**Supporting Information**

**A Novel Overtone Peak Self-Referencing Fluorescent Sensor Based on a Bipyridine-Linked Covalent Organic Framework for Highly Sensitive Copper Ion Detection**

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**figure_S1**

**Fig. S1.** (A) SEM image and EDS spectrometer of TPE-Bpy-COF. (B) C element, (C) N element, (D) O element.

**Figure_S2Fig. S2.** Fluorescence change after Cu2+ treatment with Cu2+ with EDTA

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| samples | τ1 | τ2 | B1 | B2 | τavg |
| TPE-Bpy-COF | 2.816×10−10 s | 2.850×10−9 s | -540.492 | -3432.618 | 2.89×10−9s |
| TPE-Bpy-COF@Cu2+ | 4.830×10−10 s | 3.636×10−9 s | 4096.767 | 116.313 | 1.04×10−9s |

**Table S1.** Fluorescence lifetime of TPE-Bpy-COF sensor in the absence of Cu2+ / presence of Cu2+. the average fluorescence lifetime (τavg) computational formula： .