Supplementary information

Luminescence of Tartrate Bridged Dinuclear 2,2′-Bipyridine Platinum(II) Complexes: Emission Color Controlled by Intra- and Inter-molecular Interactions in the Solid State

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Table S1. Summary of crystallographic data for crystals of **1α**, **1β**, **2**·12.5H_2O, **3**·4H_2O, and **4**·H_2O.

	1α	**1β**	**2**·12.5H_2O
CCDC deposition number	1502815	1502814	1502817
formula	$C_{24}H_{30}N_4O_{12}Pt_2$	$C_{24}H_{30}N_4O_{12}Pt_2$	$C_{48}H_{86}N_8O_{37}Pt_4$
formula weight	956.70	956.70	2147.60
temperature (K)	200	200	200
crystal system	Monoclinic	Triclinic	Monoclinic
space group	*P*2(1)	*P*1	*C*2/*c*
a [Å]	10.6927(8)	7.2798(5)	23.328(6)
b [Å]	18.9465(14)	10.3151(7)	15.799(4)
c [Å]	21.1599(16)	20.0355(14)	22.403(6)
α [deg]	90.00	102.1730(10)	90.00
β [deg]	92.9650(10)	93.9140(10)	120.006(3)
γ [deg]	90.00	100.8320(10)	90.00
V [$Å^3$]	4281.0(6)	1435.32(17)	7150(3)
Flack parameter	-0.005(4)	0.013(4)	-
Z	6	2	4
ρ(cal) (g/cm^3)	2.212	2.214	1.995
μ (mm^{-1})	9.862	9.805	7.897
F(000)	2724	908	4152
Reflections collected	44724	14758	35844
Independent reflections	16712 [*R*(int) = 0.0352]	10848 [*R*(int) = 0.0180]	7030 [*R*(int) = 0.0709]
R_1 [$I > 2\sigma(I)$]	0.0247	0.0170	0.0549
wR_2 (all)	0.0520	0.0397	0.1439
GOF	0.934	0.761	1.129

	3·4H_2O	**4**·H_2O
CCDC deposition number	1502816	1502818
formula	$C_{24}H_{26}N_4O_{10}Pt_2$	$C_{14}H_{14}N_2O_7Pt$
formula weight	920.67	517.36
temperature (K)	200	200
crystal system	Monoclinic	Monoclinic
space group	*P*2(1)/*n*	*Cc*
a [Å]	11.4751(8)	7.6436(9)
b [Å]	19.2533(14)	22.957(3)
c [Å]	11.9630(8)	8.8476(11)
α [deg]	90.00	90.00
β [deg]	104.5810(10)	102.6920(10)
γ [deg]	90.00	90.00
V [Å^3]	2557.9(3)	1514.6(3)
Flack parameter	-	-
Z	4	4
ρ(cal) (g/cm^3)	2.391	2.269
μ (mm^{-1})	10.993	9.306
F(000)	1736	984
Reflections collected	27798	7969
Independent reflections	5434 [*R*(int) = 0.0253]	3098 [*R*(int) = 0.0219]
R_1 [$I > 2\sigma(I)$]	0.0185	0.0131
wR_2 (all)	0.0425	0.0302
GOF	1.039	0.850

Table S2. Selected bond lengths (Å) for **1α**, **1β**, **2**·12.5H_2O, **3**·4H_2O, and **4**·H_2O.

	1α	**1β**	**2**·12.5H_2O	**3**·4H_2O	**4**·H_2O
C1–O1	1.306(13)	1.299(8)	1.291(16)	1.309(5)	1.291(6)
C1–O2	1.238(12)	1.230(9)	1.225(17)	1.223(5)	1.231(6)
C2–O3	1.410(11)	1.409(9)	1.440(14)	1.405(4)	1.402(10)
C3–O4	1.399(12)	1.404(8)	1.379(16)	1.421(5)	1.407(8)
C4–O5	1.310(12)	1.306(10)	1.305(17)	1.300(5)	1.322(6)
C4–O6	1.232(12)	1.230(8)	1.249(17)	1.222(5)	1.190(6)

Table S3. Hydrogen bonding parameters between complexes and between complex and lattice water molecules in **1α**, **1β**, and **4**·H_2O.

complex	*D*–H···*A*	*D*–H	H···*A*	*D*···*A*	*DHA*
1α	O1S–H1SB···O10	0.87	1.84	2.674(9)	160.9
	O2S–H2SA···O4	0.87	1.75	2.622(10)	179.5
	O2S–H2SB···O9	0.87	1.84	2.668(10)	159.3
	O5S–H5SA···O16	0.87	1.97	2.694(9)	139.3
	O5S–H5SB···O3^{i}	0.87	1.86	2.670(10)	153.2
1β	O1S–H1SA···O3	0.87	1.89	2.724(8)	160.4
	O6S–H6SA···O1^{i}	0.87	2.11	2.915(8)	154.3
	O6S–H6SB···O4^{ii}	0.87	1.92	2.696(8)	147.2
	O7S–H7SA···O7^{iii}	0.87	1.93	2.797(7)	179.6
	O7S–H7SB···O10	0.87	1.81	2.666(7)	168.1
	O10S–H10B···O9^{iii}	0.87	1.79	2.662(7)	179.8
4·H_2O	O1S–H1O···O6^{v}	0.824(15)	2.02(2)	2.817(8)	163(7)
	O1S–H2O···O3	0.828(15)	1.88(2)	2.707(10)	174(9)
	C3–H3···O6^{iv}	1.00	2.62	3.579(8)	161.0
	O4–H4···O1S^{iii}	0.84	1.85	2.679(8)	171.4
	O5–H5A···O2^{vi}	0.84	1.84	2.650(5)	161.5

i: x, y+1, z; ii: x+1, y+1, z; iii: x−1, y, z; iv: −0.5+x, 1.5−y, −0.5+z; v: x+0.5, −y+1.5, z−0.5; vi: x+0.5, −y+1.5, z+0.5.