

Electronic Supplementary Information

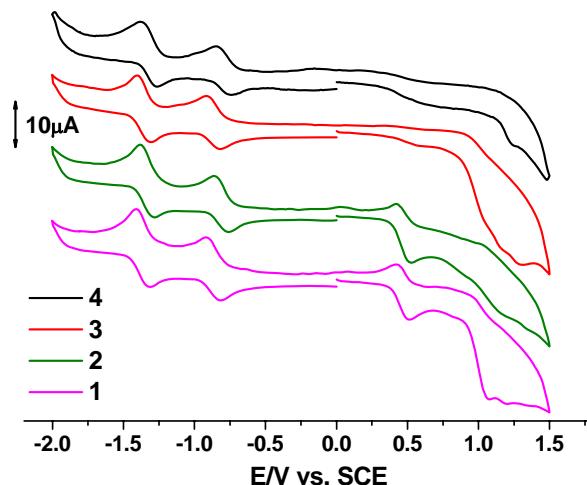
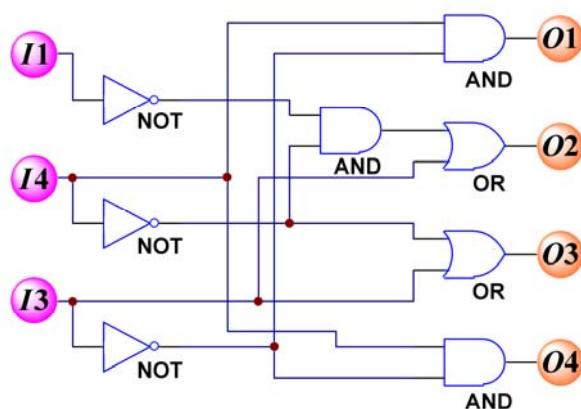


Fig. S1 Cyclic voltammetry curves of **1-4** recorded at room temperature.

Input			Output			
<i>I</i> 1	<i>I</i> 4	<i>I</i> 3	<i>O</i> 1	<i>O</i> 2	<i>O</i> 3	<i>O</i> 4
H ⁺	excess Fe ³⁺	Zn	MLCT ε ₄₀₅	ILCT ε ₅₀₀	LLCT ε ₆₄₅	LM'CT ε ₈₅₀
0	0	0	0	1	1	0
0	0	1	0	1	1	0
0	1	0	1	0	0	1
1	0	0	0	0	1	0
0	1	1	0	1	1	0
1	0	1	0	1	1	0
1	1	0	1	0	0	1
1	1	1	0	1	1	0

Table S1. Truth table 2 of complex **1** with H⁺, excess Fe³⁺ and Zn as inputs and absorption at 405 nm (MLCT), 500 nm (ILCT), 645 nm (LLCT) and 850 nm (LM'CT) as outputs.



Scheme S1. The combinational logic circuit corresponding to table S1.

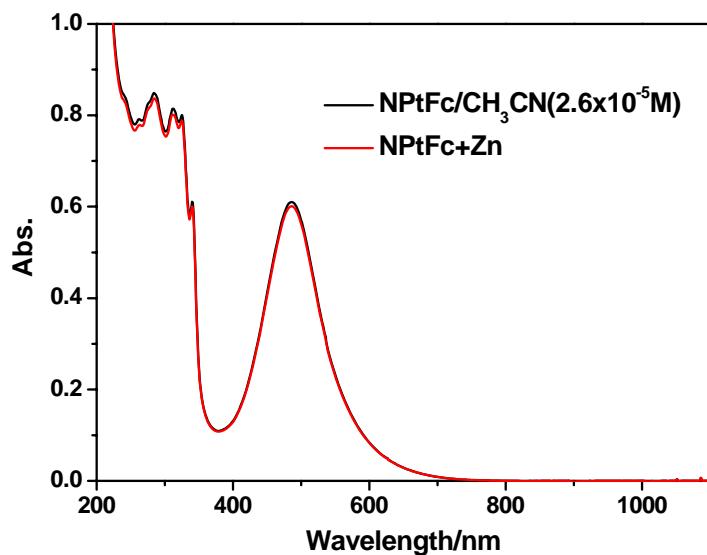


Fig. S2 Absorption spectra of **1** (input: 000, table 2, table S1) and **1** upon addition of excess zinc powder (input: 001, table 2, table S1).

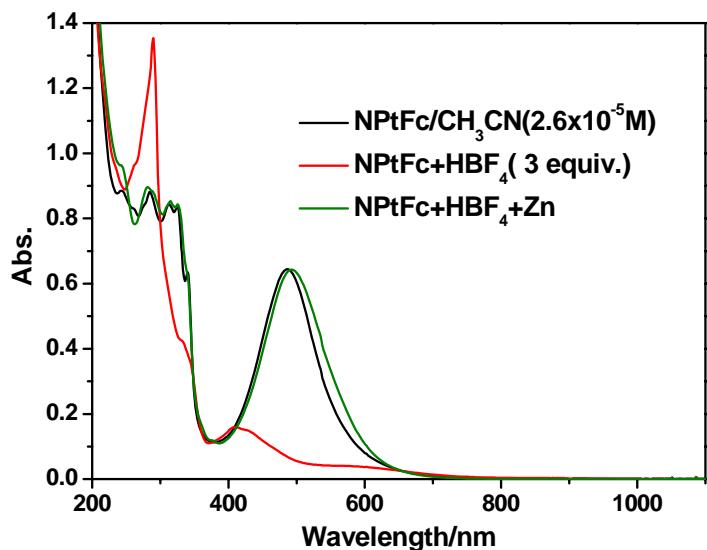


Fig. S3 Absorption spectra of **1** (input: 000, table 2, table S1), **1** upon addition of 3.0 equiv. HBF₄ (input: 100, table 2, table S1) and then upon further addition of excess zinc powder (input: 101, table 2, table S1).

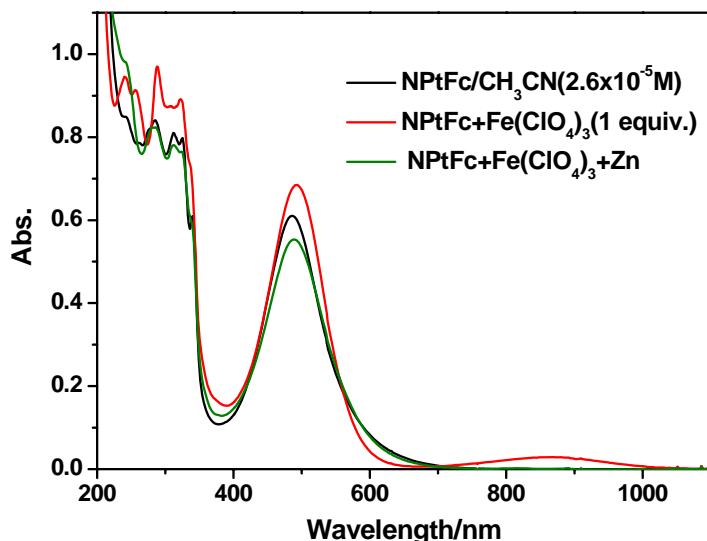


Fig. S4 Absorption spectra of **1** (input: 000, table 2), **1** upon addition of 1.0 equiv. $\text{Fe}(\text{ClO}_4)_3$ (input: 010, table 2) and then upon further addition of excess zinc powder (input: 011, table 2).

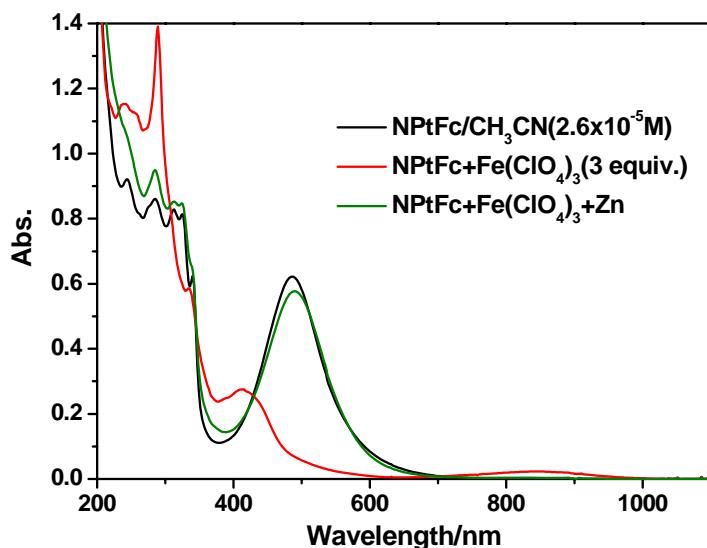


Fig. S5 Absorption spectra of **1** (input: 000, table S1), **1** upon addition of 3.0 equiv. $\text{Fe}(\text{ClO}_4)_3$ (input: 010, table S1) and then upon further addition of excess zinc powder (input: 011, table S1).

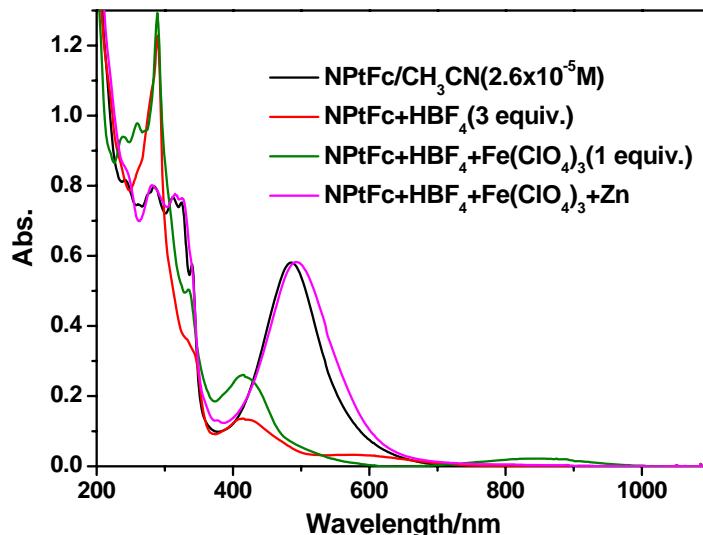


Fig. S6 Absorption spectra of **1** (input: 000, table 2), **1** upon addition of 3.0 equiv. HBF₄ (input: 100, table 2), **1** upon further addition of 1.0 equiv. Fe(ClO₄)₃ (input: 110, table 2) and then upon further addition of excess zinc powder (input: 111, table 2).

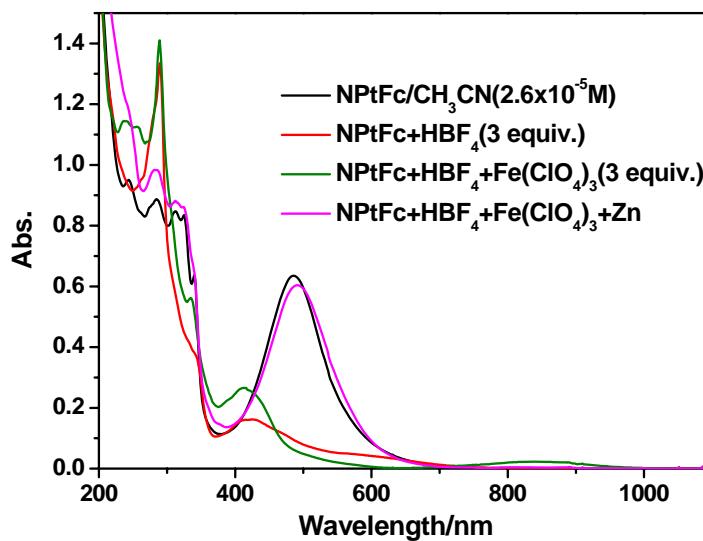


Fig. S7 Absorption spectra of **1** (input: 000, table S1), **1** upon addition of 3.0 equiv. HBF₄ (input: 100, table S1), **1** upon further addition of 3.0 equiv. Fe(ClO₄)₃ (input: 110, table S1) and then upon further addition of excess zinc powder (input: 111, table S1).