Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A

Supporting Information for

Rapid Energy Transfer in Non-Porous Metal-organic Frameworks with Caged $Ru(bpy)_3^{2+}$ Chromophores: Oxygen Trapping and Luminescence Quenching

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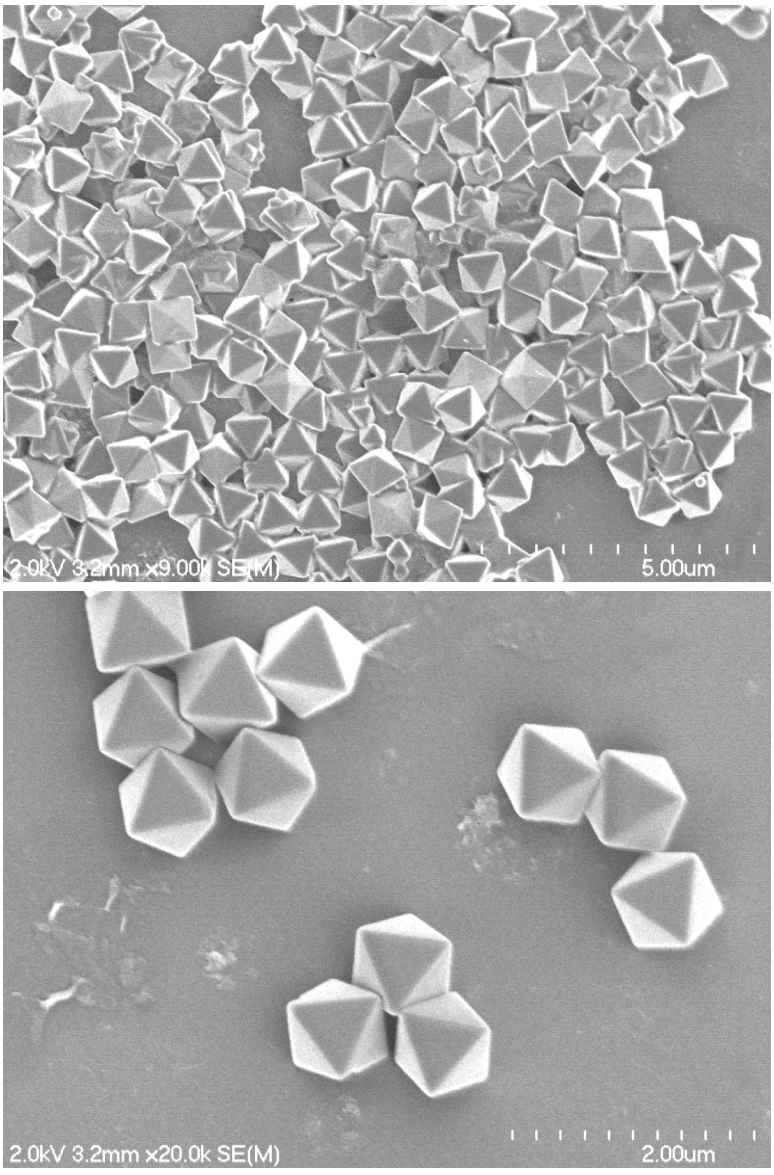

Figure S1. SEM images of **1**.

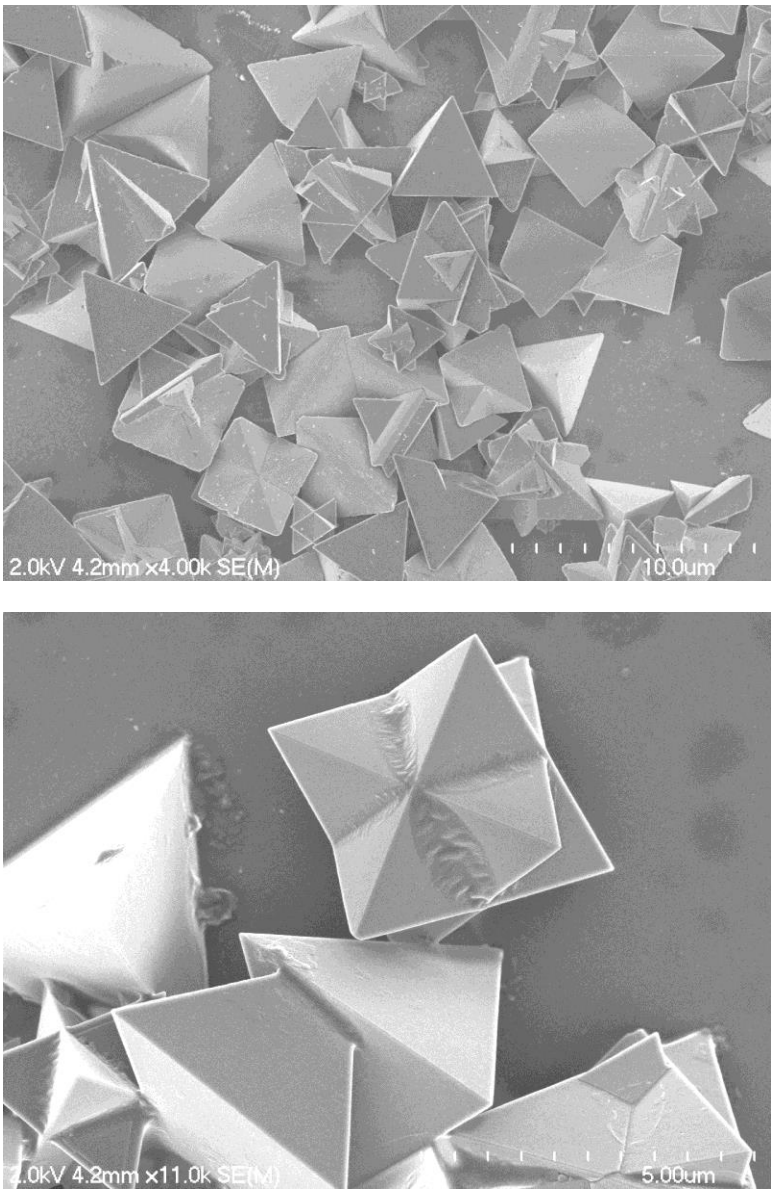

Figure S2. SEM images of **2**.

Table S1. X-Ray crystallographic data for **1**.

Compound	
Empirical formula	C36 H24 N6 O12 Ru Zn2
Formula weight	964.42
Temperature (K)	100(2) K
Wavelength (Å)	1.54178
Crystal system	Cubic
Space group	$P4_132$
Unit cell dimensions	a = 15.2853(5) Å
	b = 15.2853(5) Å

	c = 15.2853(5) Å
	α = 90 °
	β = 90 °
	γ = 90 °
Volume ($Å^3$)	3571.3(2)
Z	4
Density (calcd. g/cm^3)	1.794
Absorption coeff. (mm^{-1})	5.602
F(000)	1928
Crystal size (mm)	0.5 ×0.1 ×0.1
Crystal color & shape	red
θ range data collection	4.09 to 72.35 °
Limiting indices	$-12 \le h \le 18$
	$-18 \le k \le 15$
	$-18 \le l \le 12$
Reflections collected	13207
Independent reflections	1193 [R(int) = 0.0259]
Refinement method	Full-matrix least-square on F^2
Data/restraints/parameters	1193 / 0 / 88
Goodness-of-fit on F^2	0.795
Final R indices [$I>2\sigma(I)$][a,b]	R1 = 0.0220
	wR2 = 0.0799
R indices (all data)	R1 = 0.0220
	wR2 = 0.0799

[a] $R(F) = \Sigma||F_o| - |F_c||/\Sigma|F_o|$. [b] $R_W(F^2) = [\Sigma\{w(F_o^2 - F_c^2)^2\}/\Sigma\{w(F_o^2)^2\}]^{0.5}$; $w^{-1} = \sigma^2(F_o^2) + (aP)^2 + bP$, where $P = [F_o^2 + 2F_c^2]/3$ and a and b are constants adjusted by the program.

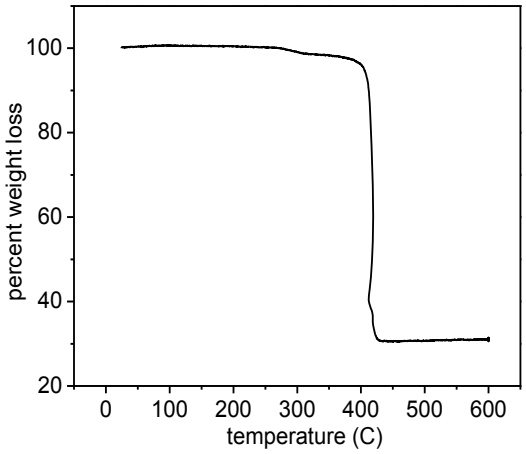

Figure S3. TGA curve for **1**.

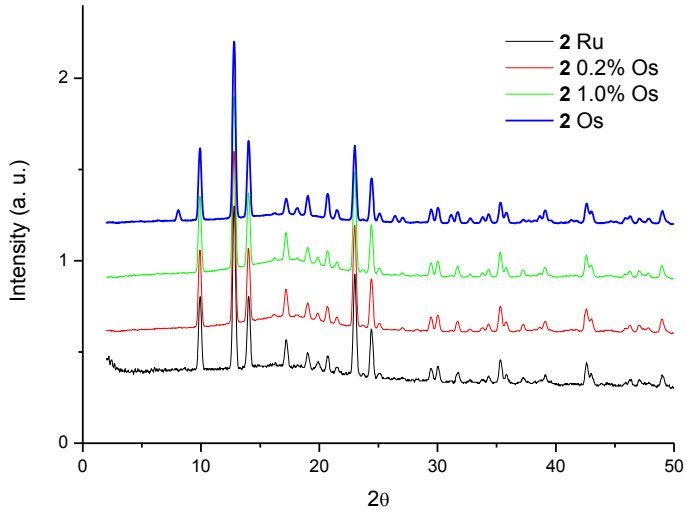

Figure S4. PXRD patterns of **2** with various Os doping levels.

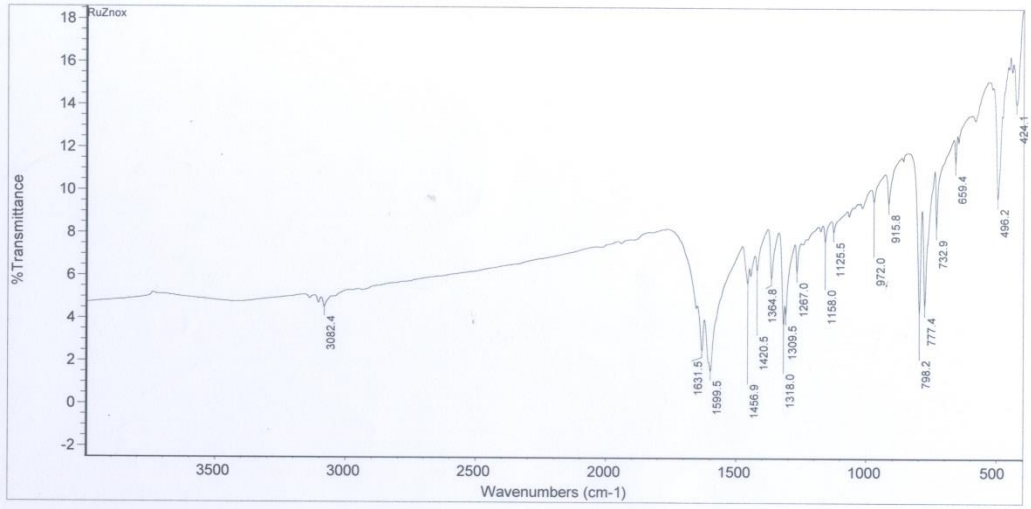

Figure S5. FT-IR spectrum of **1**.

Table S2. Biexponential fit parameters and average lifetime for Os-doped **2**.

2-xOs	A_1	τ_1	A_2	τ_2	$< \tau >$ Lifetime (ns)
0.00					1305
0.002	15.2	134	84.8	319	306
0.01	53.8	44	46.2	99.9	81
1.00					53

Table S3. Biexponential fit parameters and average lifetime for Os-doped **1**.

1-xOs	A_1	τ_1	A_2	τ_2	$< \tau >$ Lifetime (ns)
0.00	20	285	80	802	760
0.002	15.6	106	84.4	271	260
0.01	26.3	31.4	73.7	85.9	79.6
1.00	13.8	19	86.2	50.3	48.5