

## Electronic Supplementary Information

### **The trade-off anionic modulation in metal–organic hybrid glasses showing color-tunable persistent luminescence**

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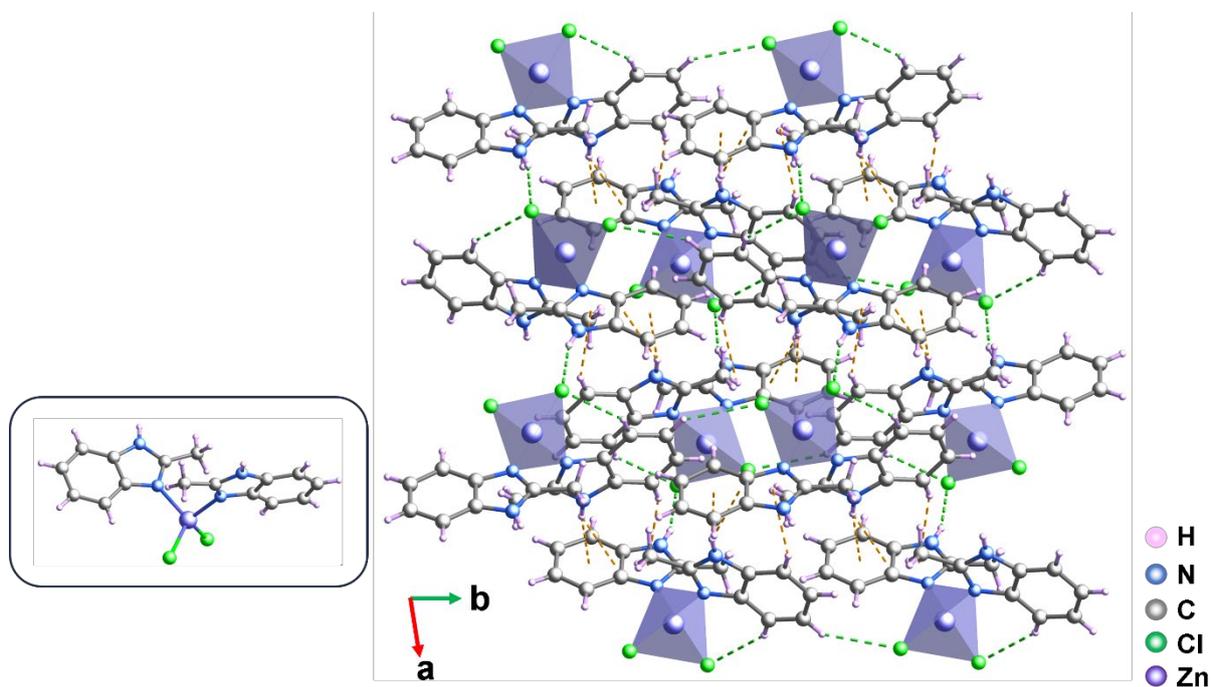
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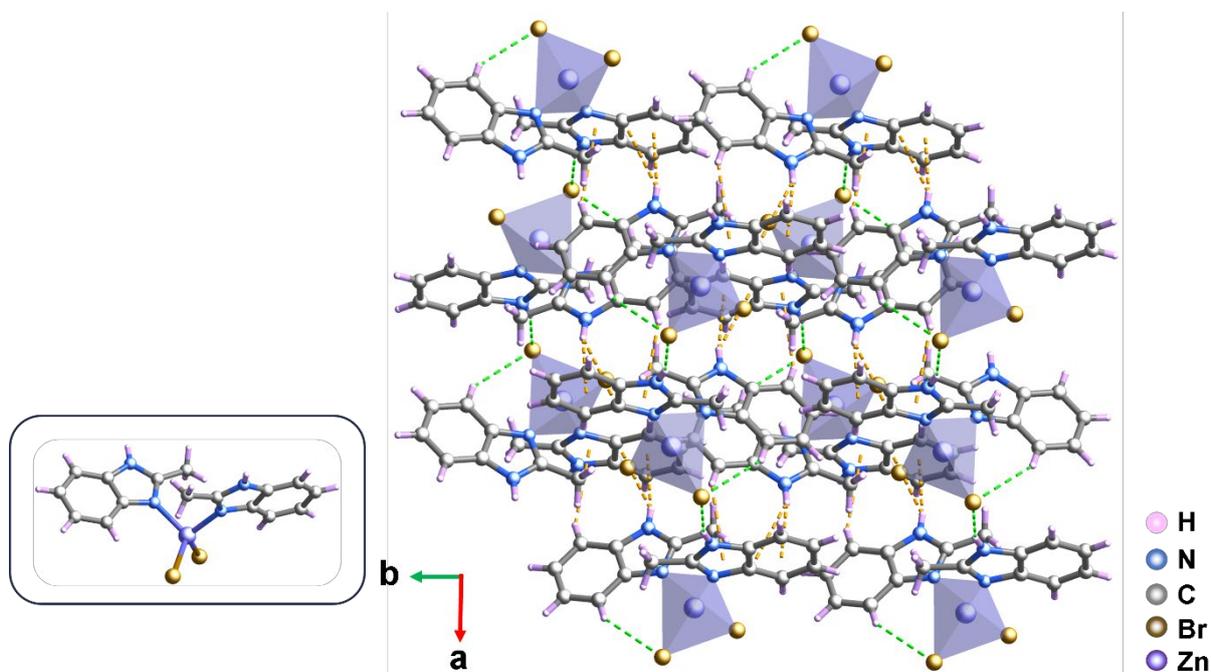
**Fig. S12.** (a-e) PDOS plots of each atom in MeBIM-Zn(OAc)<sub>2</sub>.

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**Fig. S1.** The crystal structure and the asymmetric unit of MeBIM-ZnCl<sub>2</sub>.



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**Table S1.** Crystallographic data for metal-organic halides at 100 K

	MeBIM-Zn(OAc) <sub>2</sub>	MeBIM-ZnCl <sub>2</sub>	MeBIM-ZnBr <sub>2</sub>
Formula	C <sub>20</sub> H <sub>28</sub> N <sub>4</sub> O <sub>7</sub> Zn	C <sub>16</sub> H <sub>14</sub> Cl <sub>2</sub> N <sub>4</sub> Zn	C <sub>16</sub> H <sub>14</sub> Br <sub>2</sub> N <sub>4</sub> Zn
Mr (g·mol <sup>-1</sup> )	501.83	398.58	487.50
Crystal system	monoclinic	monoclinic	monoclinic
Space group	C2/c	P2 <sub>1</sub> /n	P2 <sub>1</sub> /n
a/Å	8.33375(17)	12.5588(2)	12.6057(2)
b/Å	16.2999(3)	9.78700(10)	9.93930(10)
c/Å	15.9774(3)	14.6063(2)	14.6509(2)
α/°	90	90	90
β/°	96.7823(18)	111.748(2)	110.1050(10)
γ/°	90	90	90
Volume/Å <sup>3</sup>	2155.18(7)	1667.52(4)	1723.78(4)
Z	4	4	4
μ/mm <sup>-1</sup>	2.028	5.016	7.432
F(000)	1048.0	808.0	952.0
Index ranges	-10 ≤ h ≤ 10, -20 ≤ k ≤ 20, -20 ≤ l ≤ 19	-15 ≤ h ≤ 14, -12 ≤ k ≤ 12, -17 ≤ l ≤ 18	-15 ≤ h ≤ 15, -12 ≤ k ≤ 12, -18 ≤ l ≤ 15
Reflections collected	12344	20726	21144
Unique reflections	2235	3431	3560
R <sub>int</sub>	0.0666	0.0408	0.0391
GOF on F <sup>2</sup>	1.062	1.079	1.103
R <sub>p</sub> wR [I ≥ 2σ (I)]	0.0388, 0.1027	0.0276, 0.0737	0.0241, 0.0605
R <sub>p</sub> wR [all data]	0.0391, 0.1029	0.0283, 0.0740	0.0248, 0.0610

$${}^a R_1 = \frac{\sum \left( |F_o| - |F_c| \right)}{\sum |F_o|}, \quad {}^b wR_2 = \left\{ \frac{\sum [w(F_o^2 - F_c^2)^2]}{\sum w(F_o^2)^2} \right\}^{1/2}.$$

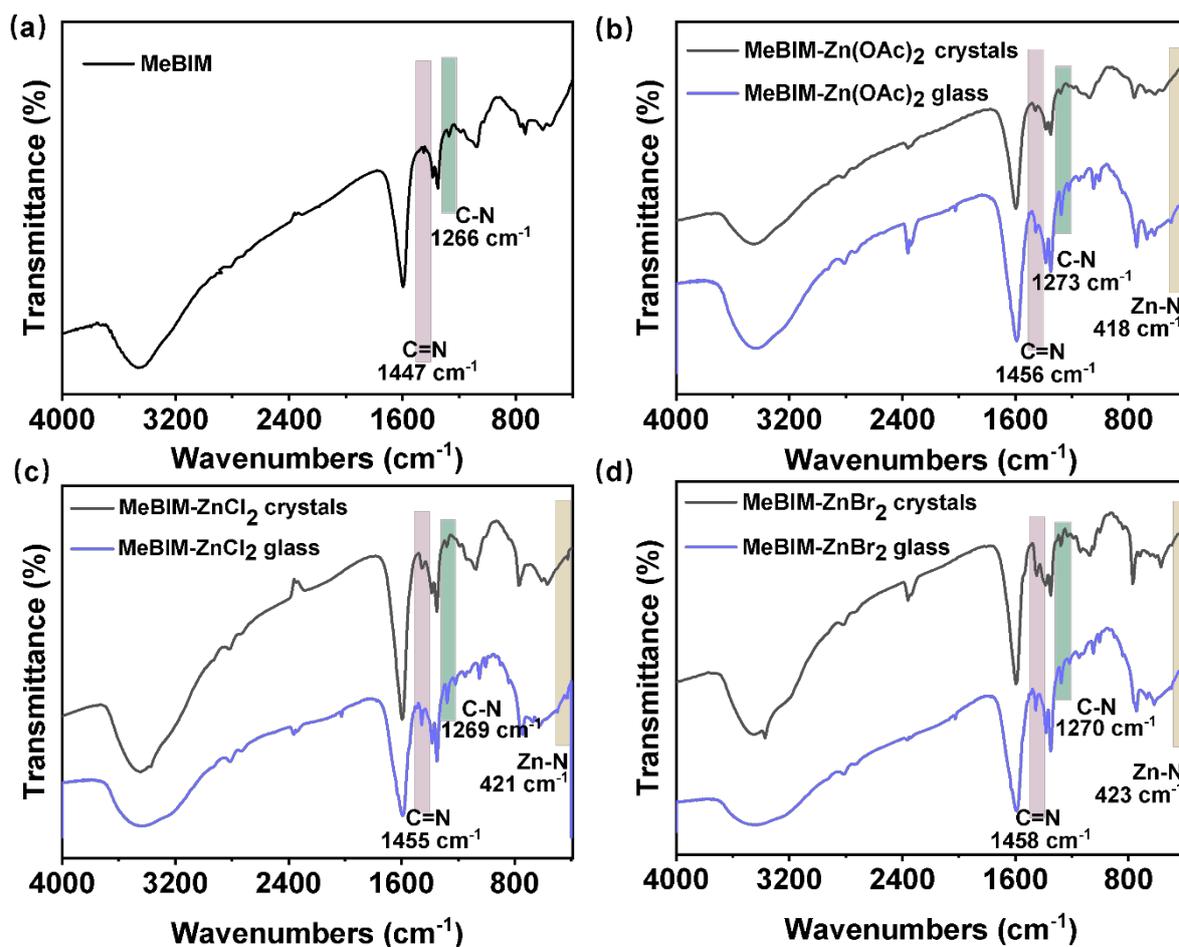


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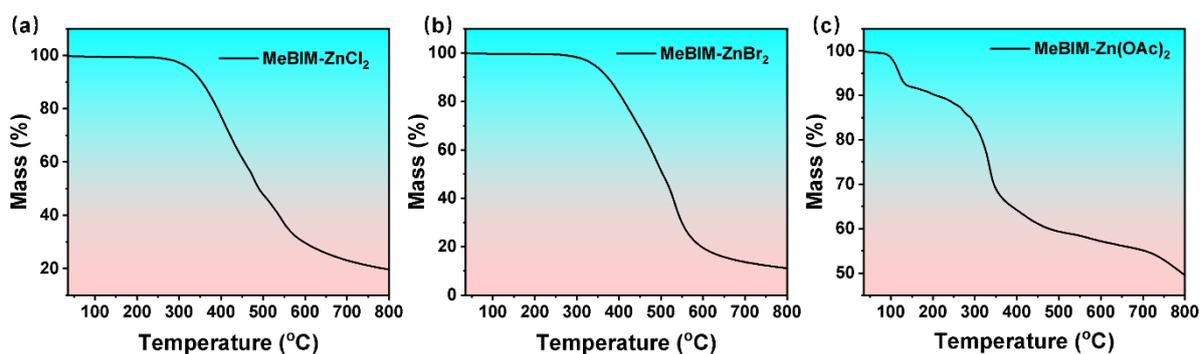
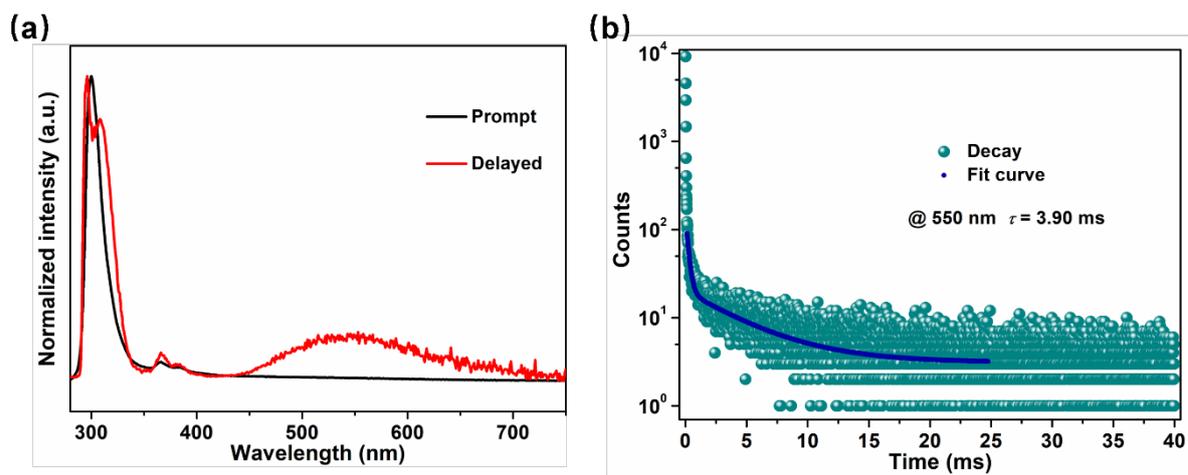
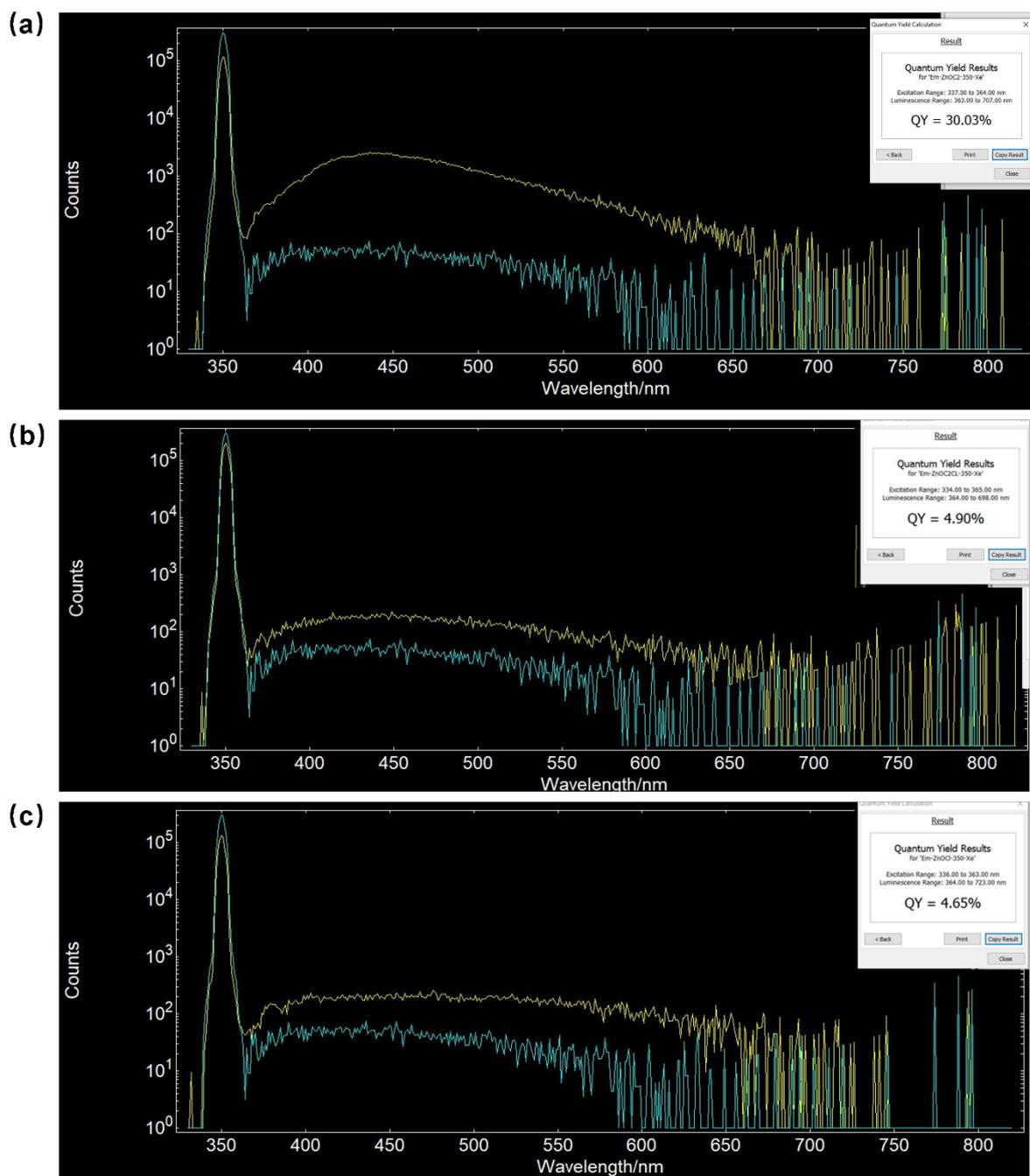


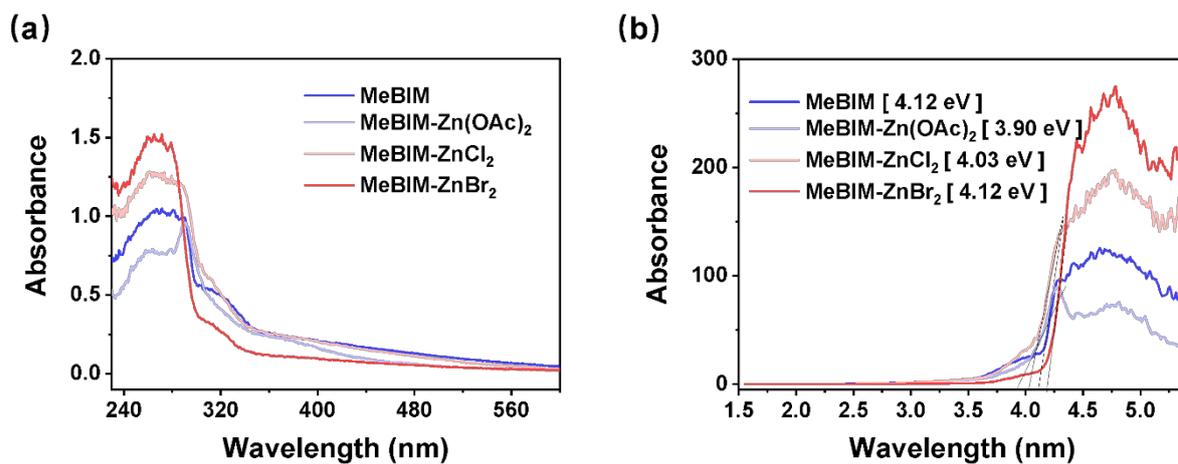
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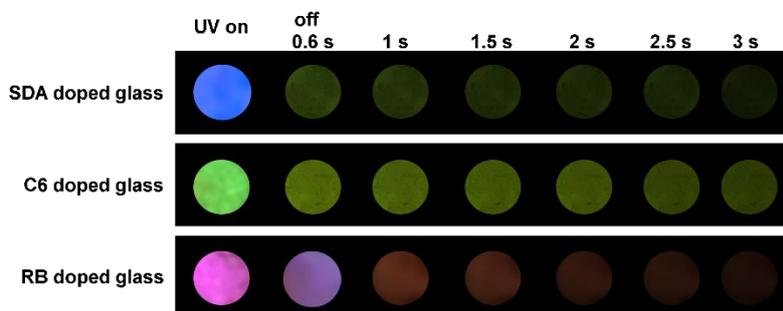
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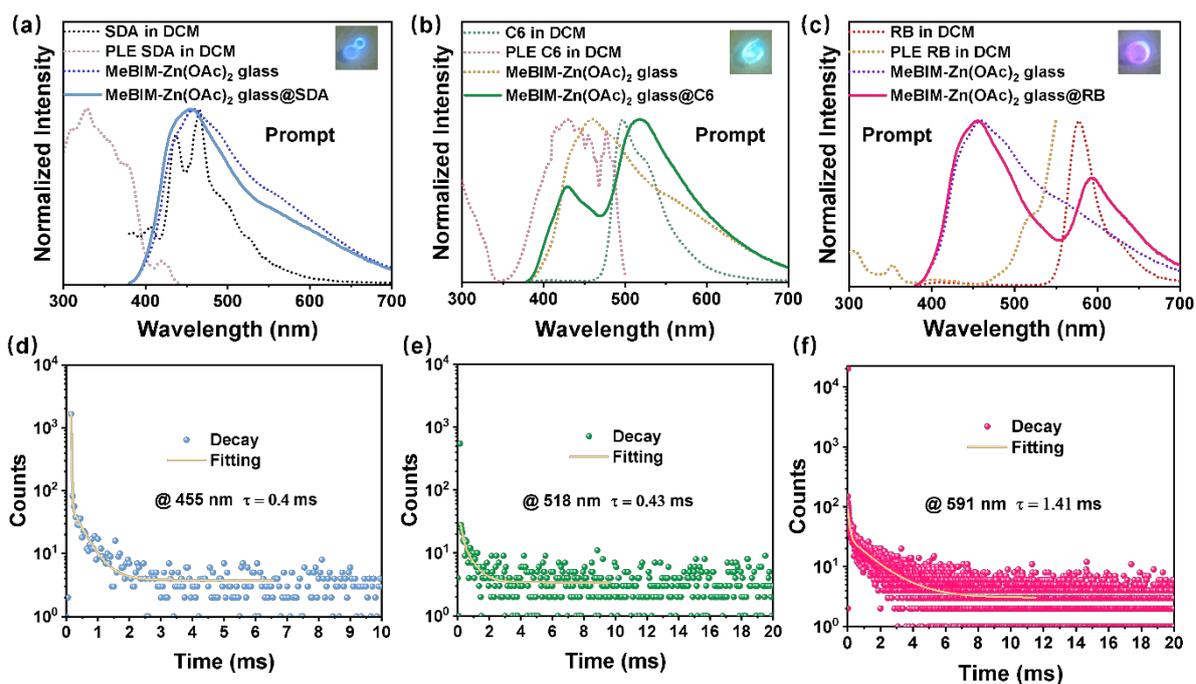
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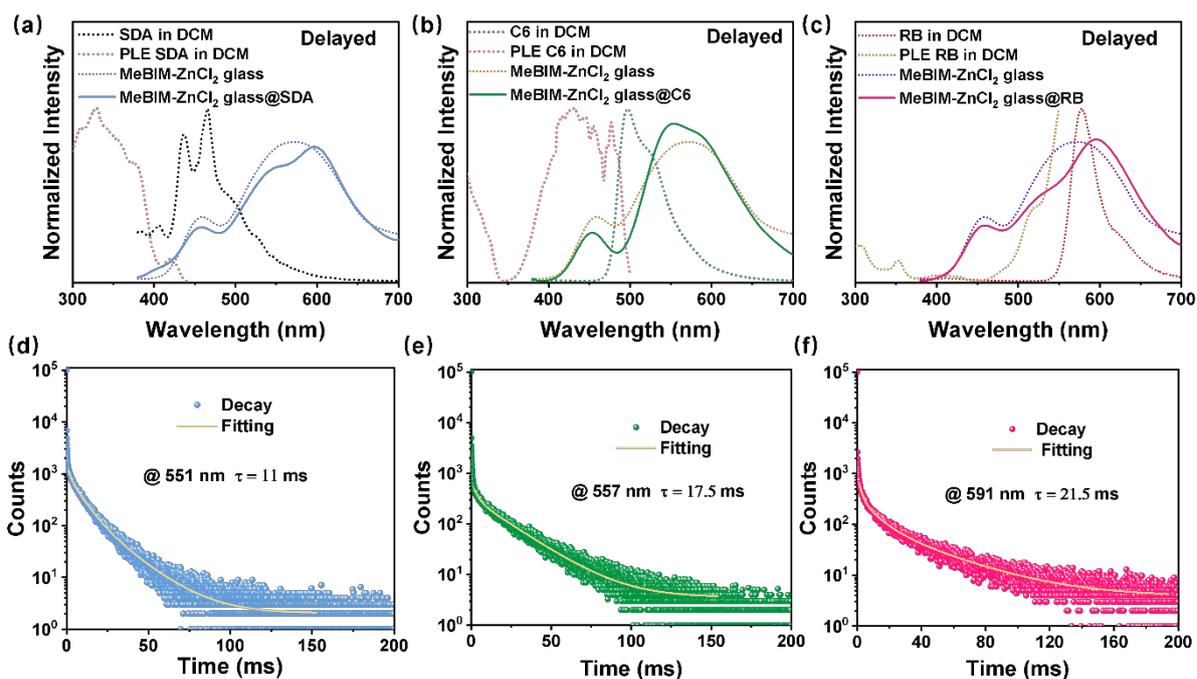
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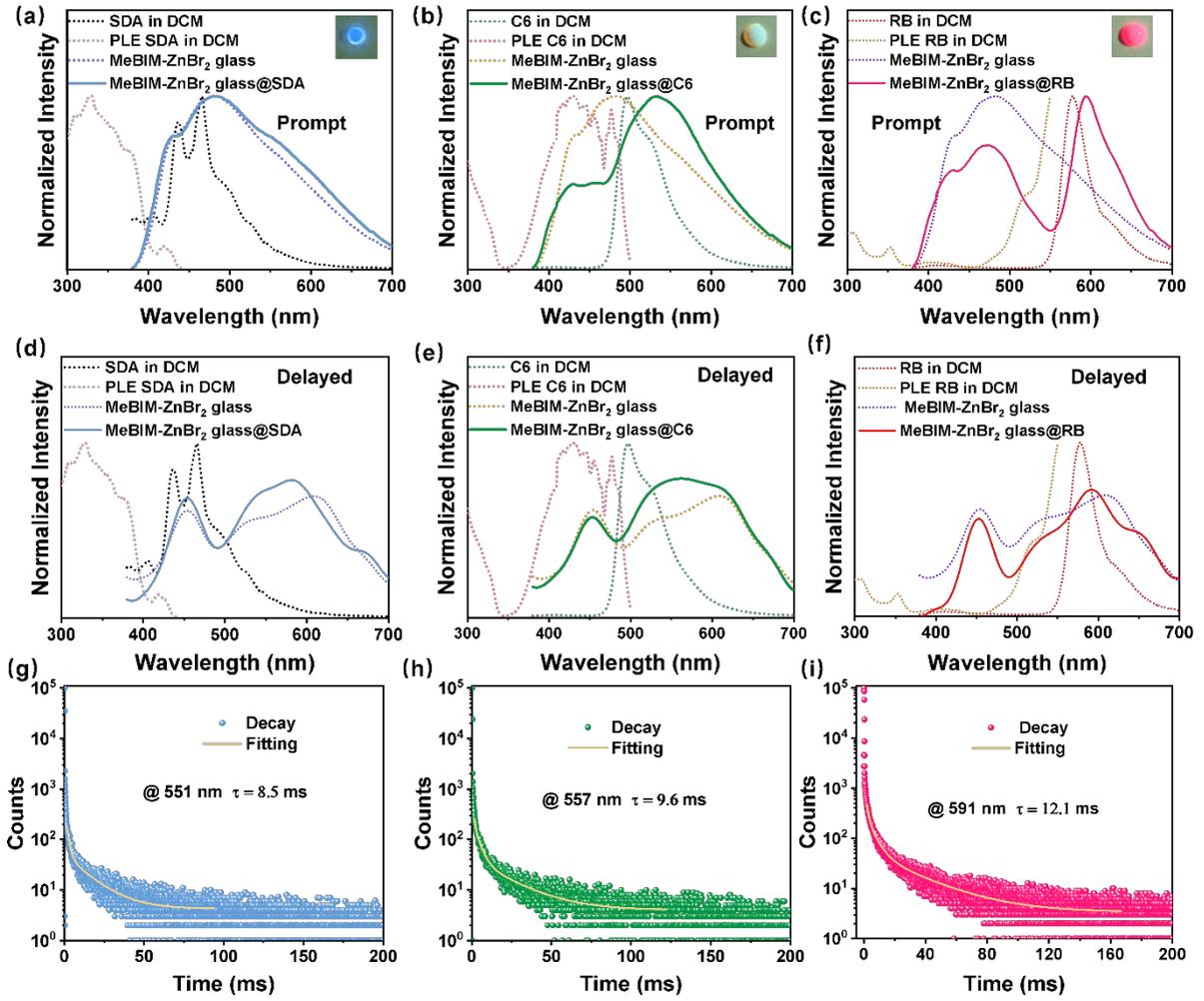
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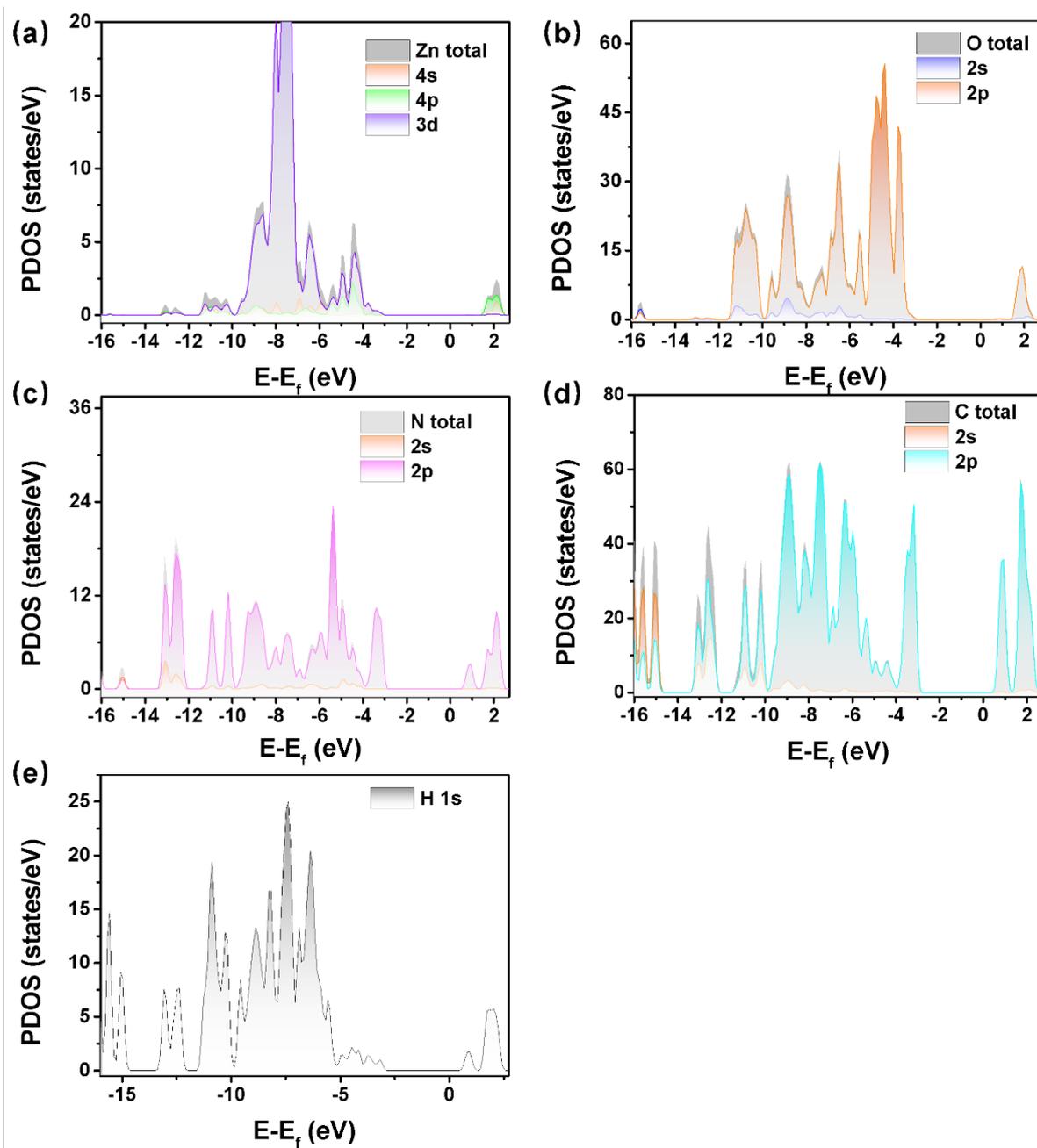


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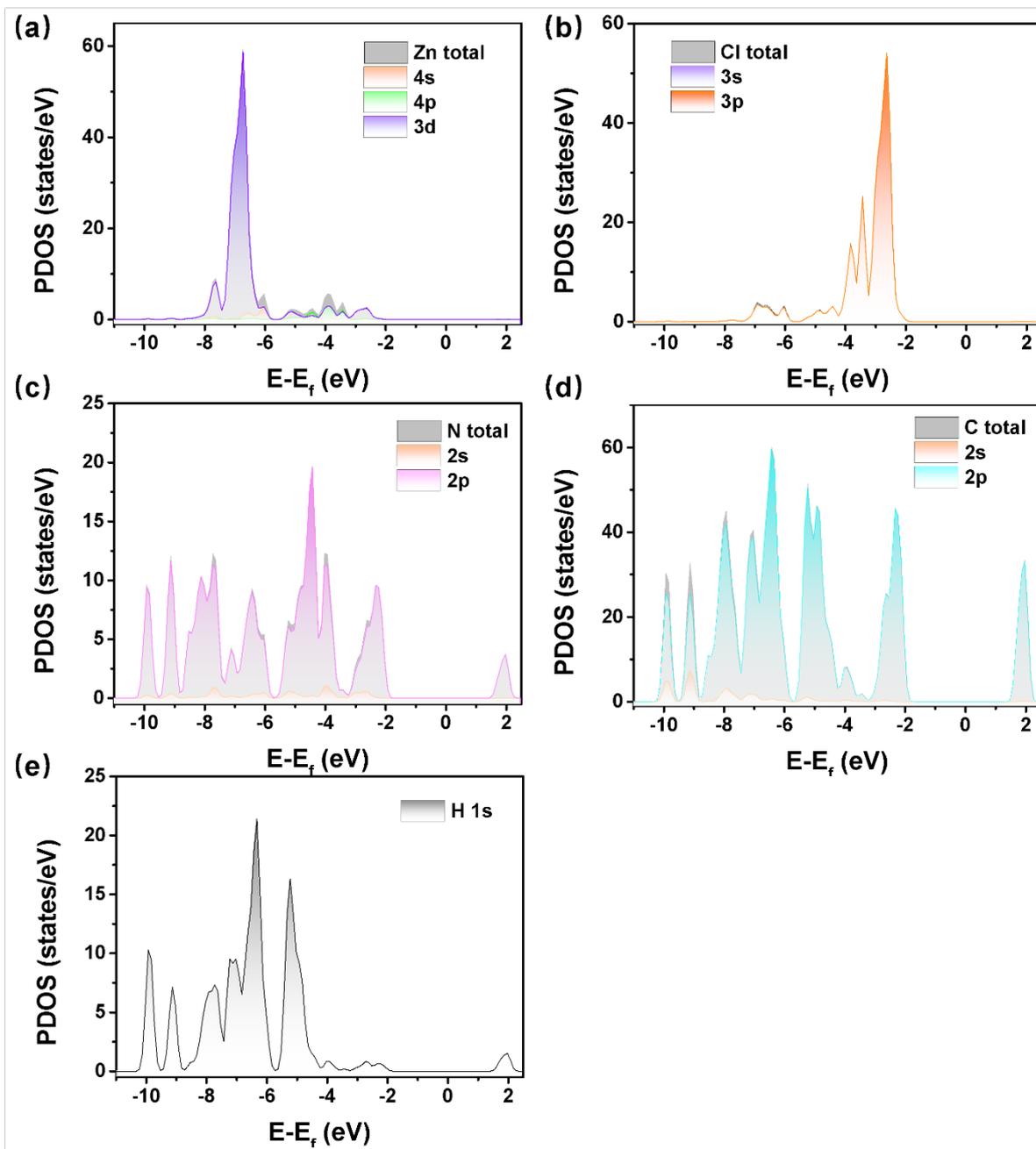


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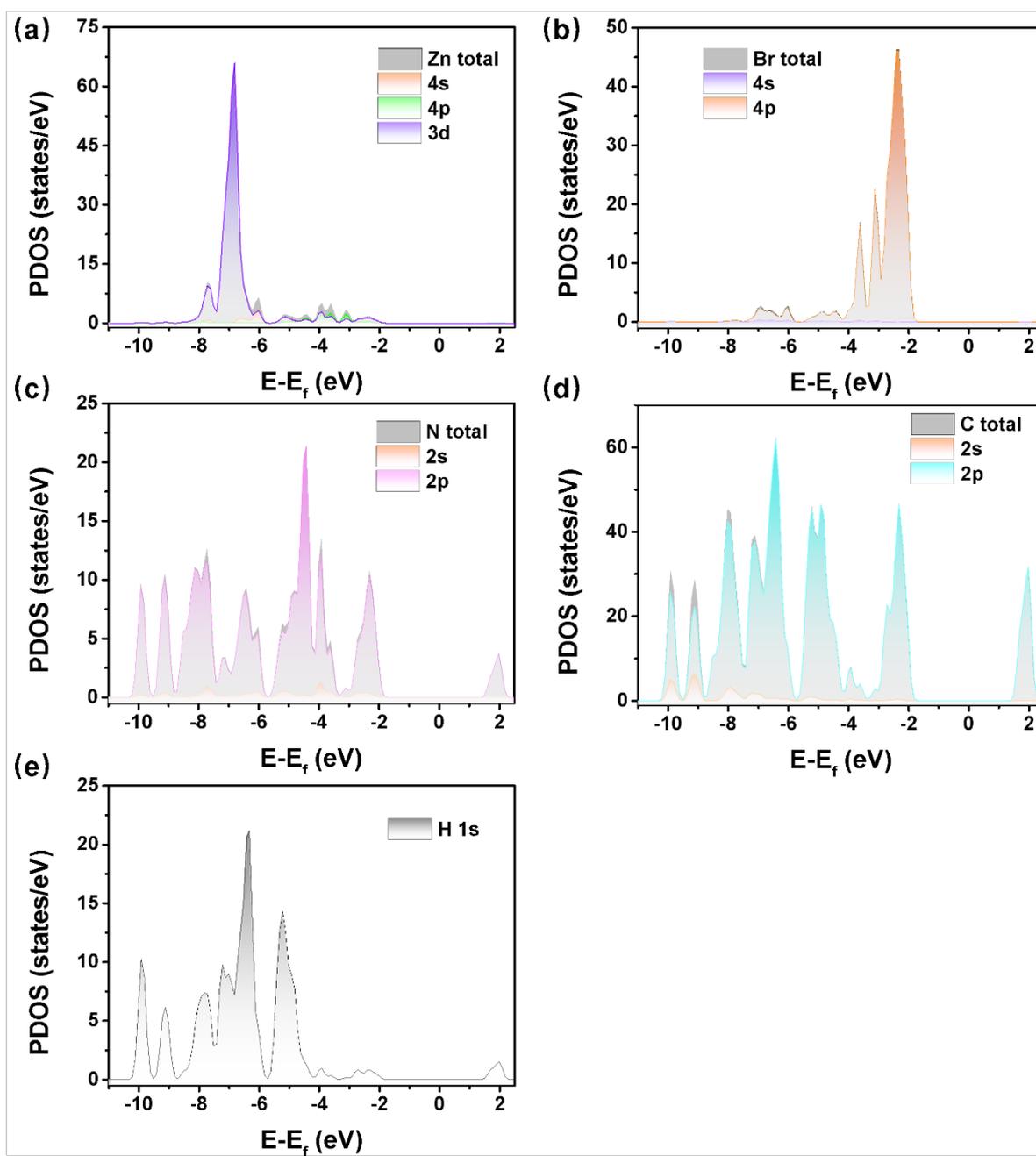


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