Supporting Information

Two blue iridium complexes for efficient electroluminescence with low efficiency roll-off

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Table S1 Crystallographic data and structure refinement for complexes $(dfpypy)_2Ir(tpip)$ and $(dfpypy)_2Ir(Ftpip)$

	(dfpypy)$_2$Ir(tpip)	(dfpypy)$_2$Ir(Ftpip)
Formula	$C_{44}H_{30}F_4$	$C_{44}H_{26}F_8$
	$IrN_5O_2P_2$	$IrN_5O_2P_2$
FW	990.90	1062.84
T (K)	296(2)	296(2)
Wavelength (Å)	0.71073	0.71073
Crystal system	Monoclinic	Monoclinic
Space group	$P2_1/c$	$P2_1/n$
***a* (Å)**	11.523 (3)	20.944(5)
***b* (Å)**	16.473 (2)	19.770(5)
***c* (Å)**	20.708 (3)	21.011(5)
***α* (deg)**	90.00	90.00
***β* (deg)**	90.00	106.420(4)
***γ* (deg)**	90.00	90.00
***V* (Å^3)**	3930.8(15)	8345(4)
Z	4	8
ρ_{calcd} (mg/cm^3)	1.674	1.692
μ (Mo Kα) (mm^{-1})	3.543	3.357
***F* (000)**	1952	4160
Reflns collected	23539	71484
Unique	7729	18321
Data/restraints/params	7729 / 0 / 523	18321/ 0 / 1117
GOF on F^2	0.892	0.991
R_1^a, wR_2^b [$I > 2\sigma(I)$]	0.0292, 0.0630	0.0357, 0.0885
R_1^a, wR_2^b (all data)	0.0380, 0.0648	0.0628, 0.1007
CCDC NO	1062396	1062397

$R_1{}^a = \Sigma||F_o| - |F_c||/\Sigma F_o|$. $wR_2{}^b = [\Sigma w(F_o{}^2 - F_c{}^2)^2/\Sigma w(F_o{}^2)]^{1/2}$

Table S2 The table of selected bond lengths of $(dfpypy)_2Ir(tpip)$ and $(dfpypy)_2Ir(Ftpip)$

$(dfpypy)_2Ir(tpip)$					
Selected bonds					
Ir(1)-C(1)	1.982(4)	Ir(1)-O(1)	2.202(2)	Ir(1)-N(4)	2.048(3)
Ir(1)-C(11)	1.970(3)	Ir(1)-O(2)	2.177(2)	Ir(1)-N(5)	2.044(3)
O(2)-P(2)	1.521(3)	N(1)-P(2)	1.591(3)	C(4)-N(2)	1.302(6)
O(1)-P(1)	1.522(2)	N(1)-P(1)	1.590(3)	C(3)-N(2)	1.303(6)
C(3)-F(1)	1.352(5)	C(4)-F(2)	1.355(5)		
$(dfpypy)_2Ir(Ftpip)$					
Selected bonds					
Ir(2)-C(45)	1.971(5)	Ir(2)-O(4)	2.180(3)	Ir(2)-N(8)	2.034(4)
Ir(2)-C(55)	1.965(5)	Ir(2)-O(3)	2.176(3)	Ir(2)-N(9)	2.030(4)
O(3)-P(9)	1.511(3)	N(10)-P(9)	1.587(4)	C(43)-N(6)	1.288(8)
O(4)-P(11)	1.504(3)	N(10)-P(11)	1.579(4)	C(47)-N(6)	1.290(8)
C(43)-F(13)	1.352(7)	C(47)-F(14)	1.355(7)		

Table S3. The orbital distributions of complexes **(**$(dfpypy)_2Ir(tpip)$ and $dfpypy)_2Ir(Ftpip)$.

Group		$(dfpypy)_2Ir(tpip)$	$(dfpypy)_2Ir(Ftpip)$
Ir (%)	LUMO	5.02	5.02
	HOMO	56.22	56.11
dfppy (%)	LUMO	91.53	90.97
	HOMO	37.36	35.36
tpip /Ftpip (%)	LUMO	3.45	4.01
	HOMO	6.41	8.52

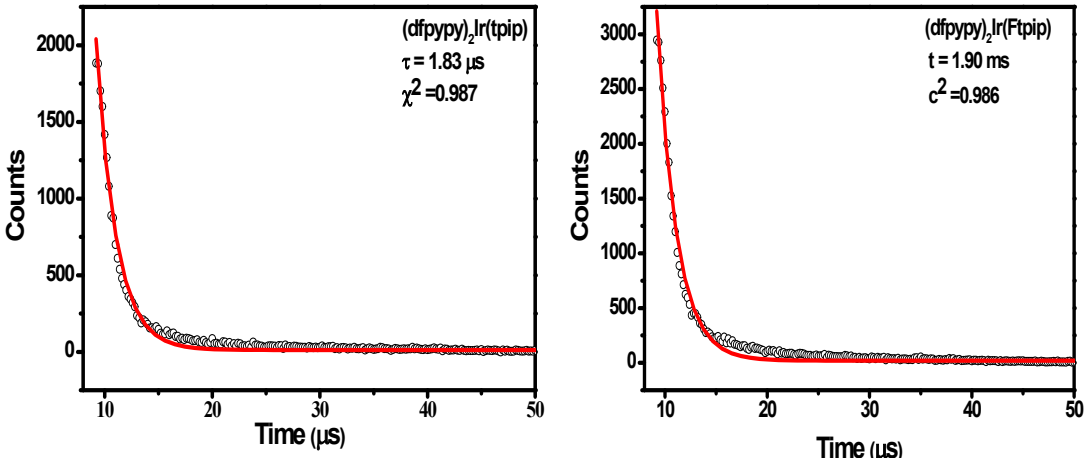

Figure S1. The lifetime curves of **(**dfpypy)$_2$Ir(tpip) and dfpypy)$_2$Ir(Ftpip) in degassed CH_2Cl_2 solution at room temperature.

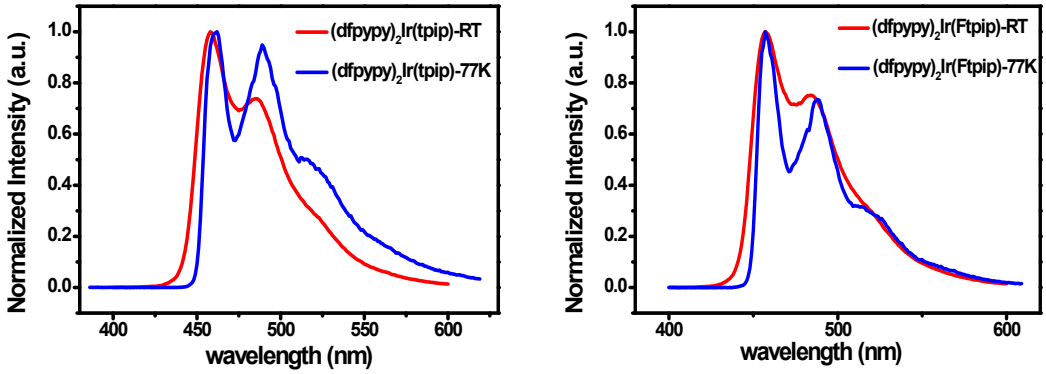

Figure S2. The normalized emission spectra of **(**dfpypy)$_2$Ir(tpip) and dfpypy)$_2$Ir(Ftpip) in CH_2Cl_2 solution at room temperature and 77 K.

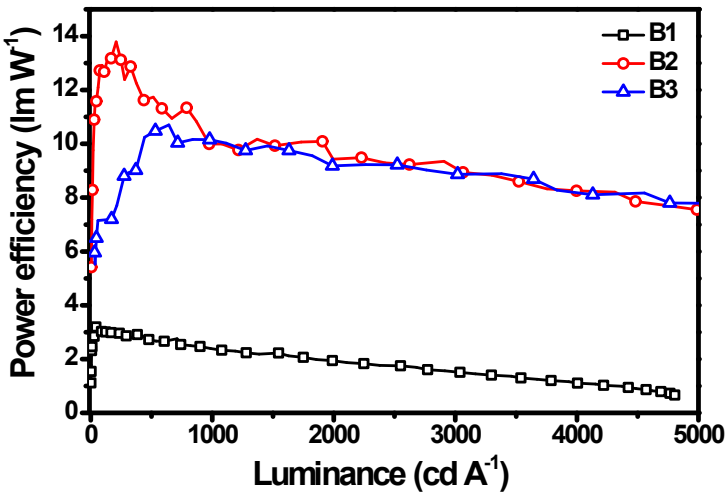

Figure S3. **The** power efficiency–luminance (η_p–L) curves of device **B1**, **B2** and **B3**.