

**Synthesis, optical properties, and two-photon bioimaging
evaluation of novel fluorescent cationic molecules with symmetrical
long conjugated all-*trans* structures**

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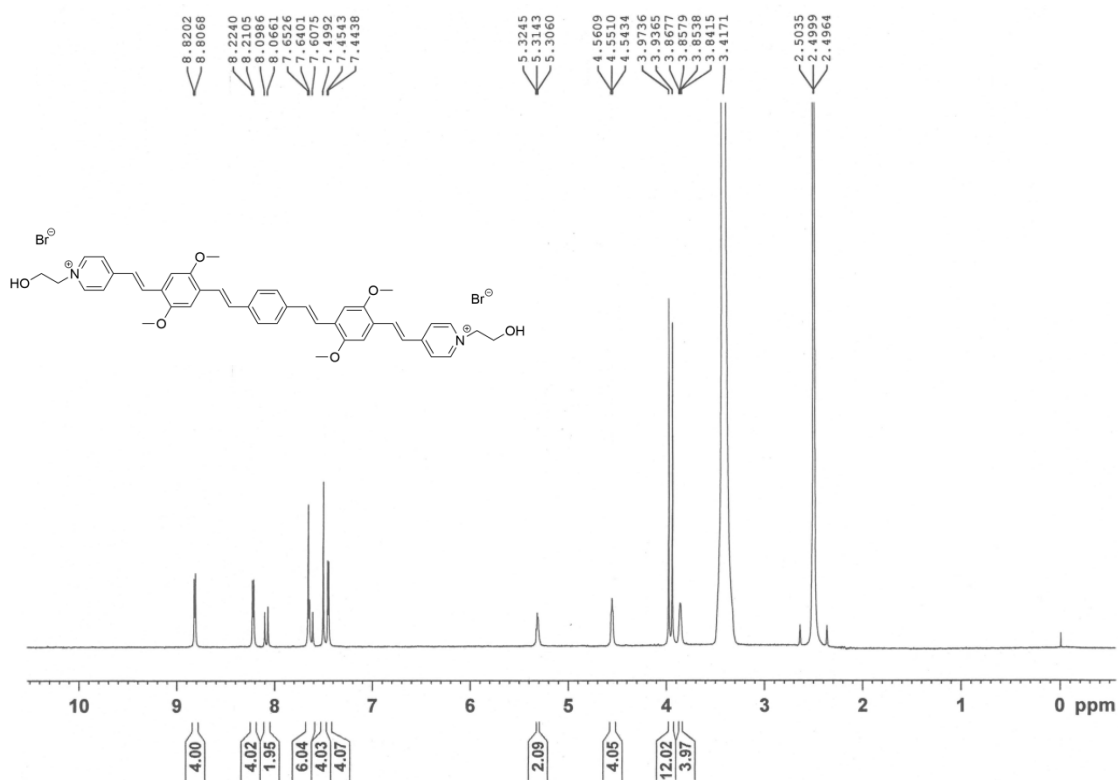


Fig.S1 ^1H NMR spectrum of **PPy** in $\text{DMSO-}d_6$.

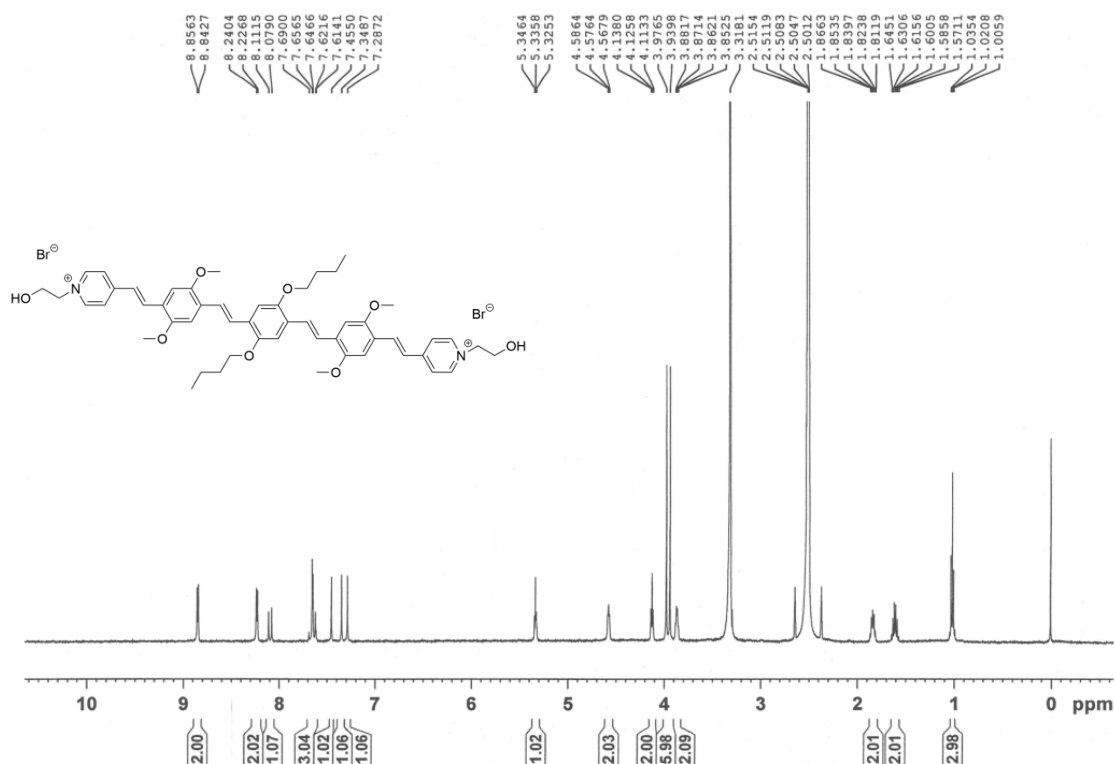


Fig.S2 ^1H NMR spectrum of **BOPPy** in $\text{DMSO-}d_6$.

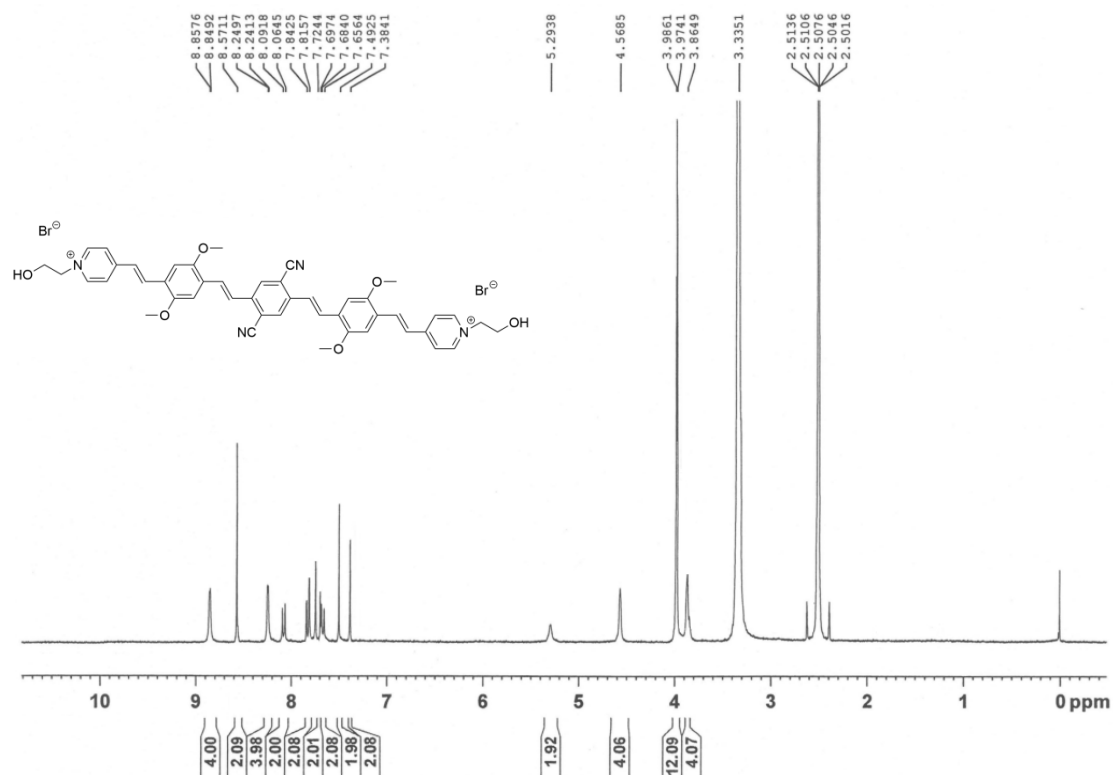


Fig.S3 ¹H NMR spectrum of CNPPy in DMSO-*d*₆.

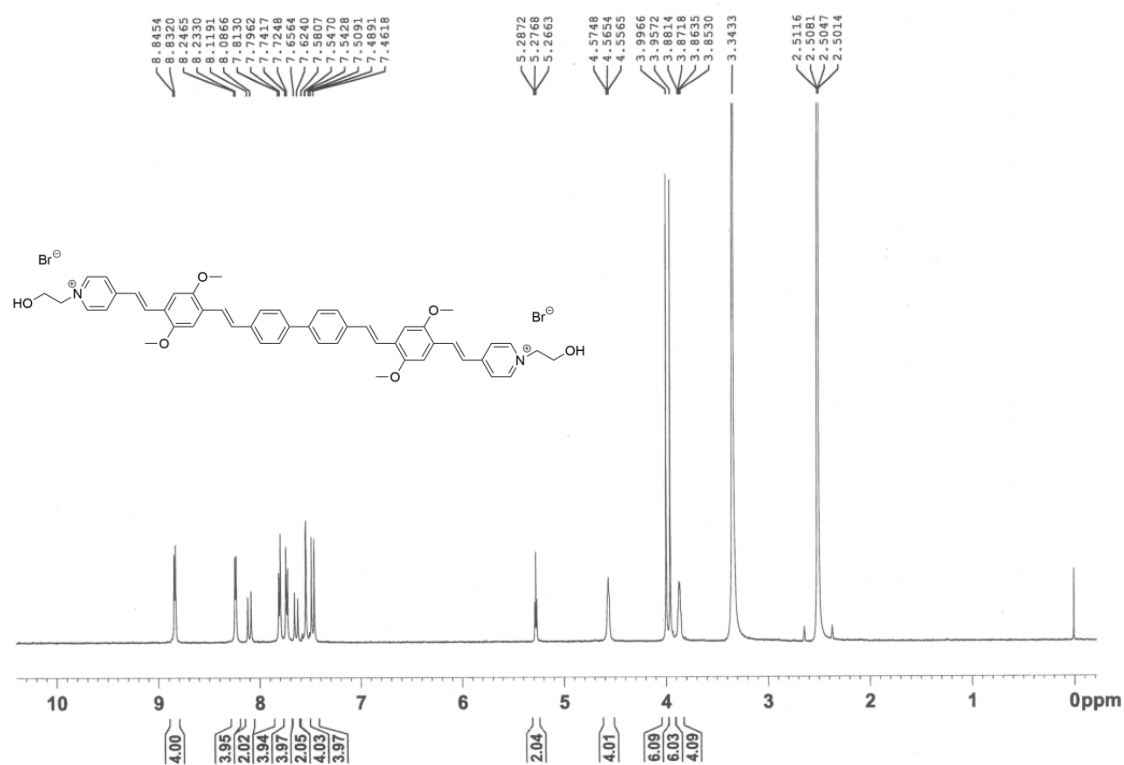


Fig.S4 ¹H NMR spectrum of BPPy in DMSO-*d*₆.

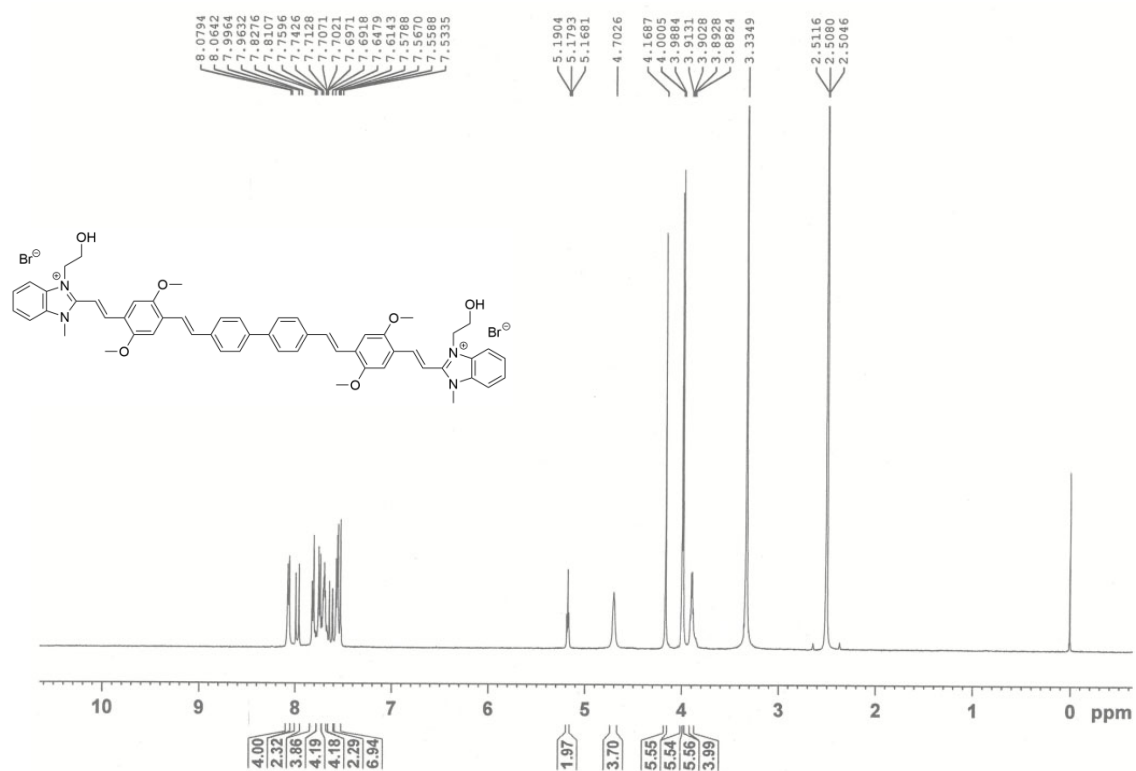


Fig.S5 ¹H NMR spectrum of **BPIIm** in DMSO-*d*₆.

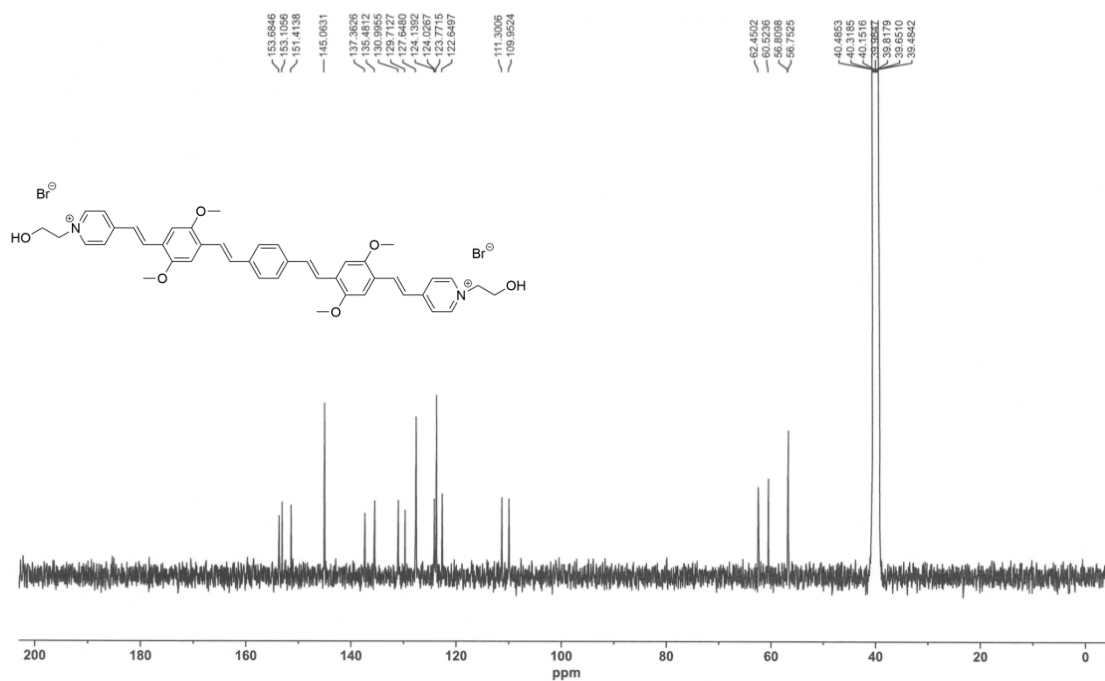


Fig.S6 ^{13}C NMR spectrum of **PPy** in $\text{DMSO-}d_6$.

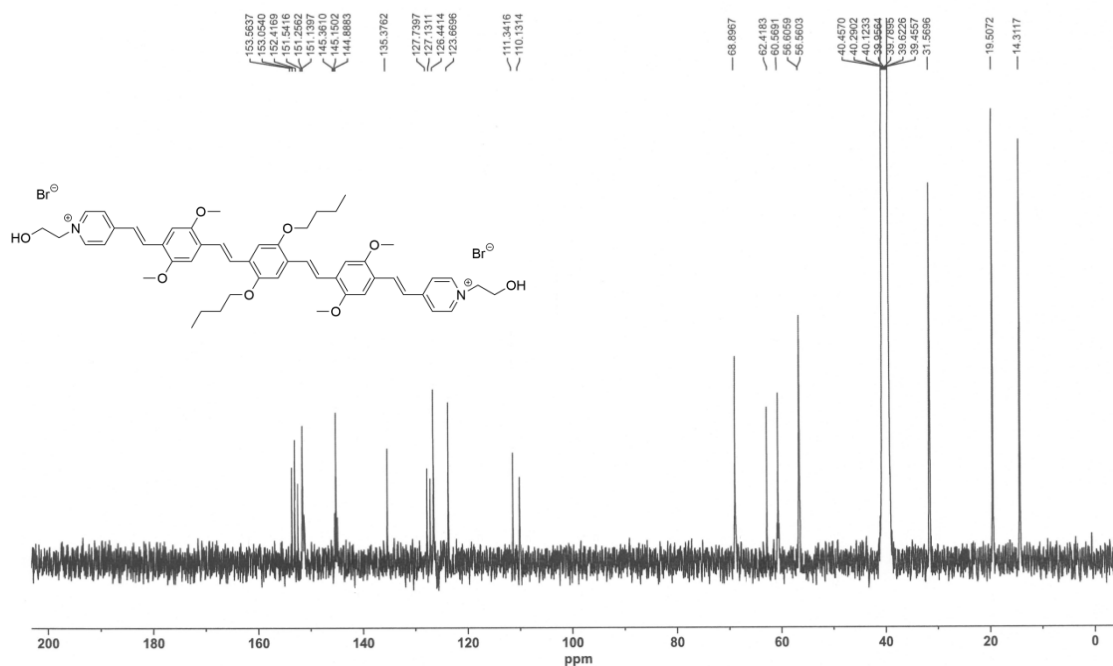


Fig.S7 ^{13}C NMR spectrum of **BOPPy** in $\text{DMSO-}d_6$.

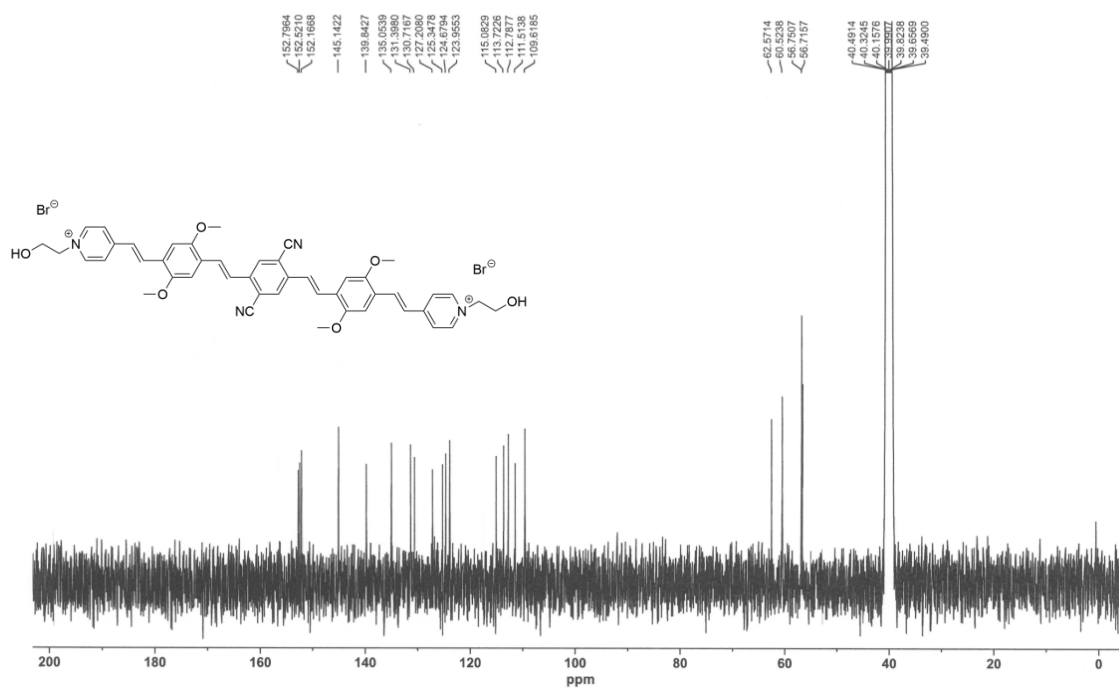


Fig.S8 ^{13}C NMR spectrum of **CNPPy** in $\text{DMSO-}d_6$.

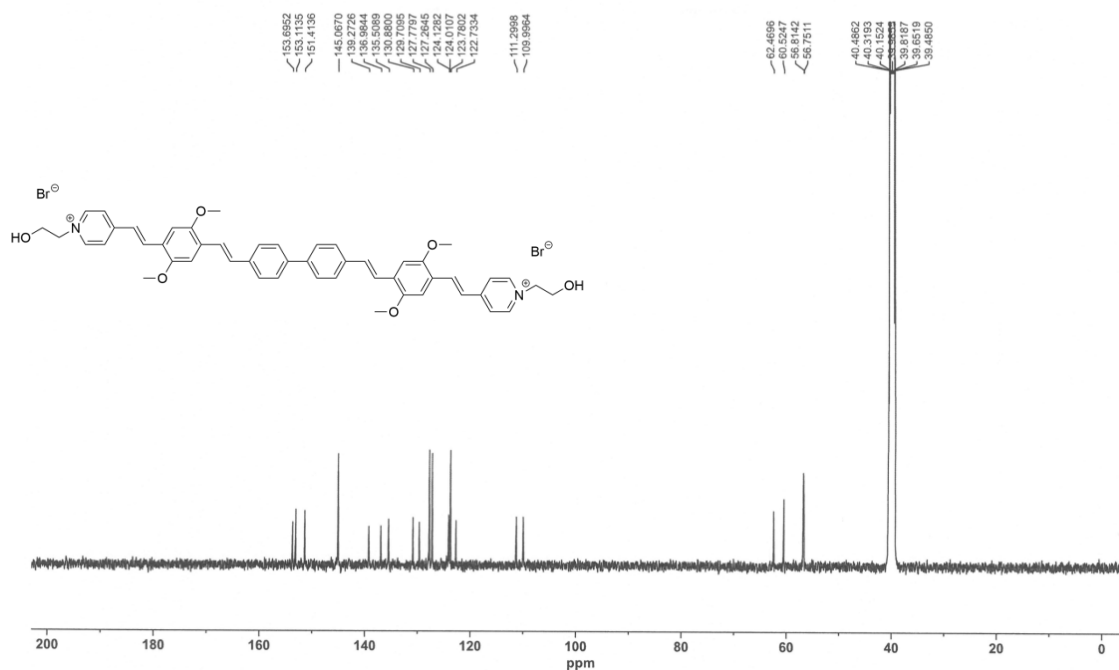


Fig.S9 ^{13}C NMR spectrum of **BPPy** in $\text{DMSO-}d_6$.

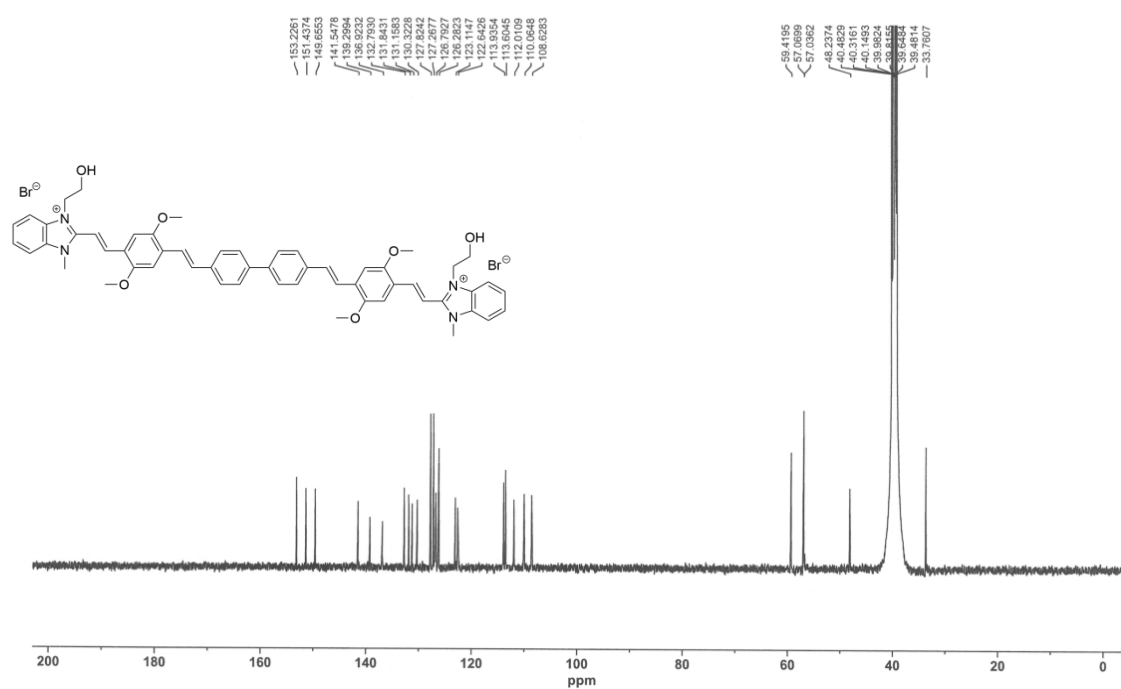


Fig.S10 ^{13}C NMR spectrum of **BPIIm** in DMSO- d_6 .

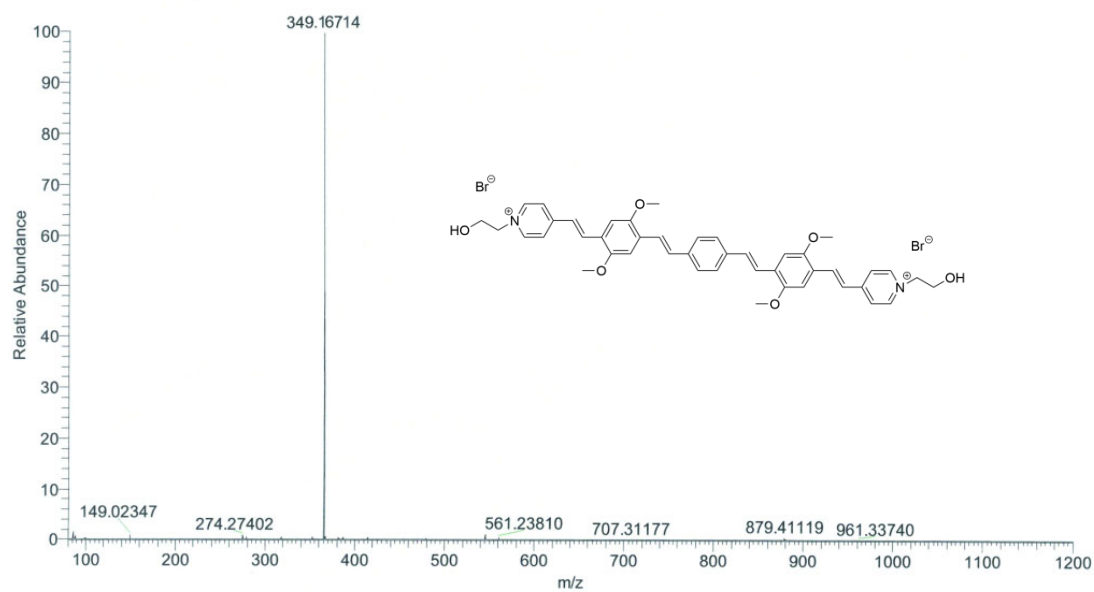


Fig.S11 HRMS spectrum of **PPy**.

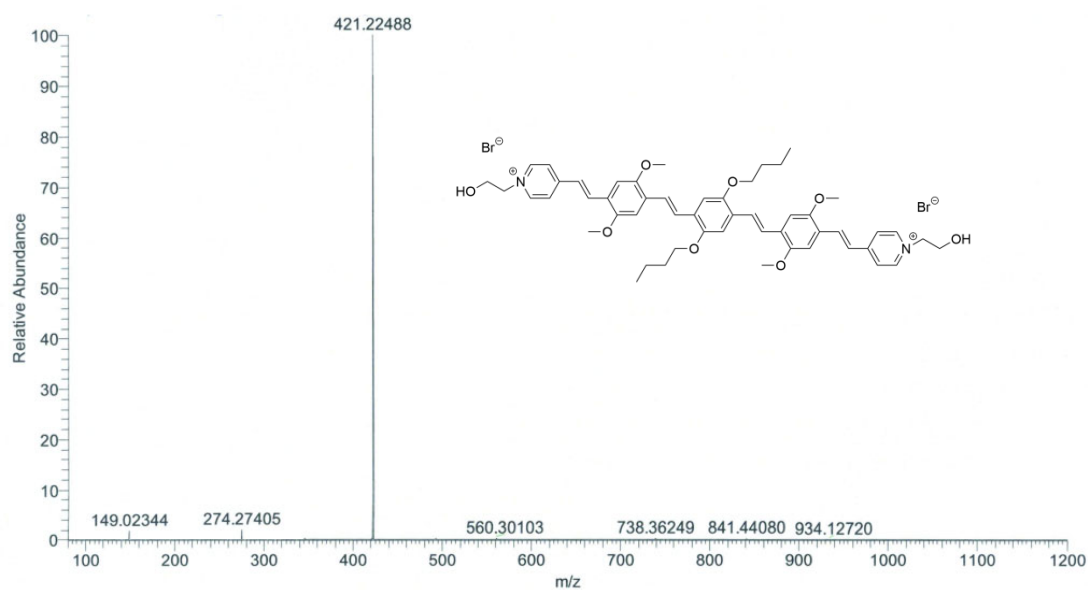


Fig.S12 HRMS spectrum of **BOPPy**.

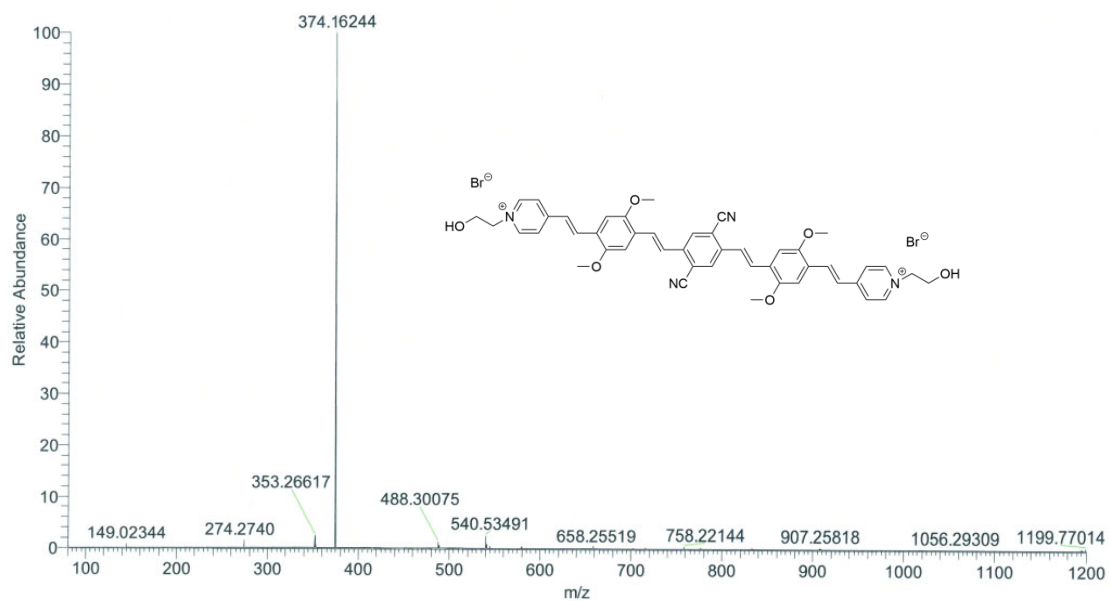


Fig.S13 HRMS spectrum of CNPPy.

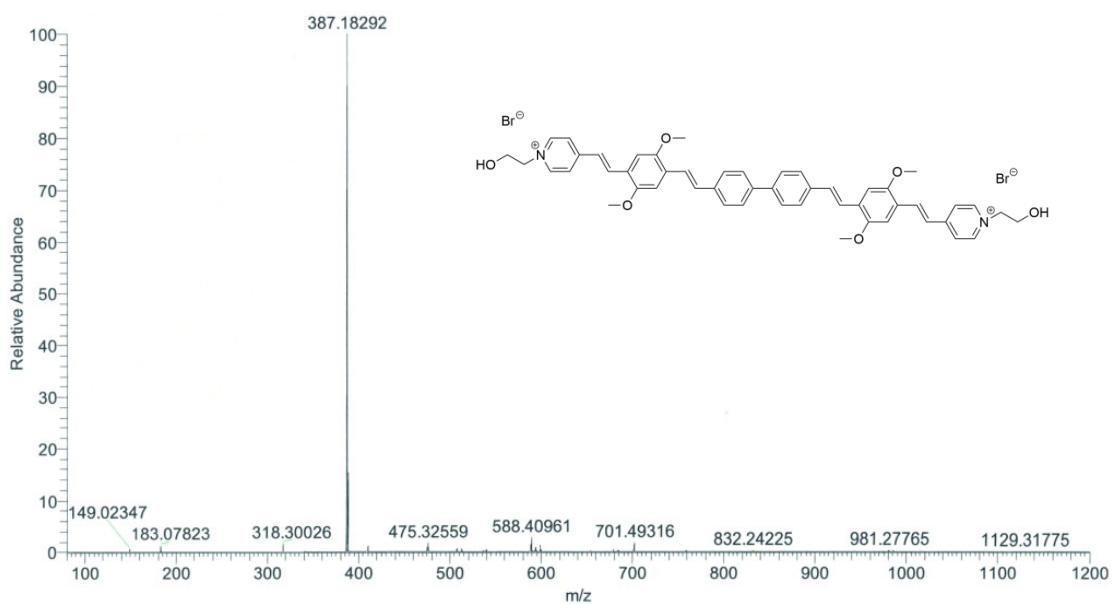


Fig.S14 HRMS spectrum of BPPy.

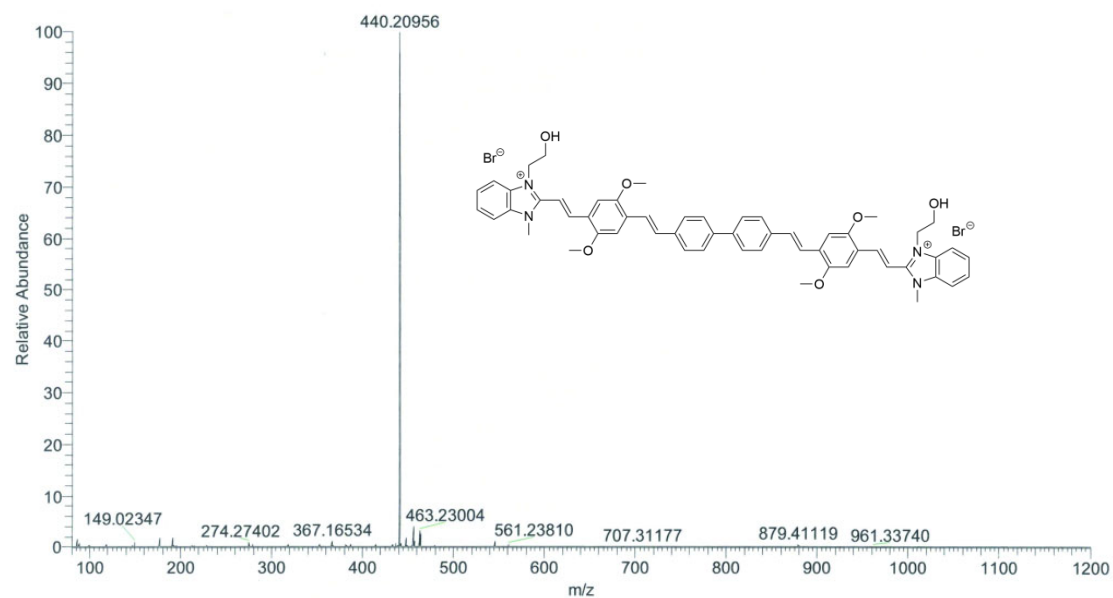


Fig.S15 HRMS spectrum of **BPIIm**.

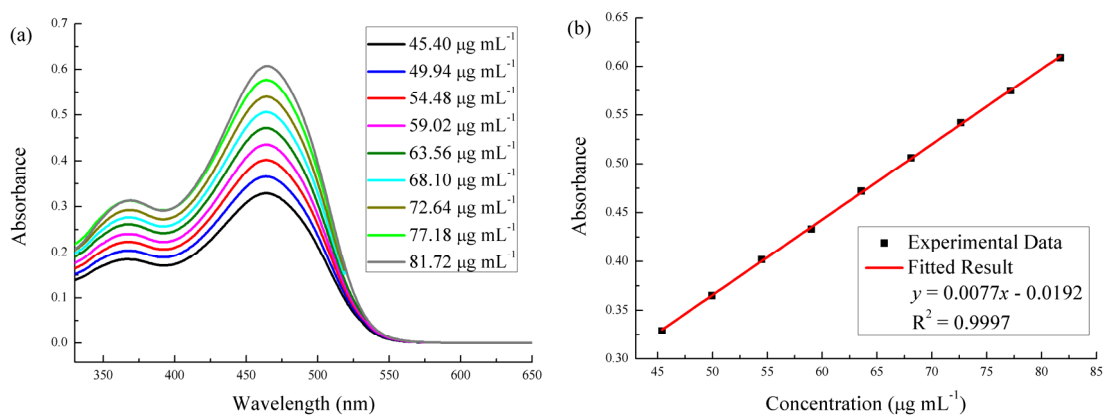


Fig.S16 (a) Linear absorption spectra of **CNPPy** at different concentrations in *n*-octanol saturated with water. (b) Absorbance of **CNPPy** at 465 nm *versus* different mass concentrations.

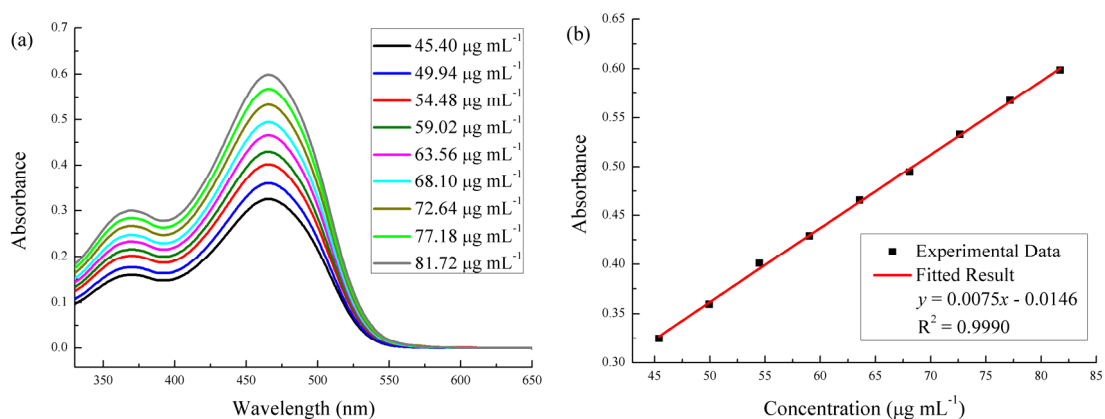


Fig.S17 (a) Linear absorption spectra of **CNPPy** at different concentrations in *n*-octanol saturated with PBS. (b) Absorbance of **CNPPy** at 465 nm *versus* different mass concentrations.

Table S1 Octanol-water partition coefficient of **CNPPy**

Solvent	Entry	A^a	c_o^b $\mu\text{g mL}^{-1}$	c_w^c $\mu\text{g mL}^{-1}$	P^d	$\log P^e$	$\log \bar{P}$
<i>n</i> -octanol/water	1	0.055	9.636	35.764	0.269	-0.570	
	2	0.057	9.896	35.504	0.279	-0.555	-0.560±0.0085
	3	0.057	9.896	35.504	0.279	-0.555	
<i>n</i> -octanol/PBS	1	0.052	8.880	36.520	0.243	-0.614	
	2	0.053	9.013	36.387	0.248	-0.606	-0.614±0.0081
	3	0.051	8.747	36.653	0.239	-0.622	

^a Absorbance in *n*-octanol saturated with water/PBS.^b Mass concentration in *n*-octanol saturated with water/PBS.^c Mass concentration in water/PBS saturated with *n*-octanol.^d Ratio of the sample concentration in the octanol phase to that in the water phase.^e Octanol-water partition coefficient.