Supplementary information for

Dinuclear Hg^{II} tetracarbene complex-triggered aggregation-induced emission for rapid and selective sensing of Hg^{2+} and organomercury species

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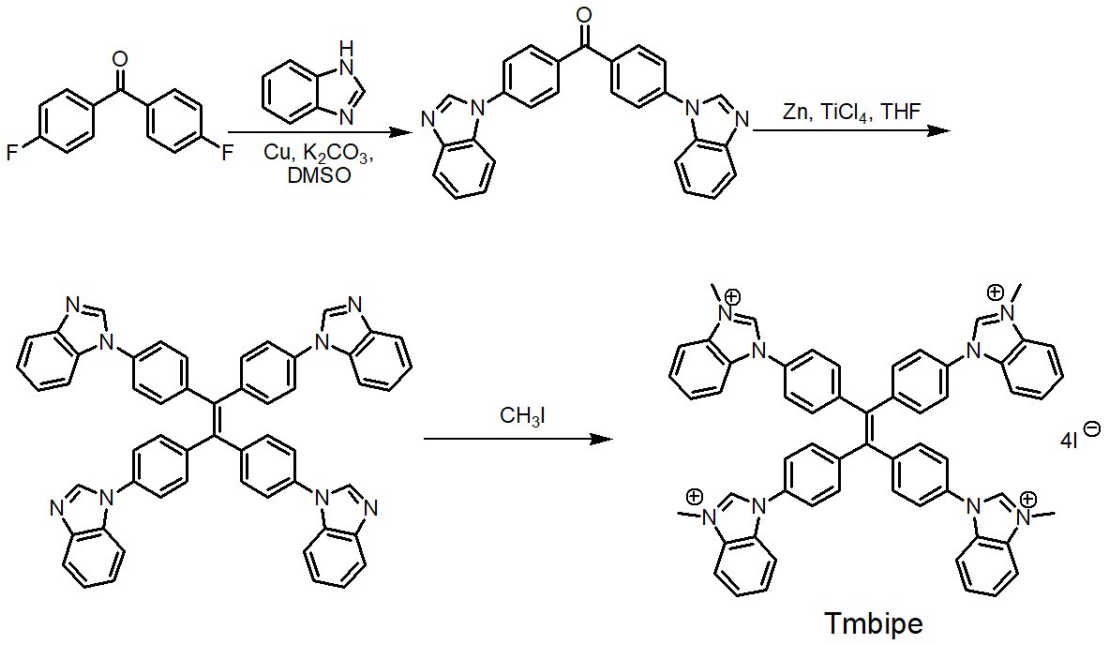
Dedicated to Professor Dai-Zheng Liao on the occasion of his 80th birthday

1. Synthesis and characterization of Tmbipe



Scheme S1. The synthetic route of **Tmbipe**

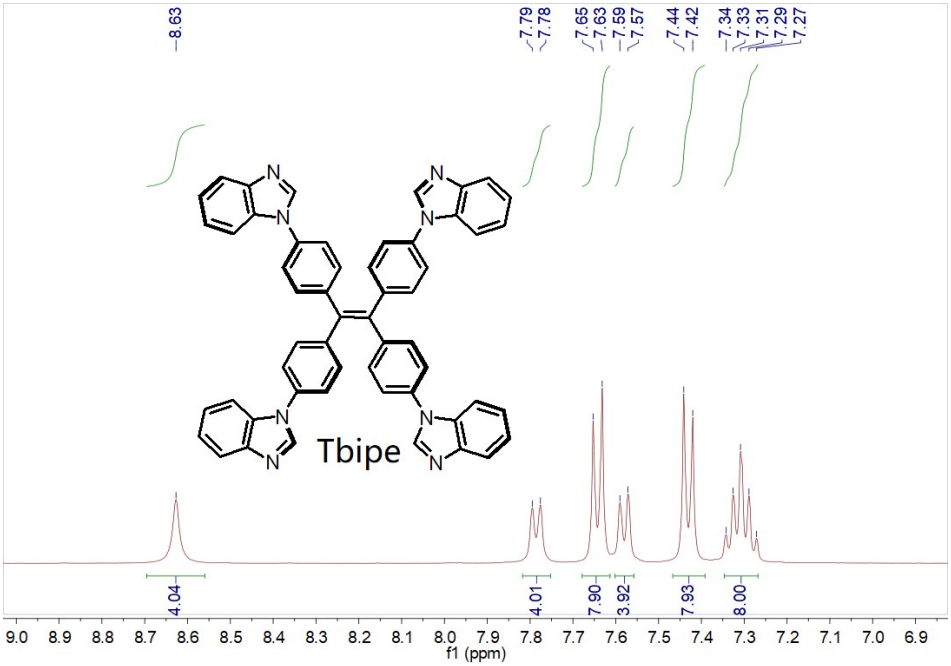


Figure S1. ^{1}H-NMR spectrum of **Tbipe**.

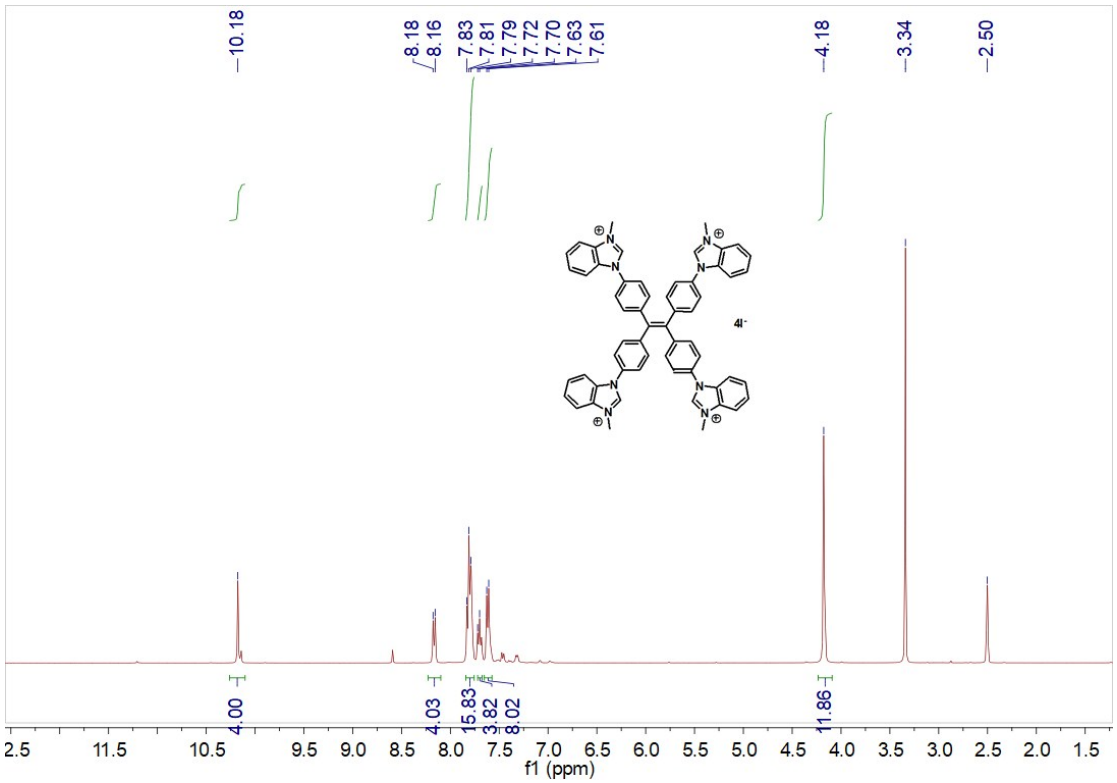


Figure S2. [1]H-NMR spectrum of **Tmbipe**.

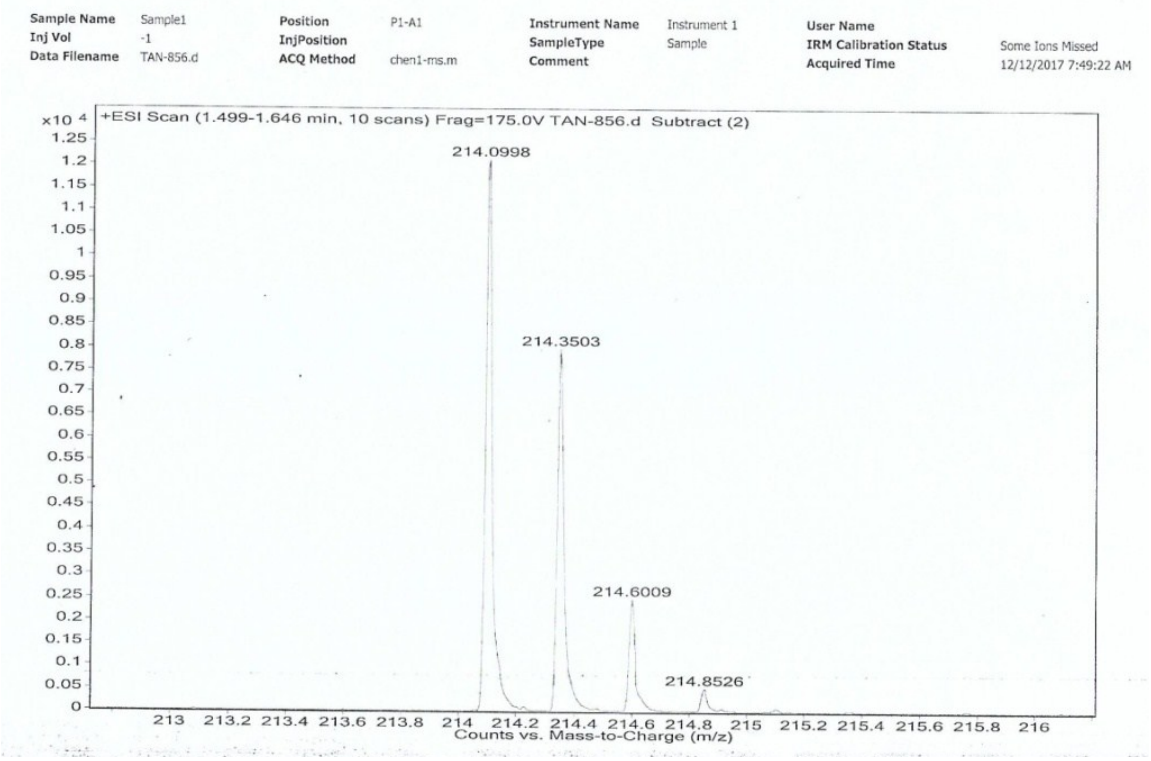


Figure S3. HRMS spectrum of **Tmbipe**.

2. Job plots for the binding of Tmbipe to Hg(II) species

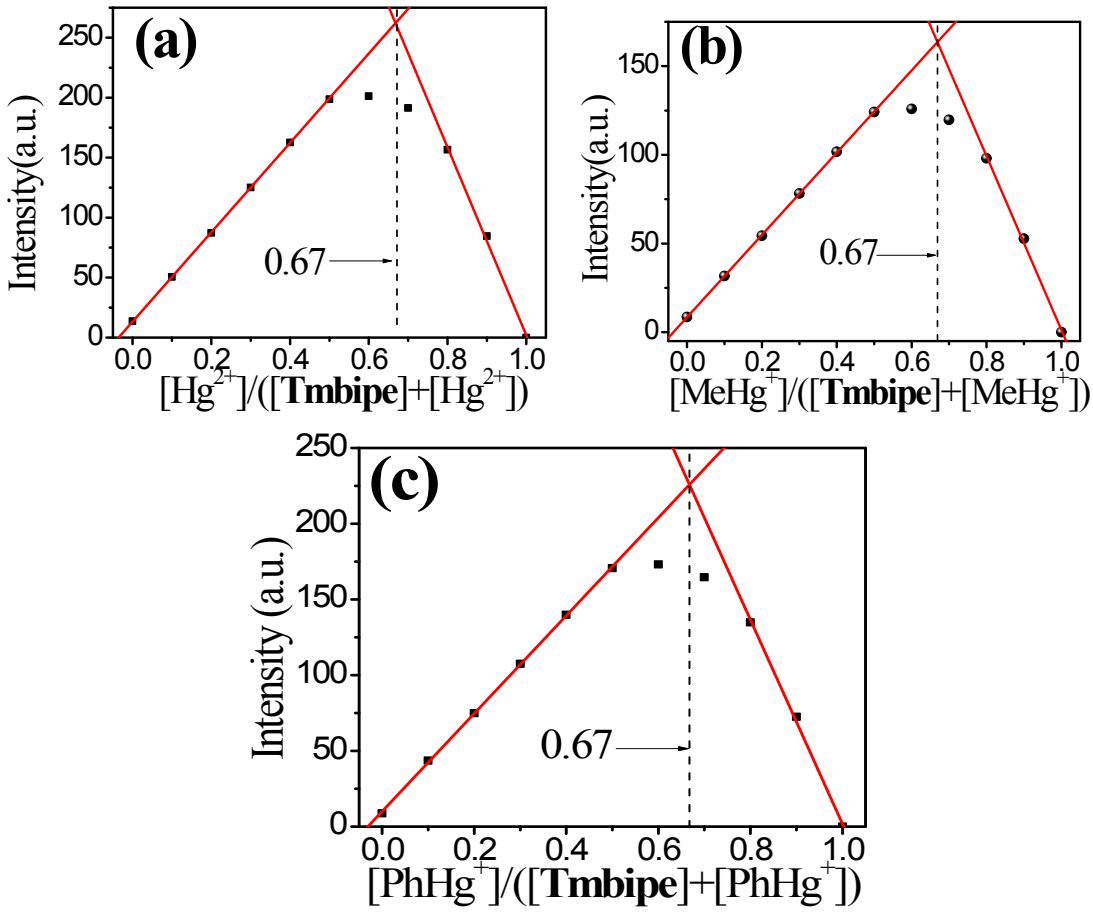


Figure S4. Job's plot analysis of the interactions between **Tmbipe** and (a) Hg^{2+}, (b) $MeHg^{+}$ or (c) $PhHg^{+}$. Total concentration of **Tmbipe** and individual Hg(II) species was 30 μM.

3. Rapid response of Tmbipe to Hg^{2+}

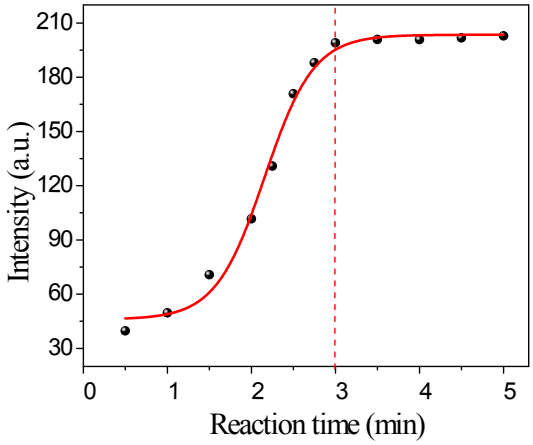


Figure S5. Time-dependent changes in fluorescence of **Tmbipe** (10 μM) to Hg^{2+} (20 μM).

4. Effects of pH on the fluorescence response of Tmbipe to Hg^{2+} and organomercury species

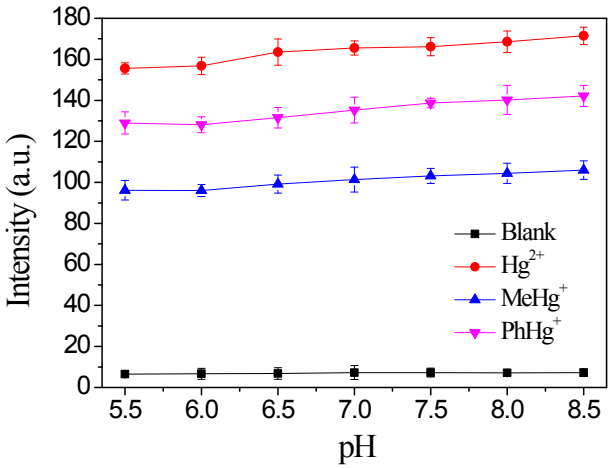


Figure S6. pH-dependent changes in fluorescence response of **Tmbipe** (10 μM) to Hg^{2+} (15 μM), $MeHg^{+}$ (15 μM) or $PhHg^{+}$ (15 μM). Tris-Acetate buffers were used to adjust the pH values of the sensing systems.

5. Comparison of our method with other reported ones

Table S1. Comparison of several Hg^{2+} and methylmercury-sensing probes

Fluorescent probe	Detection limit		Reference
	Hg^{2+}	$MeHg^{+}$	
Tetraphenylethylene-boronic acid-based AIE probe	600 nM	Not Given	18b
Coumarin-based fluorescent probe ATC-Hg	27 nM	5.8 μM	23a
BODIPY-based phenylthiourea derivatives	33 nM	64 nM	23b
Fluorogenic polymer	6.6 μM	1.6 μM	23c
DNA interacting fluorogenic probes	(5.0 ±1.0) μM	(9.9 ±1.1) μM	23d
Fluorene-based chemodosimeters	20 nM	44 nM	23e
2,1,3-benzothiadiazole-based chemodosimeters	160 nM	800 nM	23f
Selenolactone-based fluorescent chemodosimeter	20 nM	Not Given	23g
Rhodamine hydrazide derivatives	Not Given	200 nM	23h
Tetraphenylethylene-based AIE probe	63 nM	94 nM	This work

6. Imaging of Hg(II) species in living cells

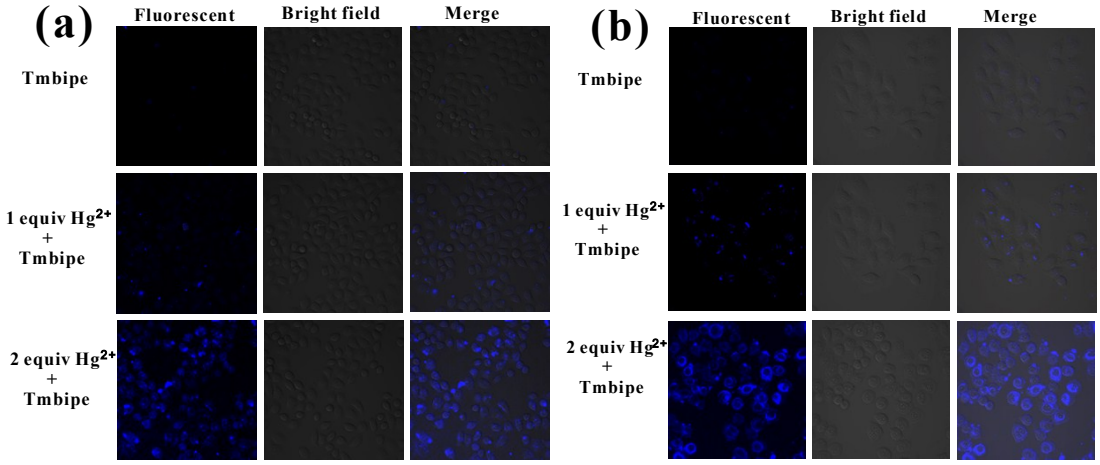


Figure S7. Detection of Hg(II) species in (a) HL7704 human adult hepatocyte cells and (b) MCF-7 human breast cancer cells.