state for Tb^{3+} in AC-Bipy-Tb (b) after excitation at 300 nm.

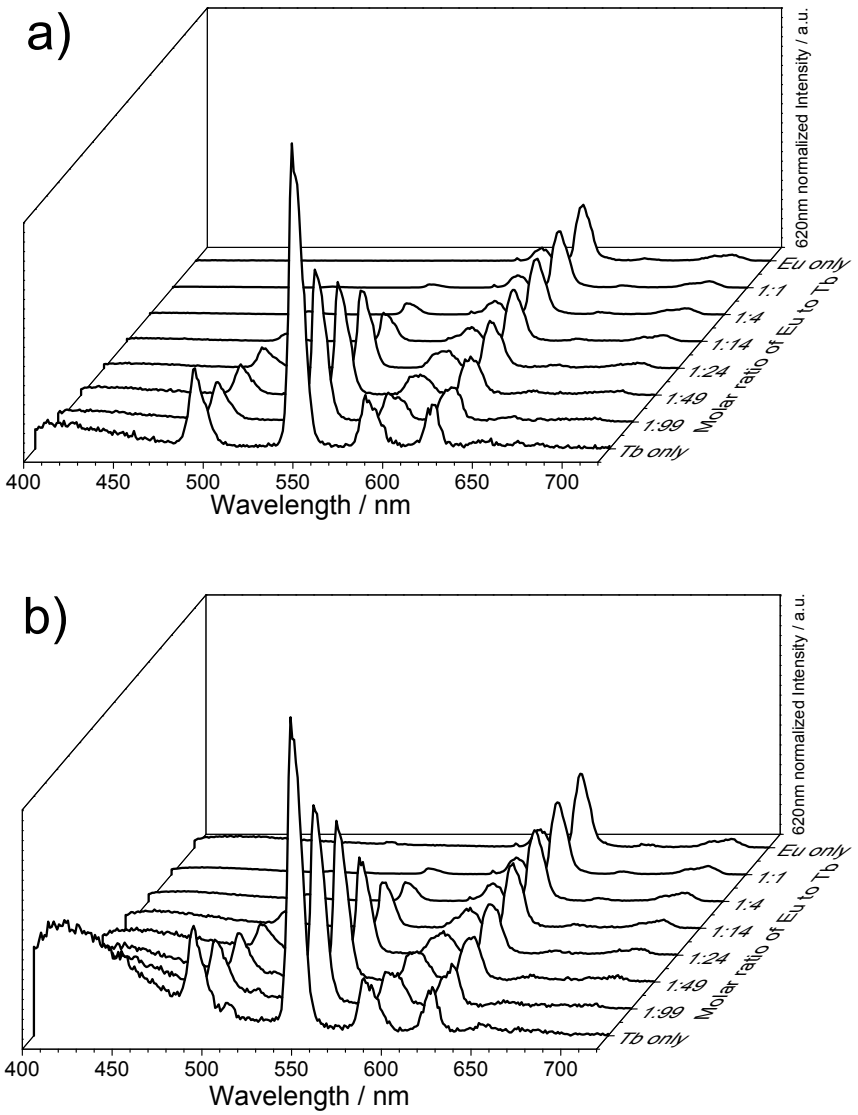


Figure S3. Emission spectra (normalized at 620 nm) of the transparent luminescent thin films excited at 300 nm (a) and 350 nm (b). (All the spectra were obtained at room temperature)

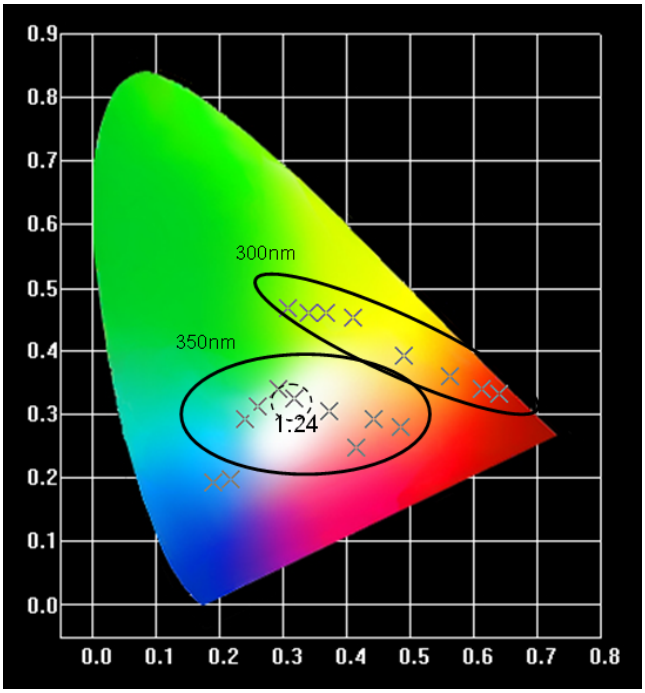


Figure S4. CIE 1931 chromaticity diagram within the co-ordinates of AC-Bipy-Ln (film) excited at 300 nm and 325 nm. The film of AC-Bipy-Eu_1Tb_{24} excited at 350 nm exhibits nearly perfect white light emission with the corresponding CIE co-ordinate of (0.32, 0.33).

Table S1. CIE co-ordinates of the luminescent powders and thin films on quartz excited at 300nm and 350nm (at room temperature).

AC-Bipy-Ln	CIE co-ordinates (powder)		CIE co-ordinates (film)	
	300nm	350nm	300nm	350nm
AC-Bipy-Eu	(0.64, 0.34)	(0.51, 0.28)	(0.64, 0.33)	(0.42, 0.25)
AC-Bipy-Eu_1Tb_1	(0.59, 0.37)	(0.32, 0.22)	(0.61, 0.34)	(0.49, 0.28)
AC-Bipy-Eu_1Tb_4	(0.58, 0.37)	(0.31, 0.22)	(0.56, 0.36)	(0.44, 0.29)
AC-Bipy-Eu_1Tb_{14}	(0.55, 0.40)	(0.30, 0.23)	(0.49, 0.39)	(0.37, 0.31)
AC-Bipy-Eu_1Tb_{24}	(0.51, 0.42)	(0.26, 0.22)	(0.41, 0.45)	**(0.32, 0.33)**
AC-Bipy-Eu_1Tb_{49}	(0.46, 0.46)	(0.23, 0.21)	(0.37, 0.46)	**(0.29, 0.34)**
AC-Bipy-Eu_1Tb_{99}	(0.42, 0.51)	**(0.30, 0.30)**	(0.34, 0.46)	**(0.26, 0.31)**
AC-Bipy-Tb	(0.36, 0.55)	(0.26, 0.31)	(0.31, 0.47)	(0.24, 0.29)

Table S2. Photophysical data of AC-Bipy-Eu and AC-BTC-Eu.

Sample	k_{exp} (ms^{-1})	k_r (ms^{-1})	n_w
AC-Bipy-Eu	2.15	0.28	1.7
AC-BTC-Eu	2.70	0.23	2.4