

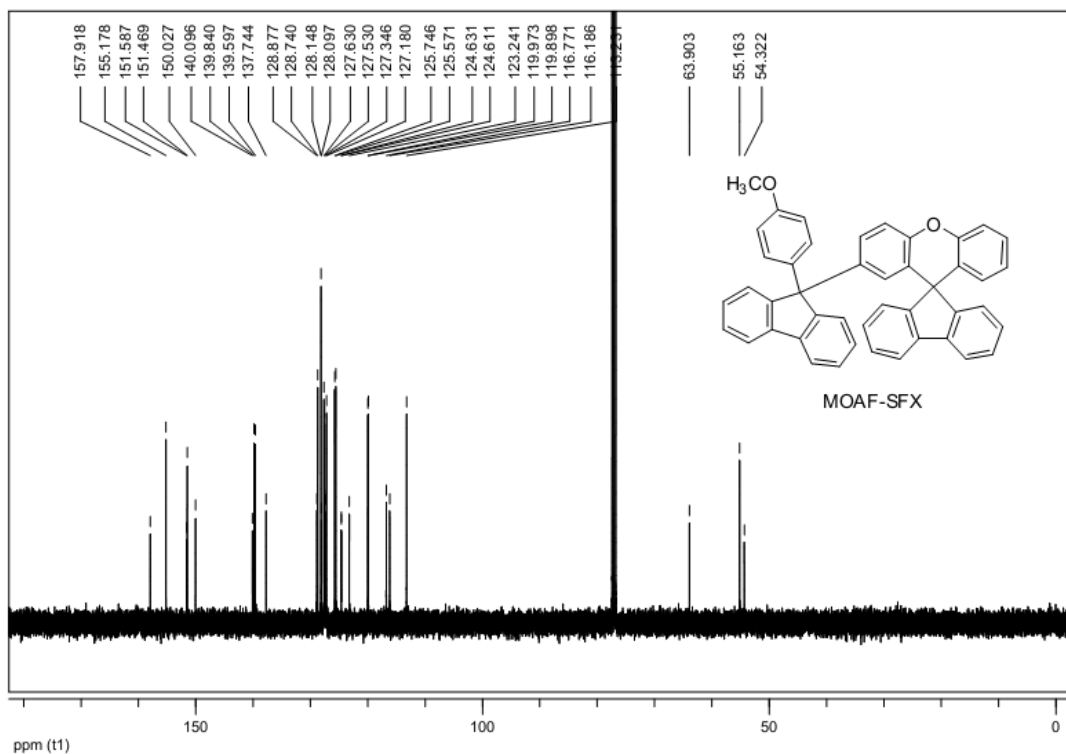
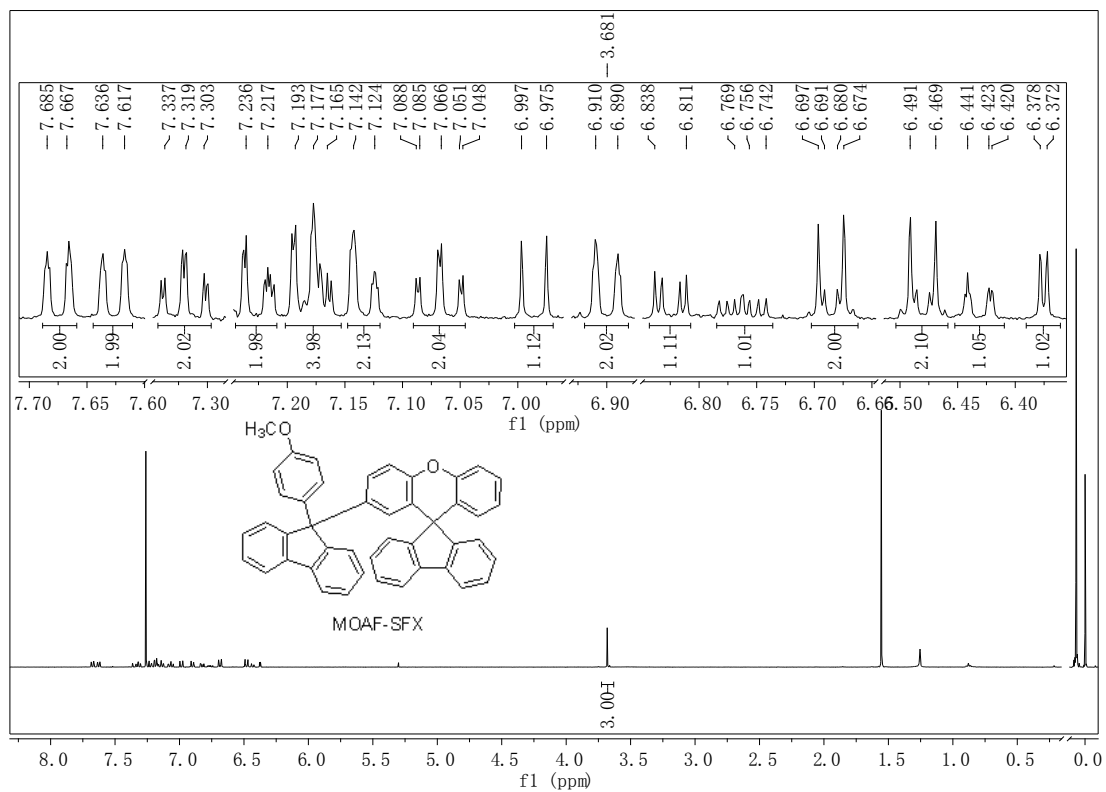
Spiro[fluorene-9,9'-xanthene]-based universal hosts for understanding structure-property relationship in RGB and white PhOLEDs

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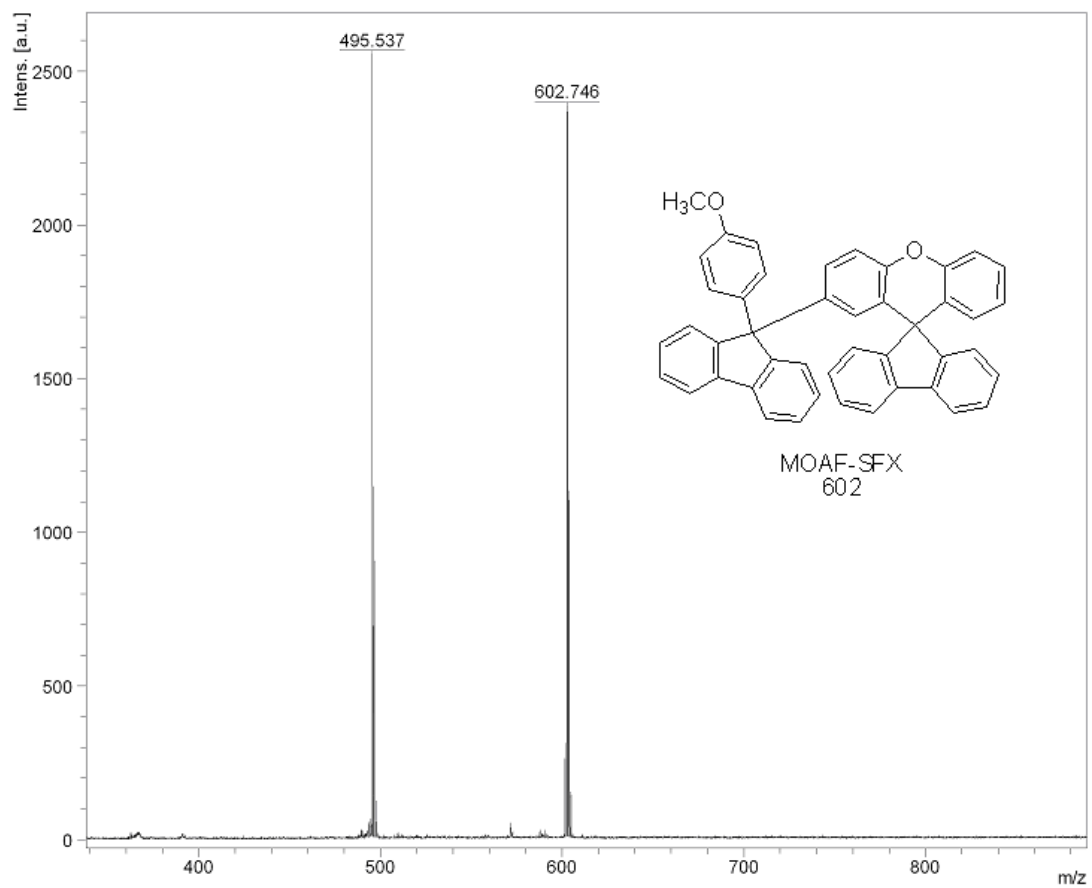
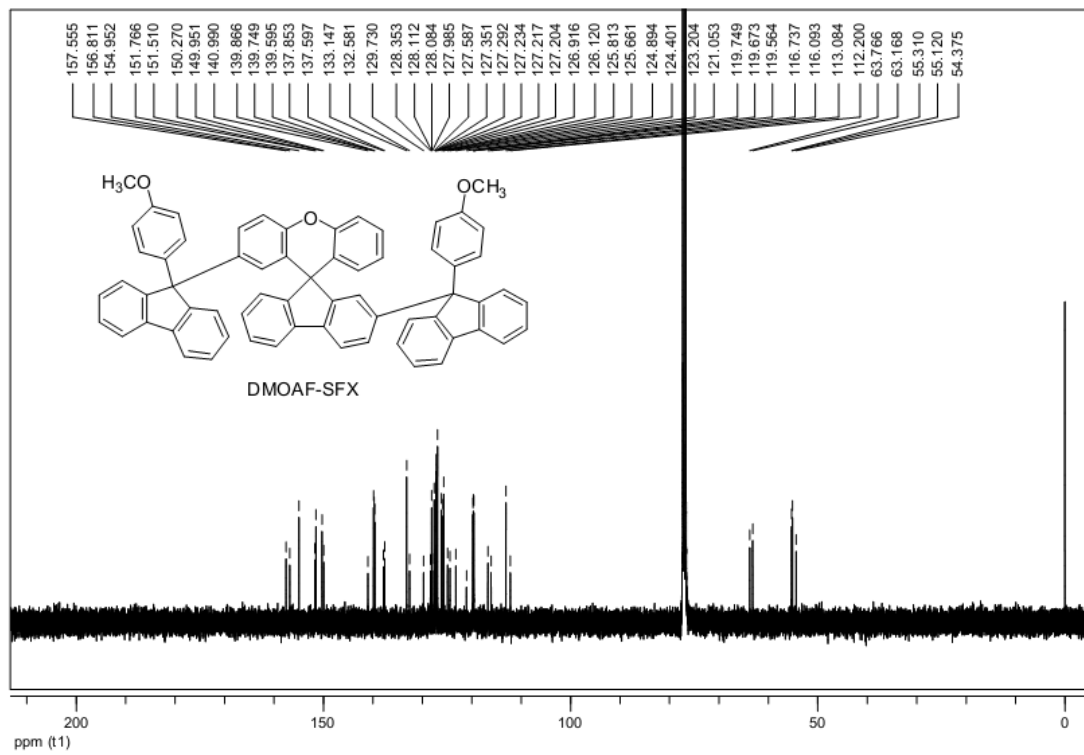
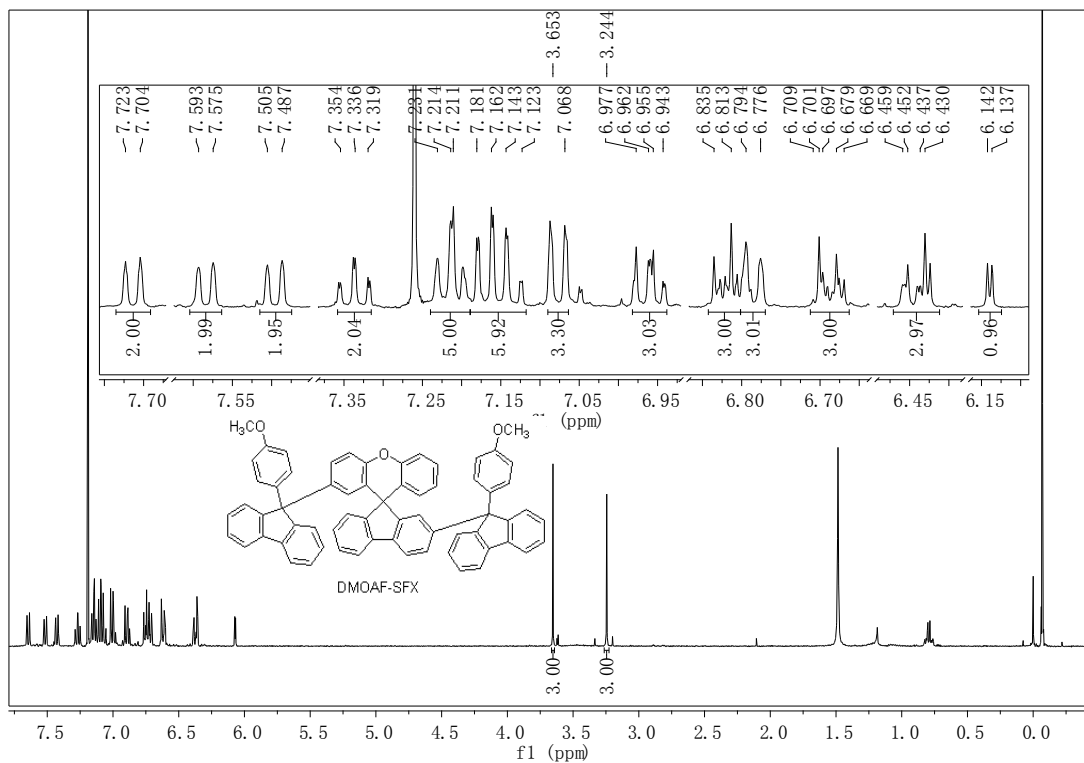


Figure S1. ¹H-NMR, ¹³C-NMR and MALDI-TOF mass spectra of MOAF-SFX.



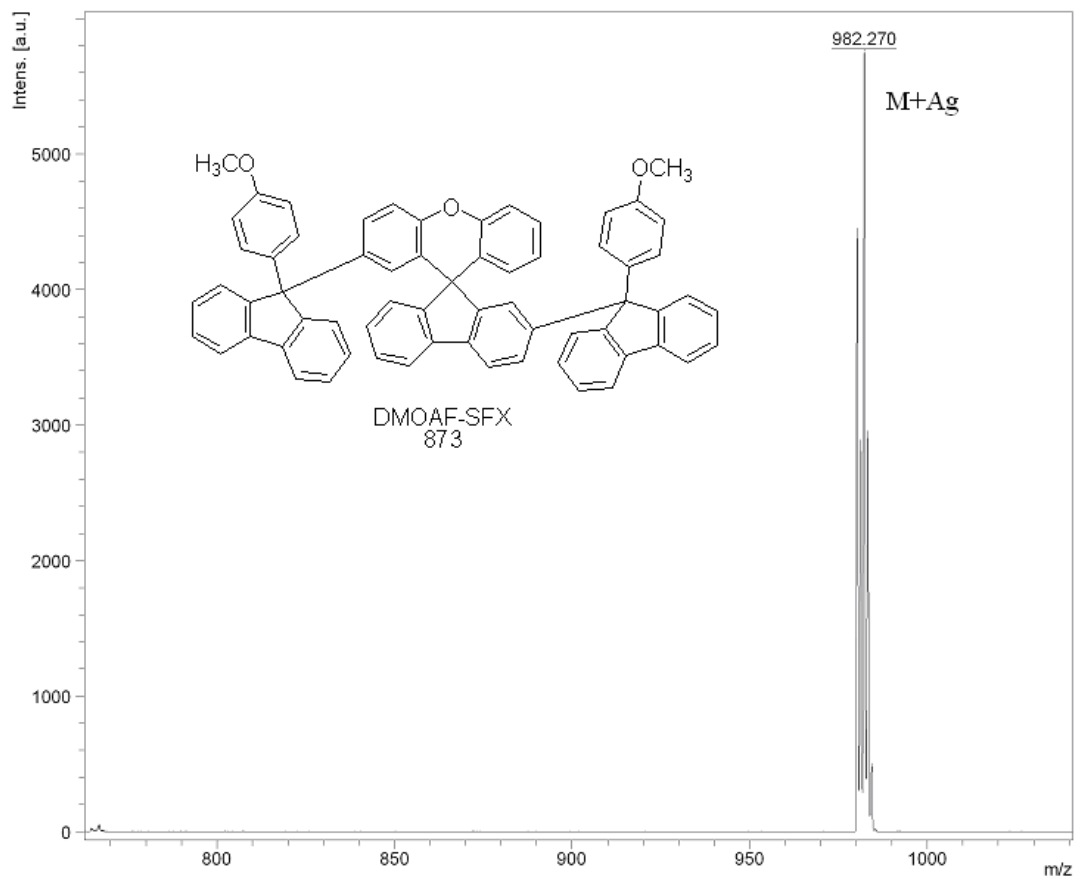
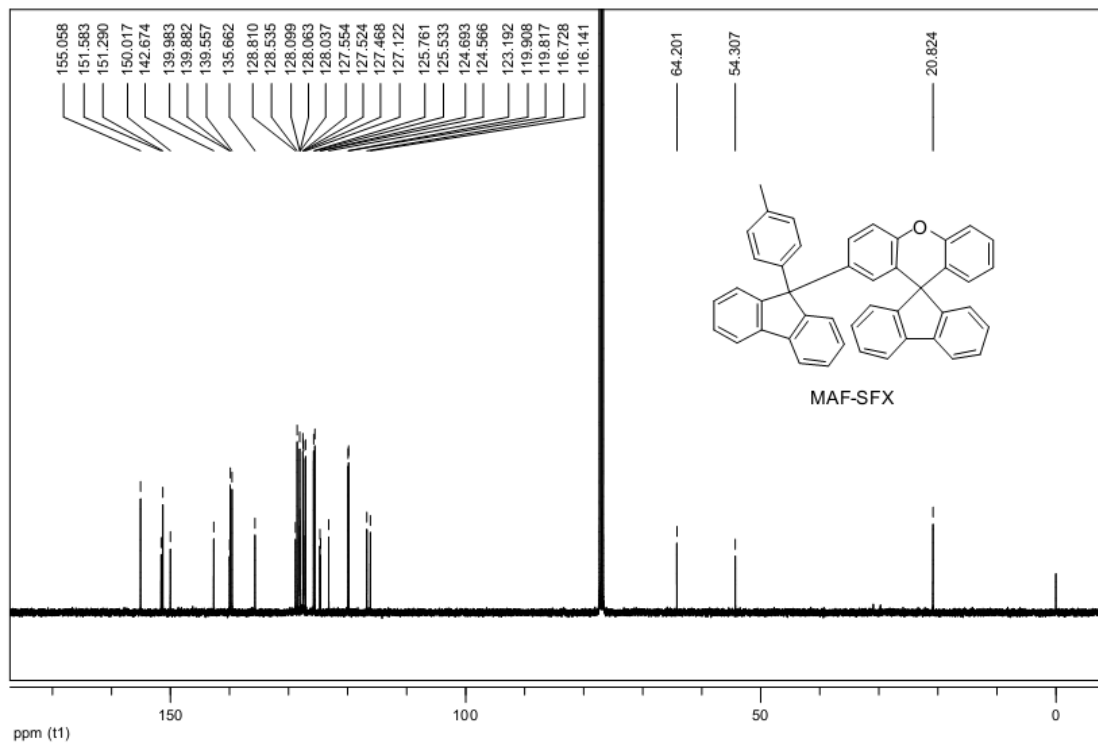
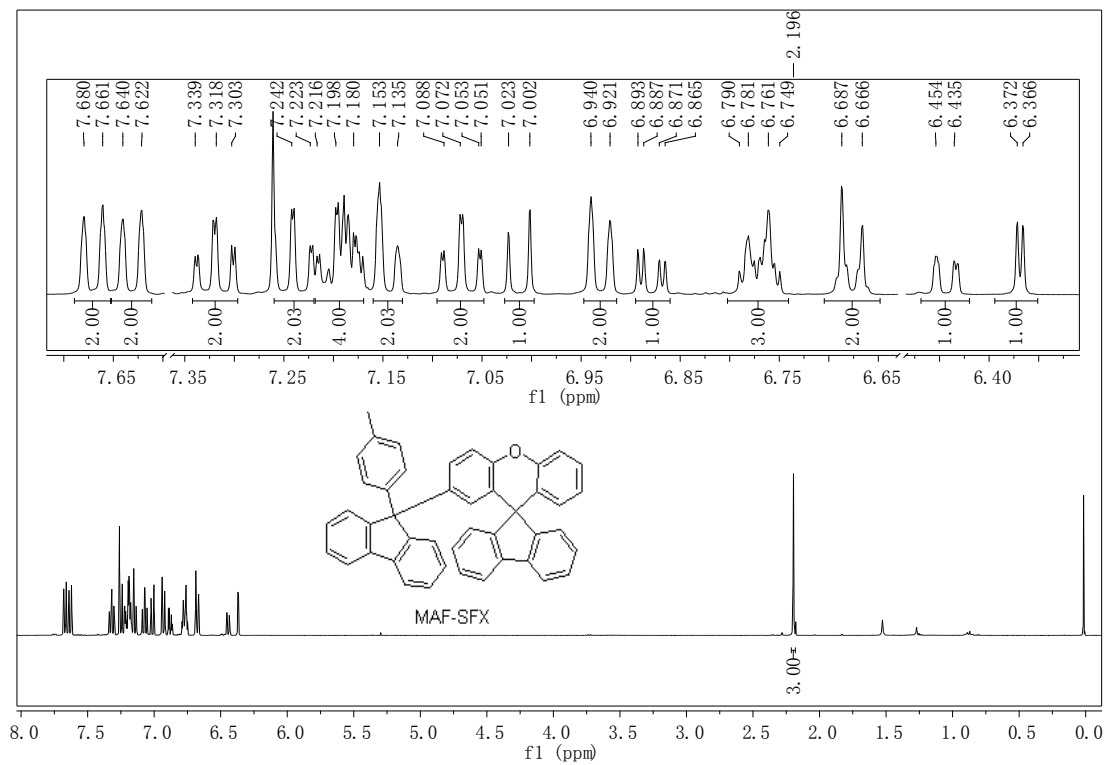


Figure S2. $^1\text{H-NMR}$, $^{13}\text{C-NMR}$ and MALDI-TOF mass spectra of DMOAF-SFX.



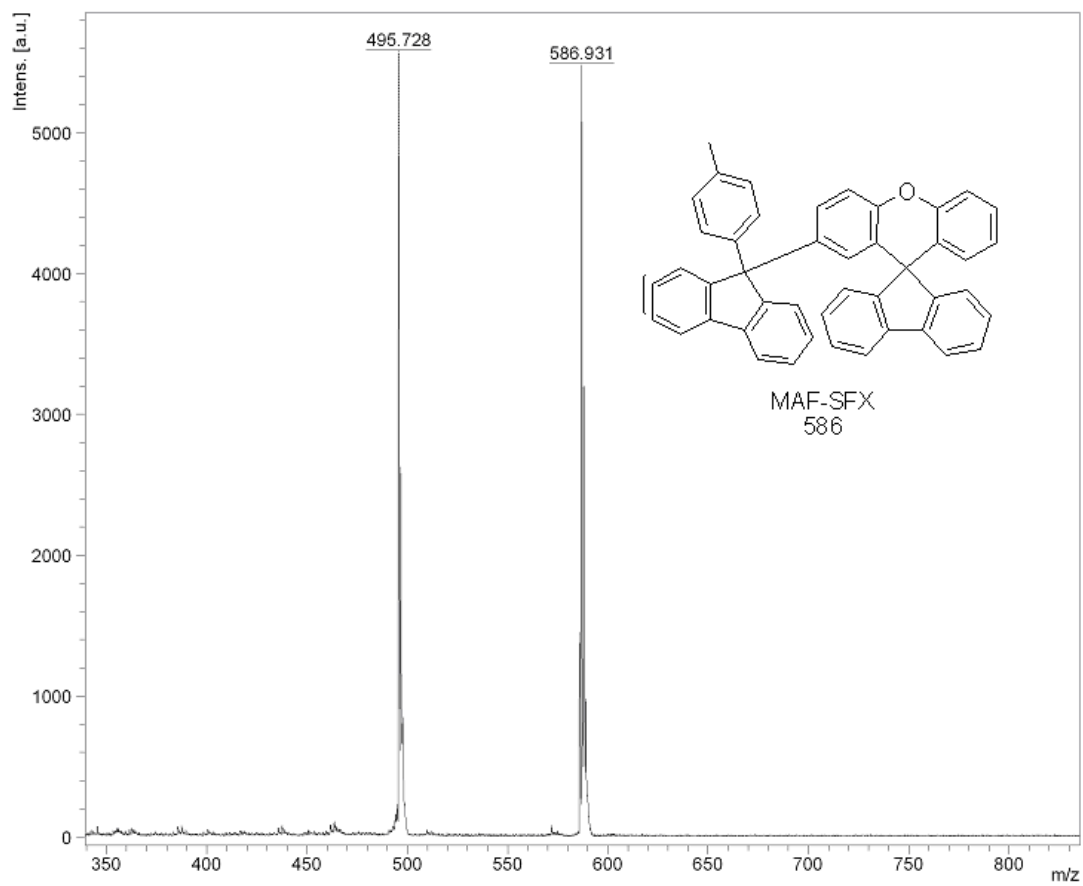
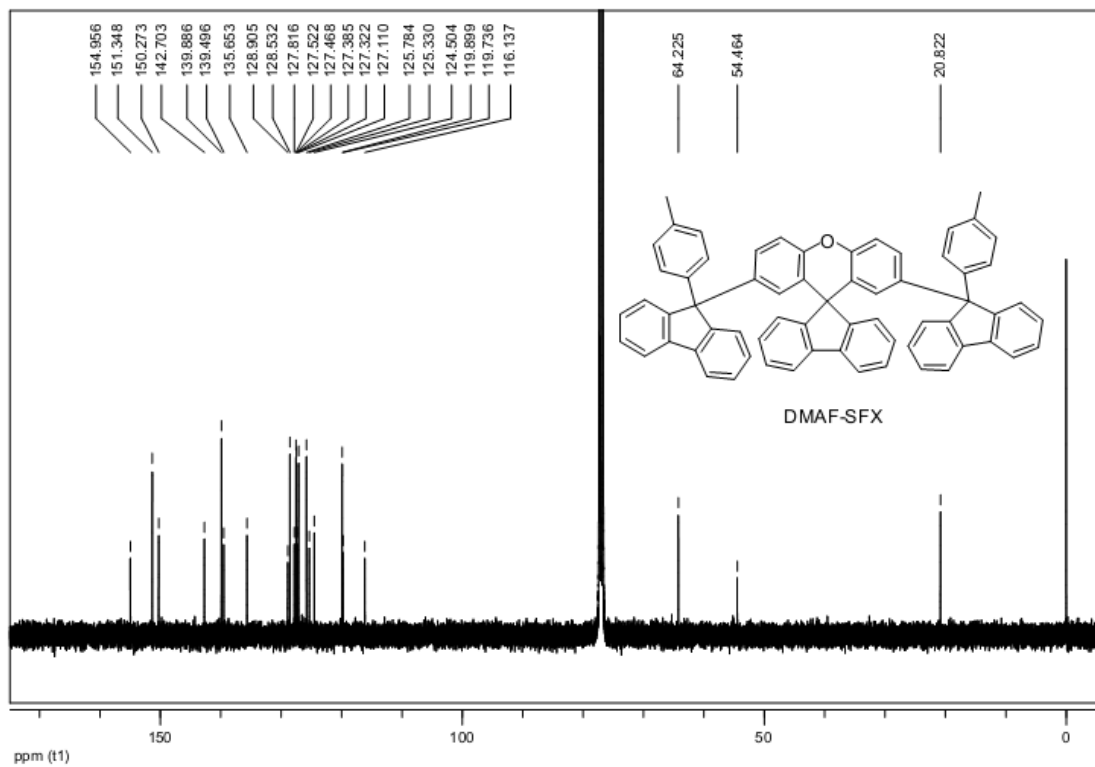
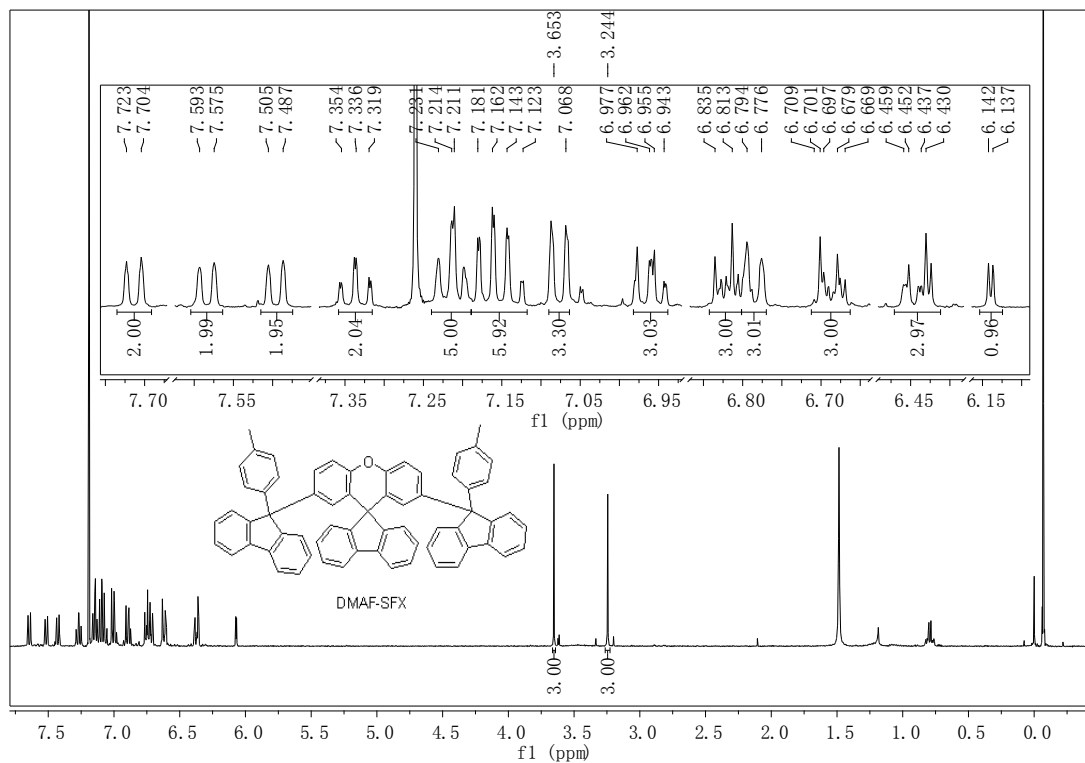


Figure S3. $^1\text{H-NMR}$, $^{13}\text{C-NMR}$ and MALDI-TOF mass spectra of MAF-SFX.



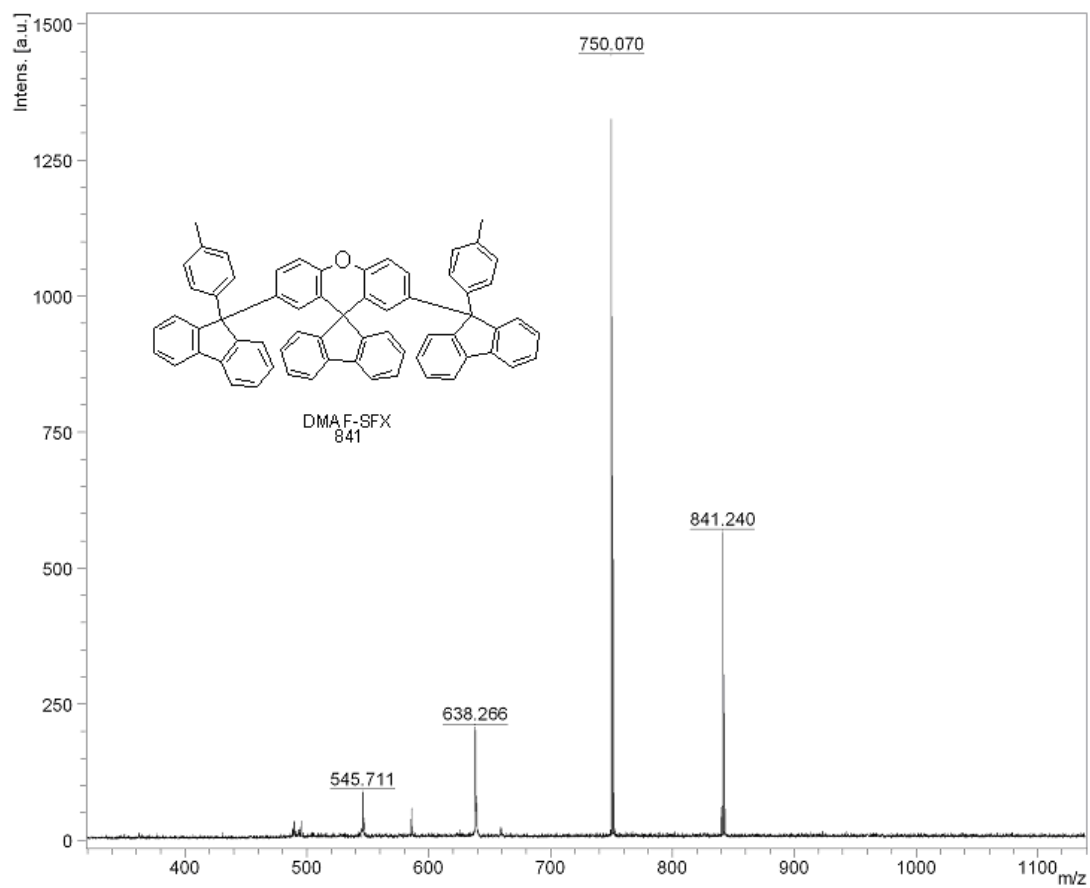
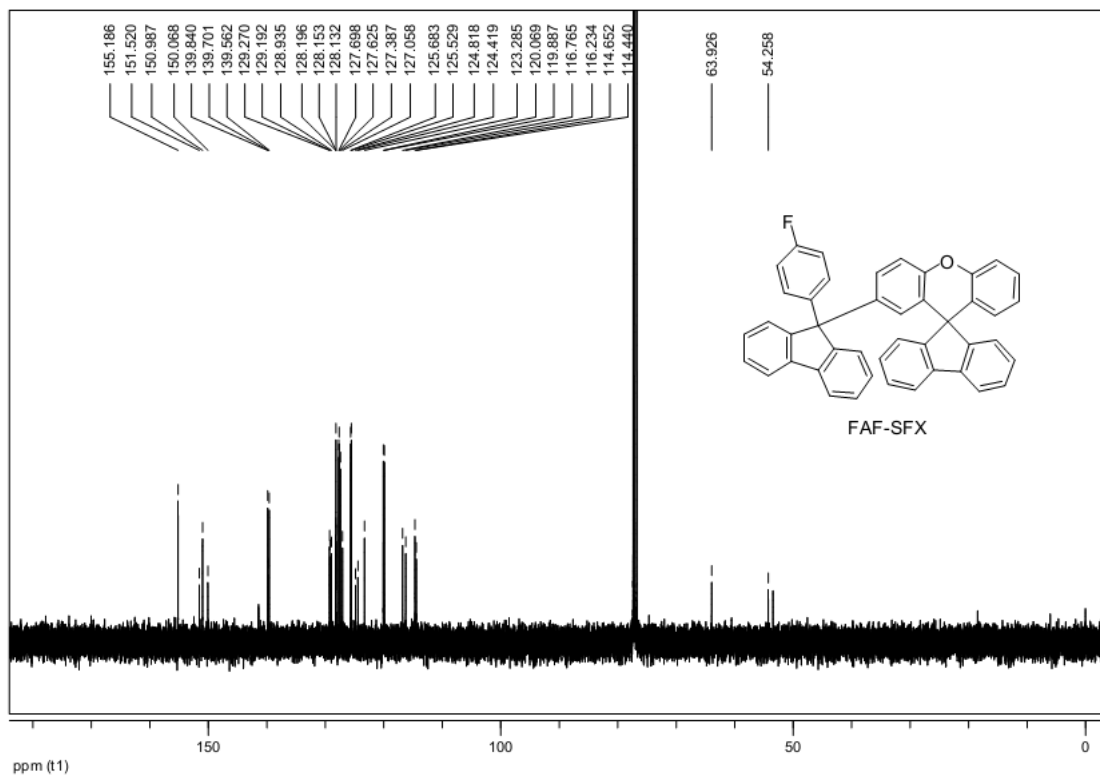
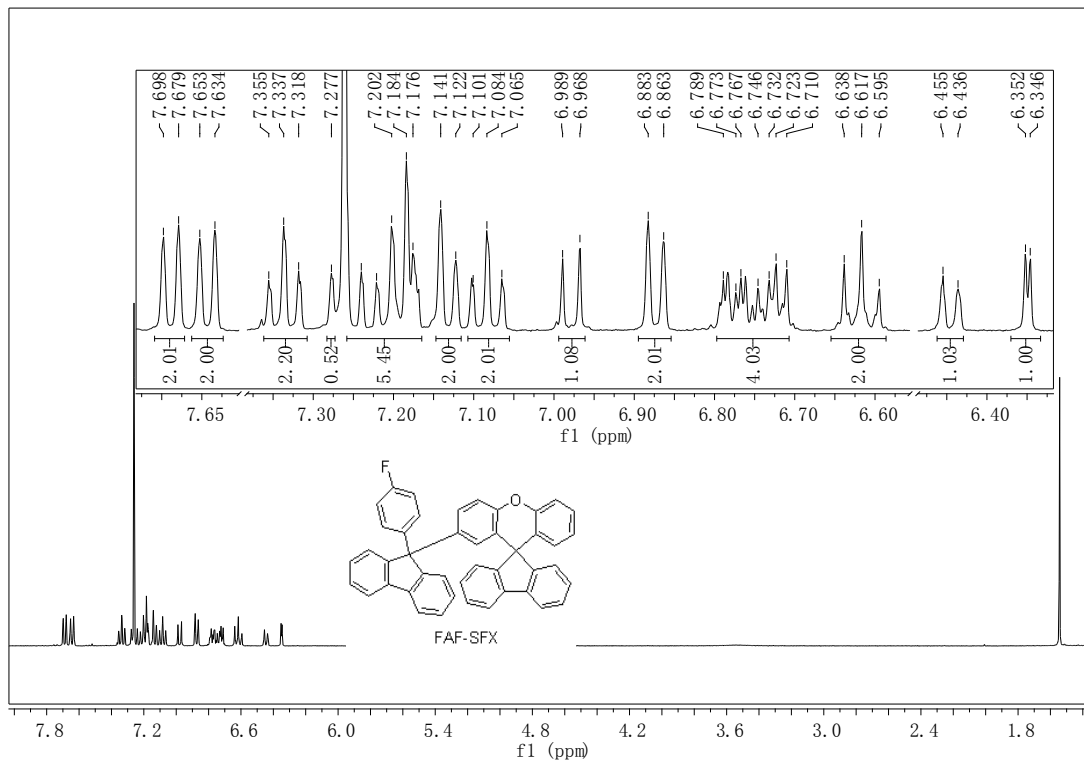


Figure S4. $^1\text{H-NMR}$, $^{13}\text{C-NMR}$ and MALDI-TOF mass spectra of DMAF-SFX.



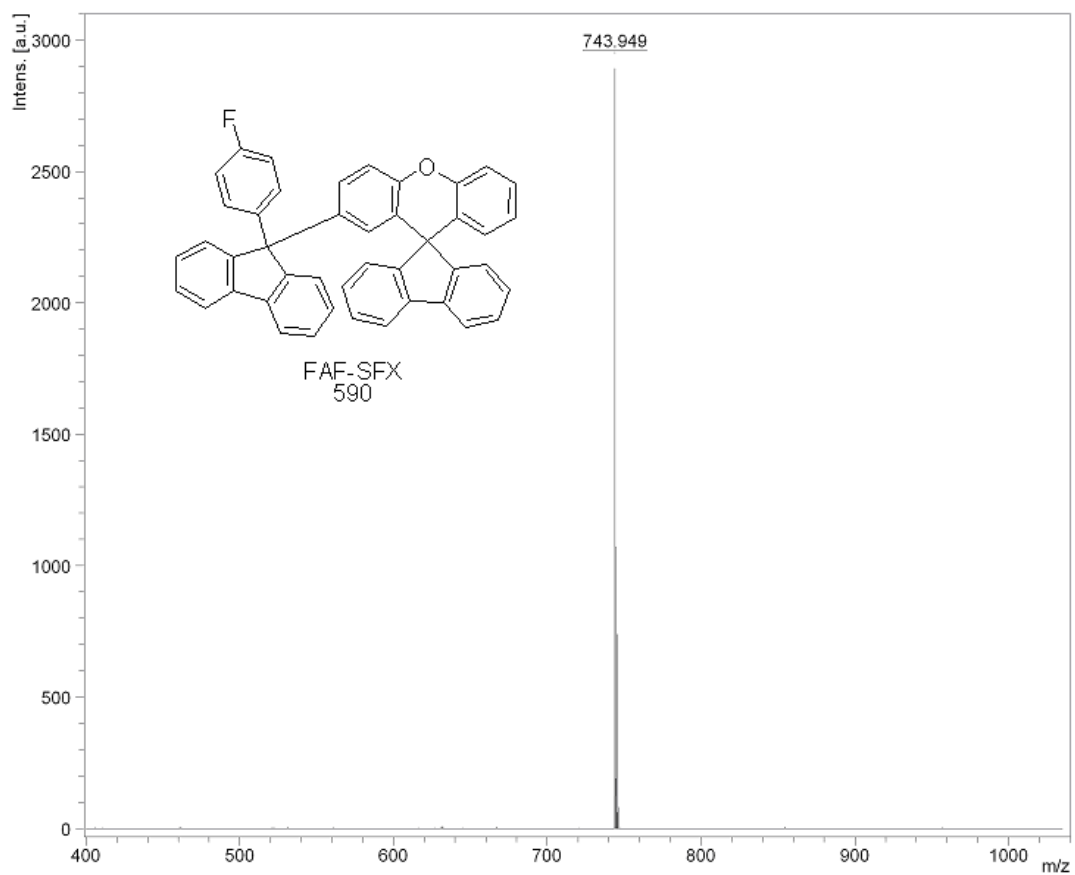


Figure S5. ^1H -NMR, ^{13}C -NMR and MALDI-TOF mass spectra of FAF-SFX.

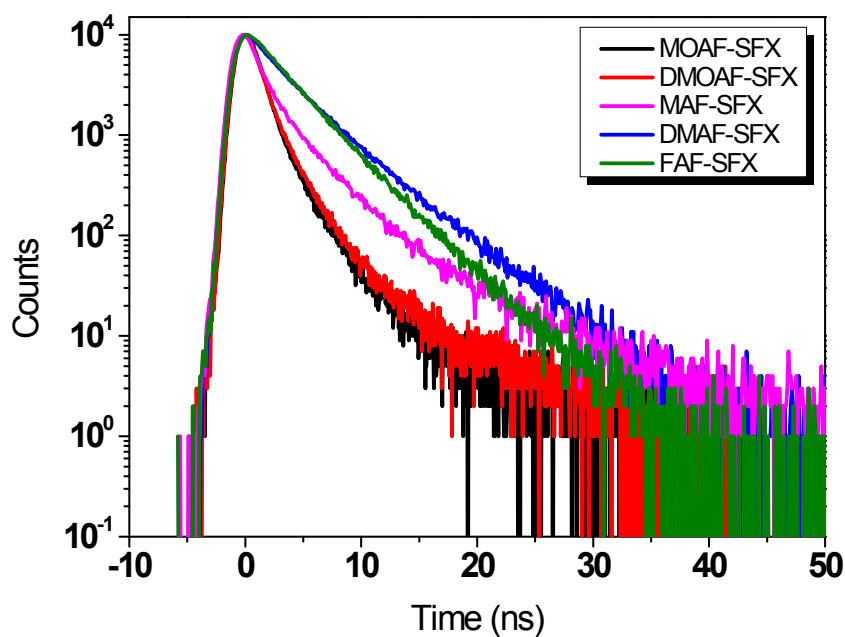


Figure S6. Fluorescence decay spectra of SFX/AFs hybrid compounds in powder.

Table S1. lifetime of SFX/AFs hybrid compounds in powder.

Compounds	τ_1/ns	τ_2/ns	τ_3/ns	$\langle\tau\rangle^a/\text{ns}$	χ^2
MOAF-SFX	0.8683(91.37%)	3.3198(8.63%)		1.1	1.004
DMOAF-SFX	0.4344(41.83%)	1.3144(52.99%)	4.9090(5.18%)	1.1	1.111
MAF-SFX	0.8255(56.08%)	2.9552(36.27%)		2.1	1.023
DMAF-SFX	1.8457(38.00%)	4.6546(62.00%)	7.4342(7.65%)	3.6	1.156
FAF-SFX	3.3675(94.39%)	5.9330(5.61%)		3.5	1.103

^a the average lifetime

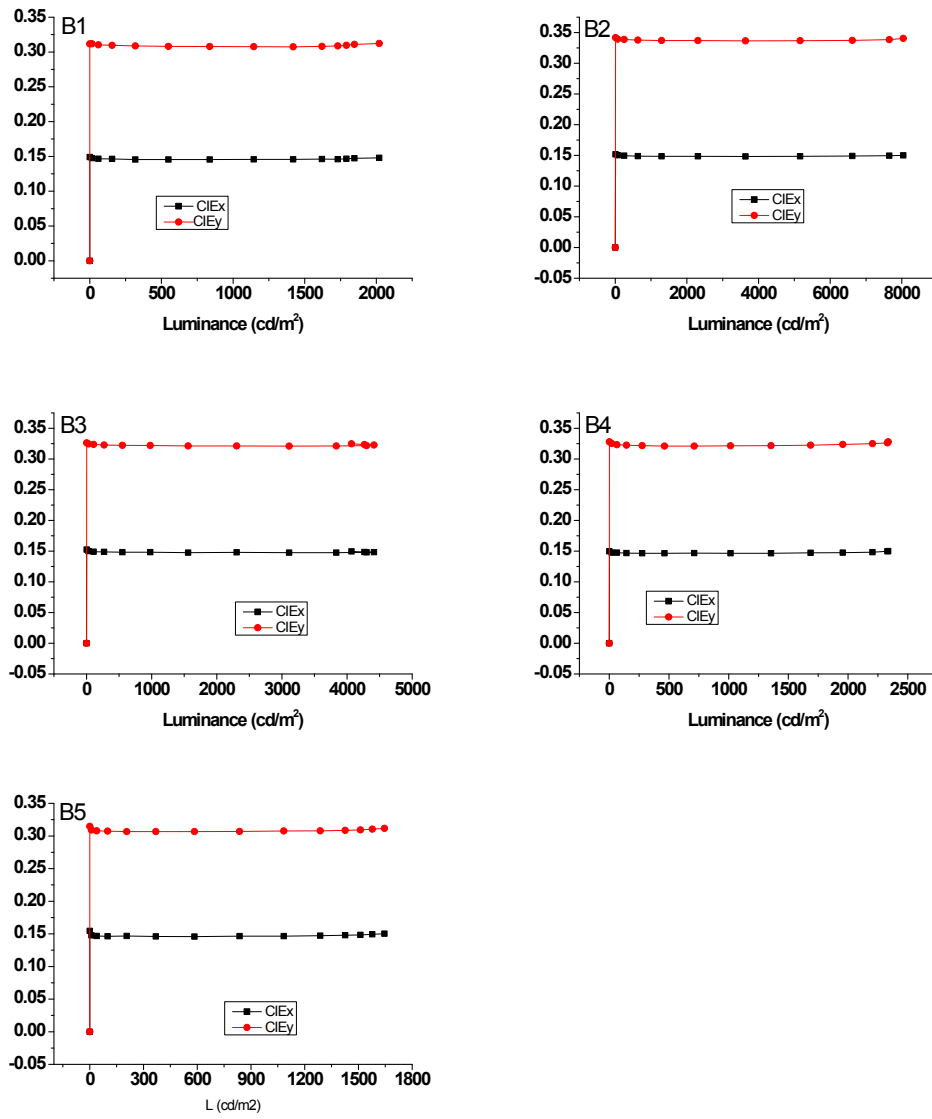


Figure S7. The CIE coordinates versus the luminance of the blue devices B1–B5.

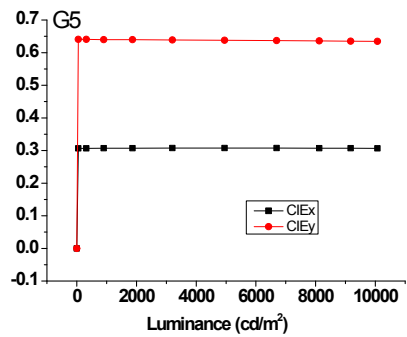
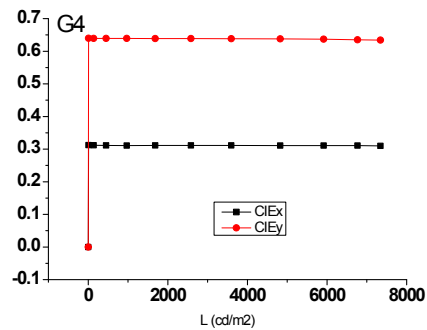
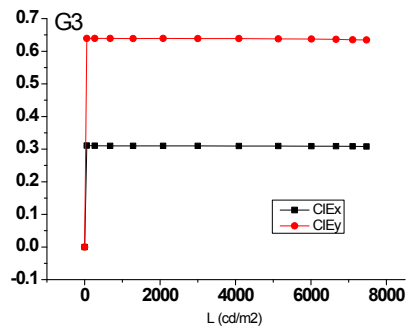
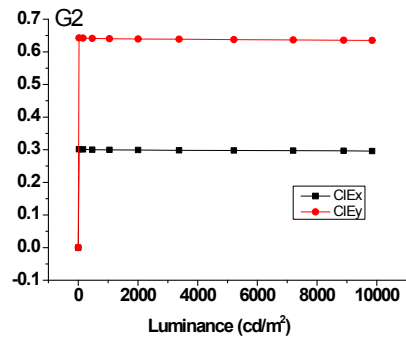
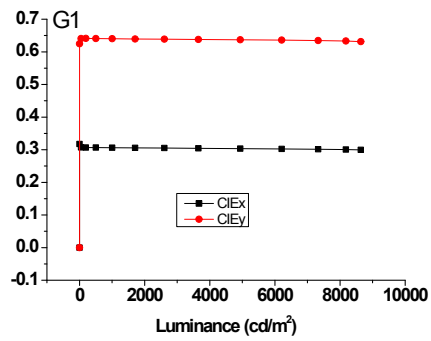


Figure S8. The CIE coordinates versus the luminance of the green devices G1–G5.

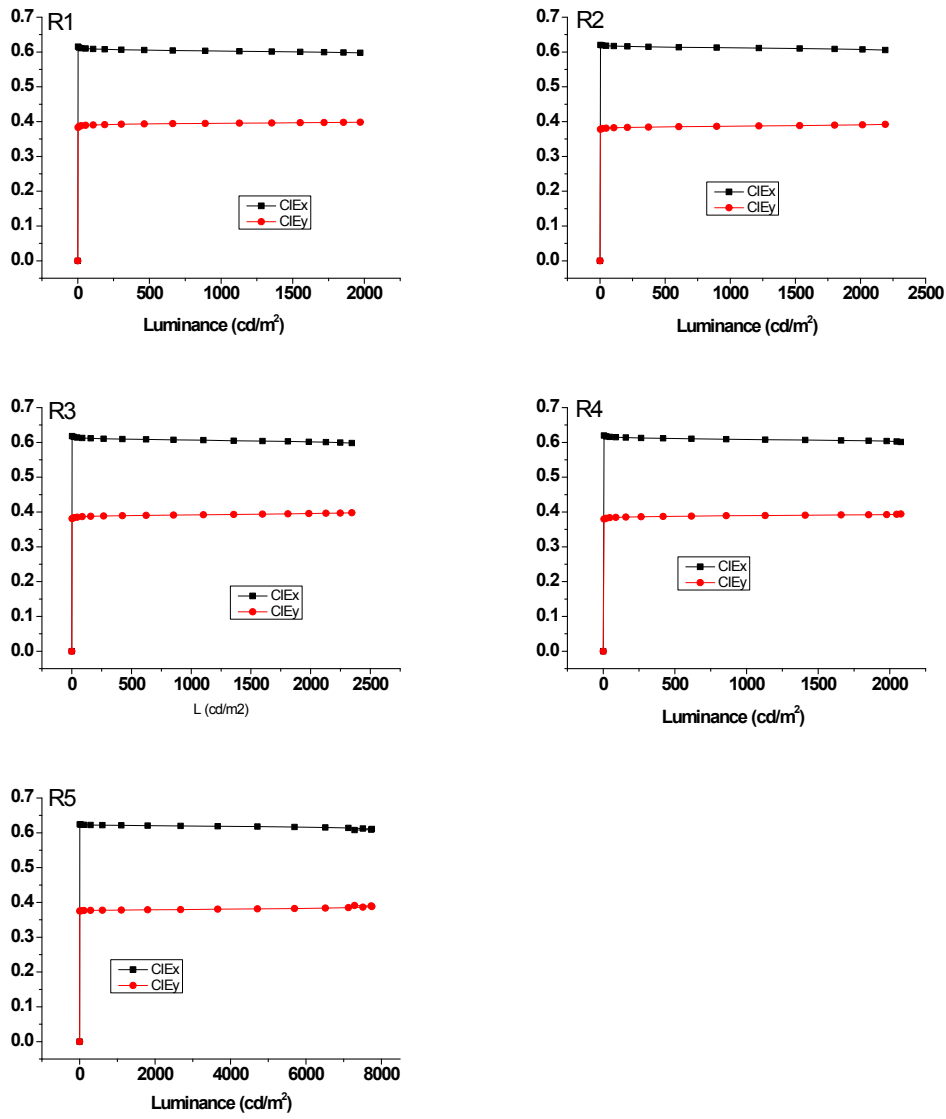


Figure S9. The CIE coordinates versus the luminance of the red devices R1–R5.