Electronic Supplementary Material (ESI) for Materials Chemistry Frontiers.

Supplementary Information

A Novel Fluorous Effect Induced Fluorescence Sensor for Cu(II) Detection in Organic Phase with High Sensitivity

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1. FTIR characterization

The FTIR spectrum of P(VDF-CTFE) and P(VDF-ATrFE) was show in Fig. S1. The characteristic peak at 2147 cm^{-1}, assigned to the azido stretching, is observed in the resultant copolymer. The absorption band at 1724 cm^{-1} in the P(VDF-ATrFE) may address the existence of -CF=CH-. Meanwhile, the intensity of the absorption band of P(VDF-CTFE) at 760 cm^{-1} (C-Cl bond) is remarkably decreased after reacted with NaN_3.

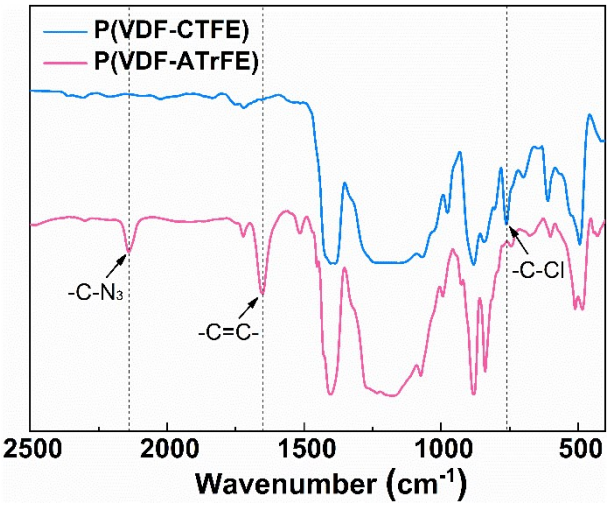


Fig. S1. FTIR spectrum of P(VDF-CTFE) before (line in blue) and after reacted with NaN_3 (line in red)

2. The order of complexing equilibrium constants of BPy, PMDETA and Me_6-TREN with $CuCl_2$ through computer simulation

Theoretical Method: M062X/6-31G*

Solvation Model: standard SMD with radii=Bondi

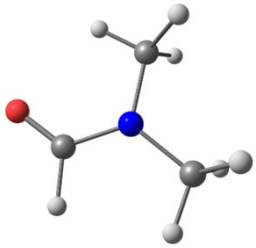
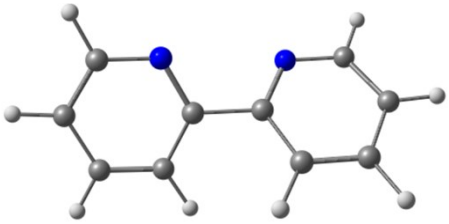
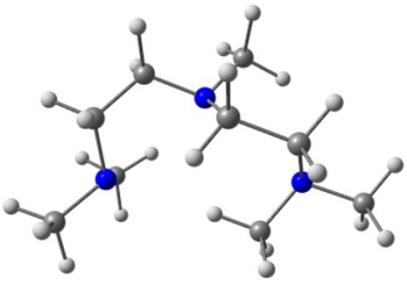
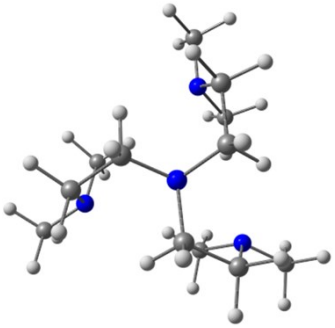
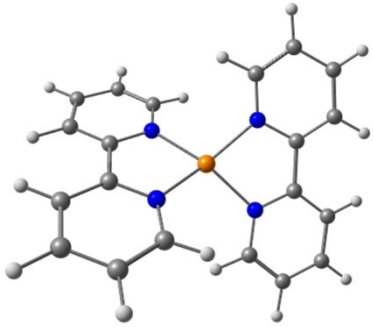
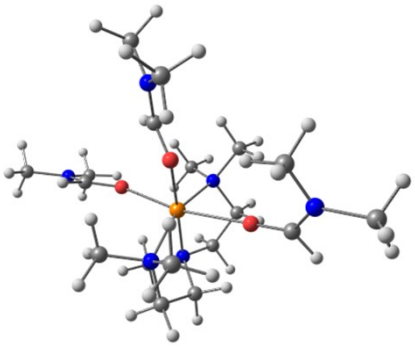
The calculation simulation results were shown in Table S1 and the structure information was shown in Table S2.

Table S1 Free energy and stabilization constant in DMF by SMD model.

Reaction	$G_{stab\text{-}sol}$ (kcal/mol)	$K_{stab\text{-}sol}$
$Cu(DMF)_6 + 2N_2L \rightarrow Cu(N_2L)_2 + 6DMF$	16.8	5.91E-13
$Cu(DMF)_6 + N_3L \rightarrow Cu(N_3L)(DMF)_3 + 3DMF$	-2.7	8.80E+01
$Cu(DMF)_6 + N_4L \rightarrow Cu(N_4L)(DMF)_2 + 4DMF$	0.5	4.02E-01

*N_2L, N_3L, N_4L respectively represent BPy, PMDETA and Me_6TREN.

Table S2 The molecular structure and possible complex structure.

DMF	BPy (N_2L)
	
PMDETA (N_3L)	Me_6TREN (N_4L)
	
$Cu(N_2L)_2$	$Cu(N_3L)(DMF)_3$
	
$Cu(N_4L)(DMF)$