

Supplementary Materials:

A One-Dimensional Cu(I) Coordination Polymer with Optical Sensing of Oxygen and Temperature

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Figure S1. The FTIR spectrum of **1**.

Figure S2. Comparison of coordination environments of **1·g** (blue) and **1** (green).

Figure S3. PXRD patterns of **1·g** and **1**.

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Figure S5. Emission spectra of **1·g** and **1**, excited by 365 nm.

Figure S6. The photographs of **1** (a) at 1 bar O₂, (b) air and (c) vacuum, excited by 365 nm UV light.

Figure S7. The emission spectra of **1·g** in air and 1 atm O₂.

Figure S8. Under the excitation of 365 nm, (a) the emission spectra of **1·g** in the temperature range from 80 to 300 K with an interval of 20 K, and (b) the integral intensities of **1·g** at different temperatures.

Table S1. Elemental analysis result of **1**.

Table S2. Crystallography data and structural refinements of **1·g** and **1**.

Table S3. Decay curves of **1** at 1 bar O₂, air and vacuum, respectively, excited by 375-nm VPL and detected by 542 nm.

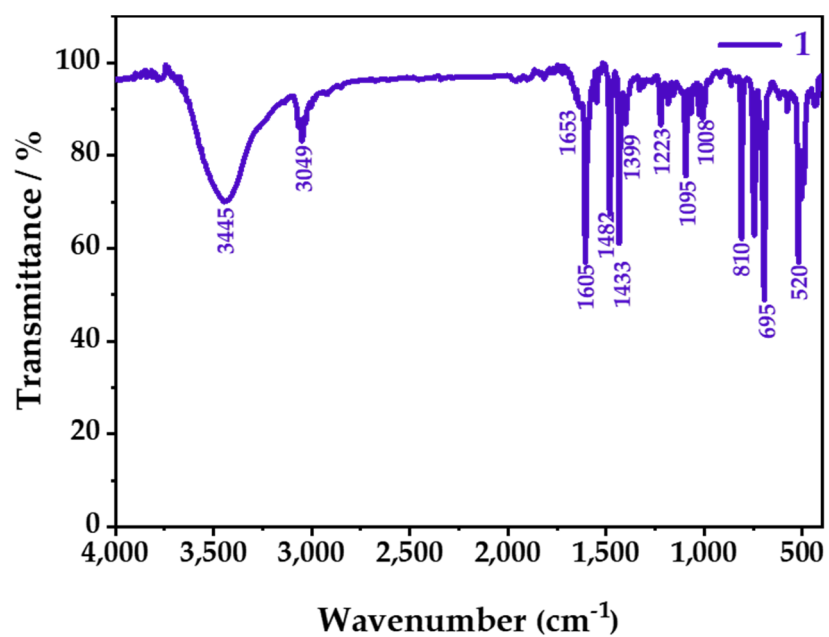


Figure S1. The FTIR spectrum of 1.

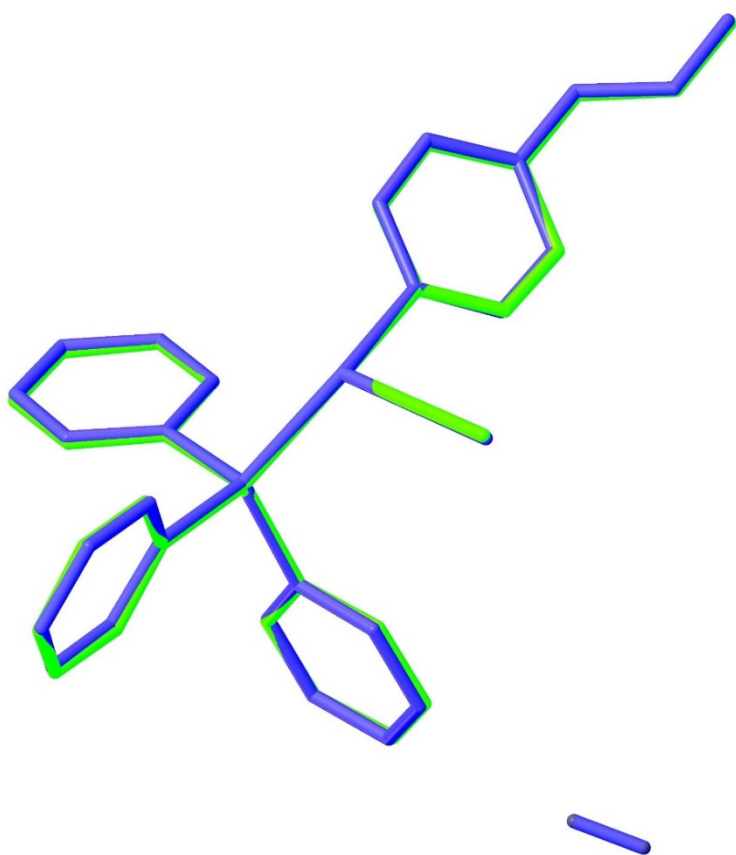


Figure S2. Comparison of coordination environments of 1·g (blue) and 1 (green).

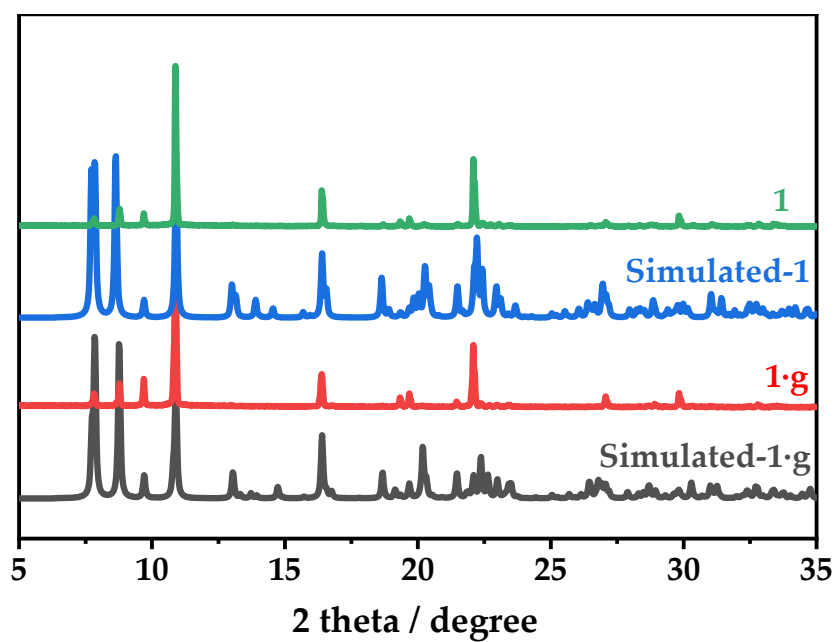


Figure S3. PXRD patterns of 1·g and 1.

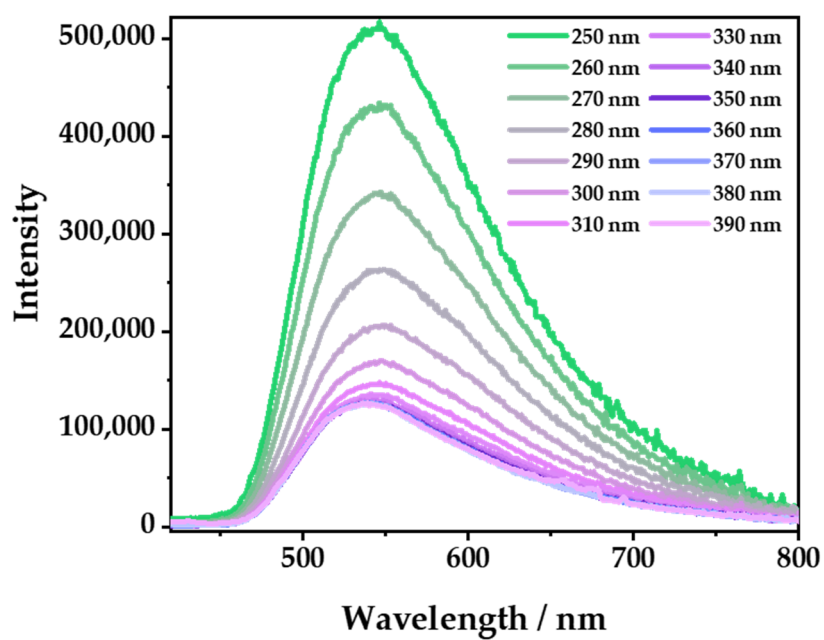


Figure S4. Excitation-Emission map of 1.

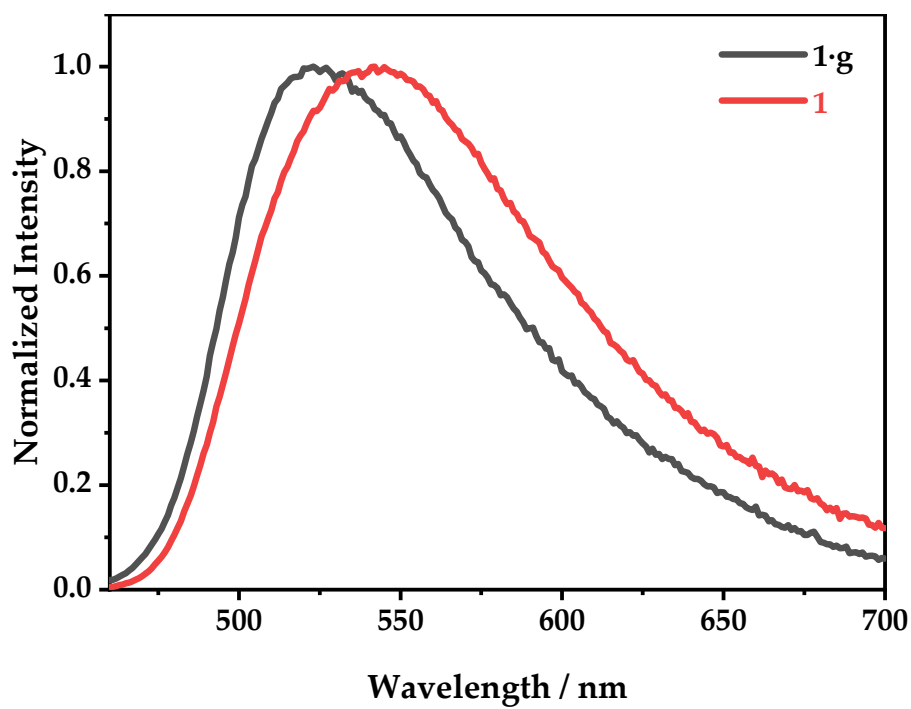


Figure S5. Emission spectra of 1·g and 1, excited by 365 nm.

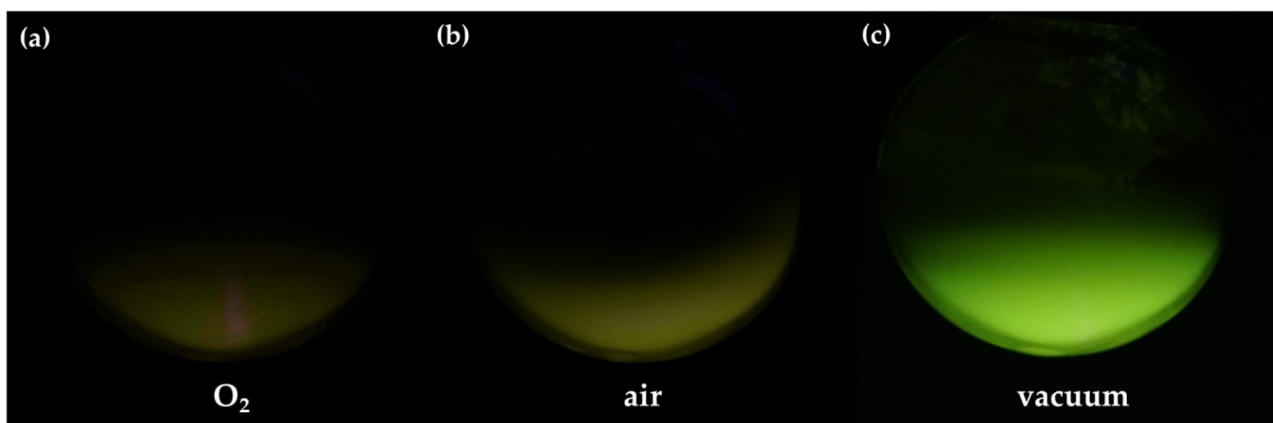


Figure S6. The photographs of 1 (a) at 1 bar O₂, (b) air and (c) vacuum, excited by 365 nm UV light.

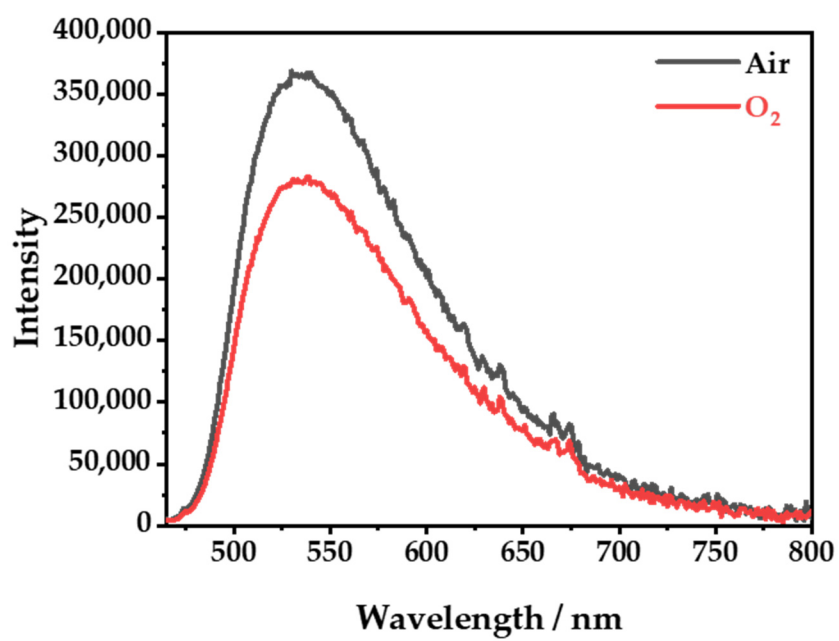


Figure S7. The emission spectra of 1·g in air and 1 atm O₂.

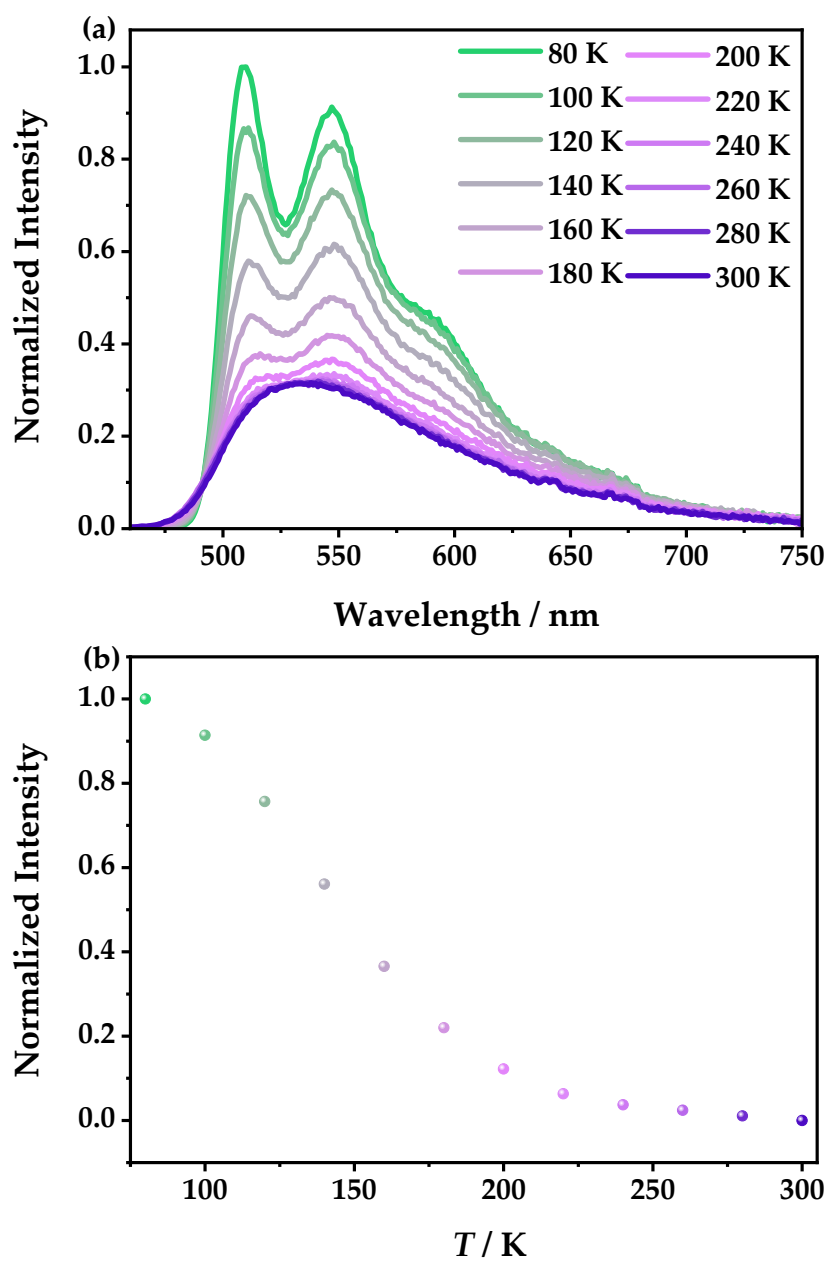


Figure S8. Under the excitation of 365 nm, (a) the emission spectra of **1·g** in the temperature range from 80 to 300 K with an interval of 20 K, and (b) the integral intensities of **1·g** at different temperatures.

Table S1. Elemental analysis result of **1**.

Calculated Results			Experimental Results		
C / %	N / %	H / %	C / %	N / %	H / %
53.52	2.31	3.66	53.07	2.29	3.76

Table S2. Crystallography data and structural refinements of **1·g** and **1**.

Complex	1·g	1
Formula	C ₅₃ H ₄₃ Cu ₂ I ₂ N ₂ O ₂ P ₂	C ₅₂ H ₄₂ Cu ₂ I ₂ N ₂ P ₂
Formula weight	1166.71	1137.69
Temperature / K	296.09(10)	297.26(10)
Crystal system	Triclinic	Triclinic
Space group	<i>P</i> $\bar{1}$	<i>P</i> $\bar{1}$
<i>a</i> / Å	9.3463(5)	9.3735(2)
<i>b</i> / Å	12.0932(6)	12.0348(2)
<i>c</i> / Å	12.1787(7)	12.1231(3)
α / °	109.733(5)	109.047(2)
β / °	99.360(5)	99.339(2)
γ / °	100.949(4)	101.151(2)
Volume/Å ³	1233.21(12)	1230.28(5)
<i>Z</i>	1	1
<i>R</i> _{int}	0.0443	0.0431
<i>R</i> ₁ [<i>I</i> > 2σ(<i>I</i>)] ^a	0.0272	0.0268
<i>wR</i> ₂ [<i>I</i> > 2σ(<i>I</i>)] ^b	0.0685	0.0694
<i>R</i> ₁ (all data)	0.0287	0.0284
<i>wR</i> ₂ (all data)	0.0696	0.0704
GOF	1.070	1.057

^a $R_1 = \sum ||F_o| - |F_c|| / \sum |F_o|$

^b $wR_2 = [w(F_o^2 - F_c^2)^2 / \sum w(F_o^2)^2]^{1/2}$

Table S3. Lifetime fitting results of **1** at 1 bar O₂, air and vacuum, respectively, excited by 375-nm VPL and detected by 542 nm.

	Fitted values				χ^2
	τ_1 (μs)	τ_2 (μs)	τ_3 (μs)	τ_{int} (μs)	
1 bar O ₂	0.097	0.241	0.860	0.318	1.086
air	0.366	1.331	2.715	1.520	1.271
vacuum	2.436	11.503	27.241	22.007	1.240