

## Supporting Information

Inducing the distinctly different fluorescent properties of a tetraphenylethene (TPE) derivative modified lanthanide nanowire upon the addition of a pair of *cis*- and *trans*- isomers of fatty acids

Jianbin Wu, Songyang Huang, Yan Gao, Jiale Li and Xi Wang\*

*Marine College, Shandong University, Weihai, Weihai 264209, People's Republic of China.*

*E-mail: xi\_wang@sdu.edu.cn*

## Captions

**Fig. S1**  $^1\text{H}$  NMR (400 MHz) of TPE-2COOH in  $\text{DMSO-}d_6$ .

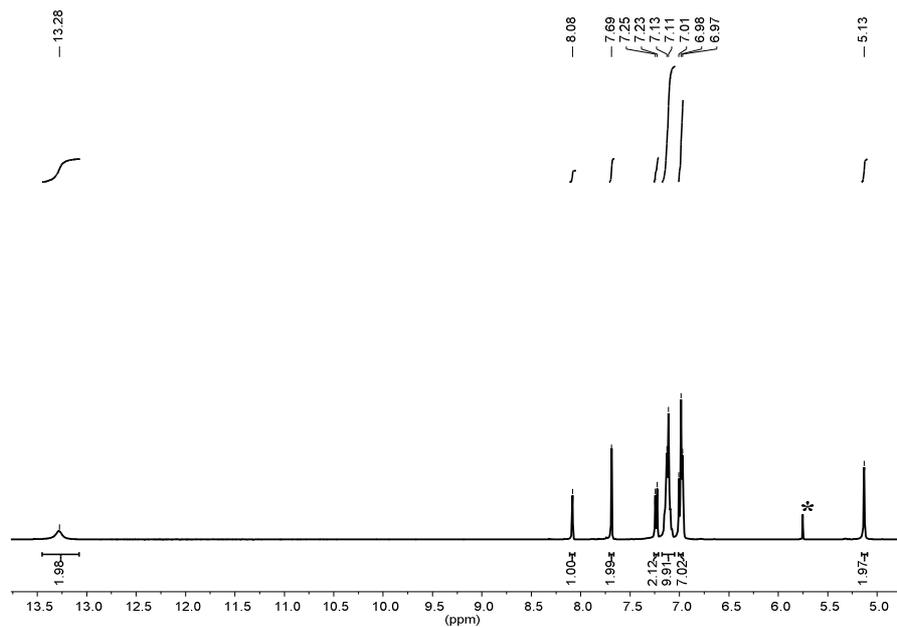
**Fig. S2** MALDI-TOF mass spectrum of TPE-2COOH in absolute alcohol.

**Fig. S3** UV-Vis absorption spectra of TPE-2COOH dissolved in alcohol/water mixtures with different water fractions.

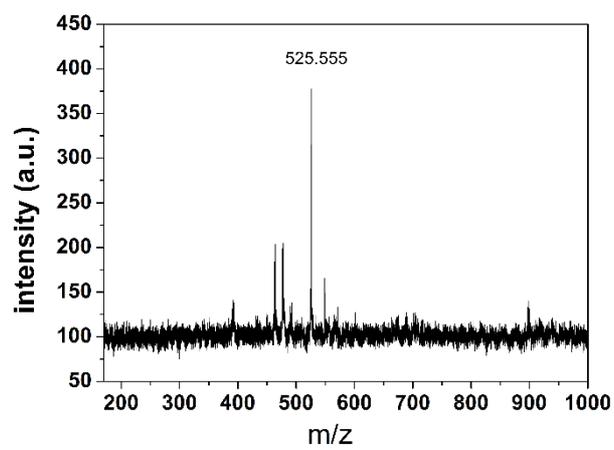
**Fig. S4** XRD and morphology of PSS-capped  $\text{TbPO}_4$  nanowires.

**Fig. S5** Fluorescence of the frozen diluted TPE-2COOH solution ( $1.95 \times 10^{-10}$  mol/L) and TPE-2COOH modified  $\text{TbPO}_4$  nanowires upon addition of oleic acid ( $4.98 \times 10^{-4}$  mol/L) respectively.

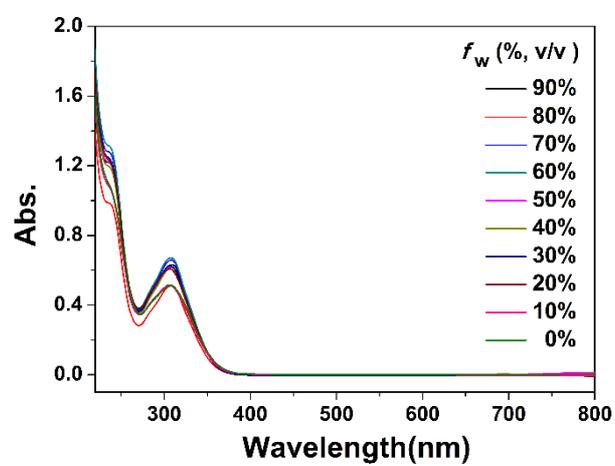
**Fig. S6** Fluorescent spectra of TPE-2COOH modified  $\text{TbPO}_4$  nanowires upon addition of acetic acid (a), butyric acid (b), hexanoic acid (c) and octanoic acid (d) dispersed in absolute alcohol (Inset: Stern-Volmer plots of quenching by different acid respectively).



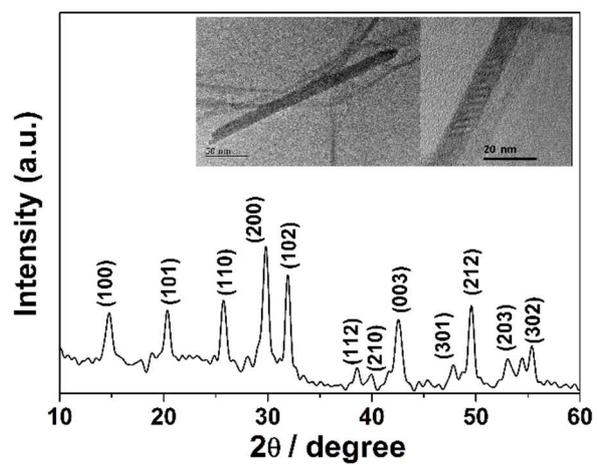
**Fig. S1**  $^1\text{H}$  NMR (400 MHz) of TPE-2COOH in  $\text{DMSO-}d_6$ .



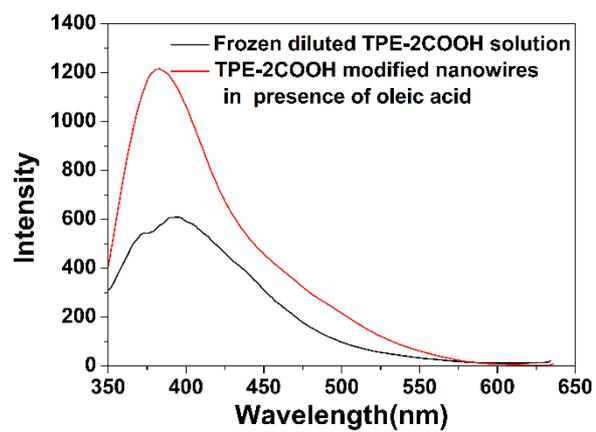
**Fig. S2** MALDI-TOF mass spectrum of TPE-2COOH in absolute alcohol.



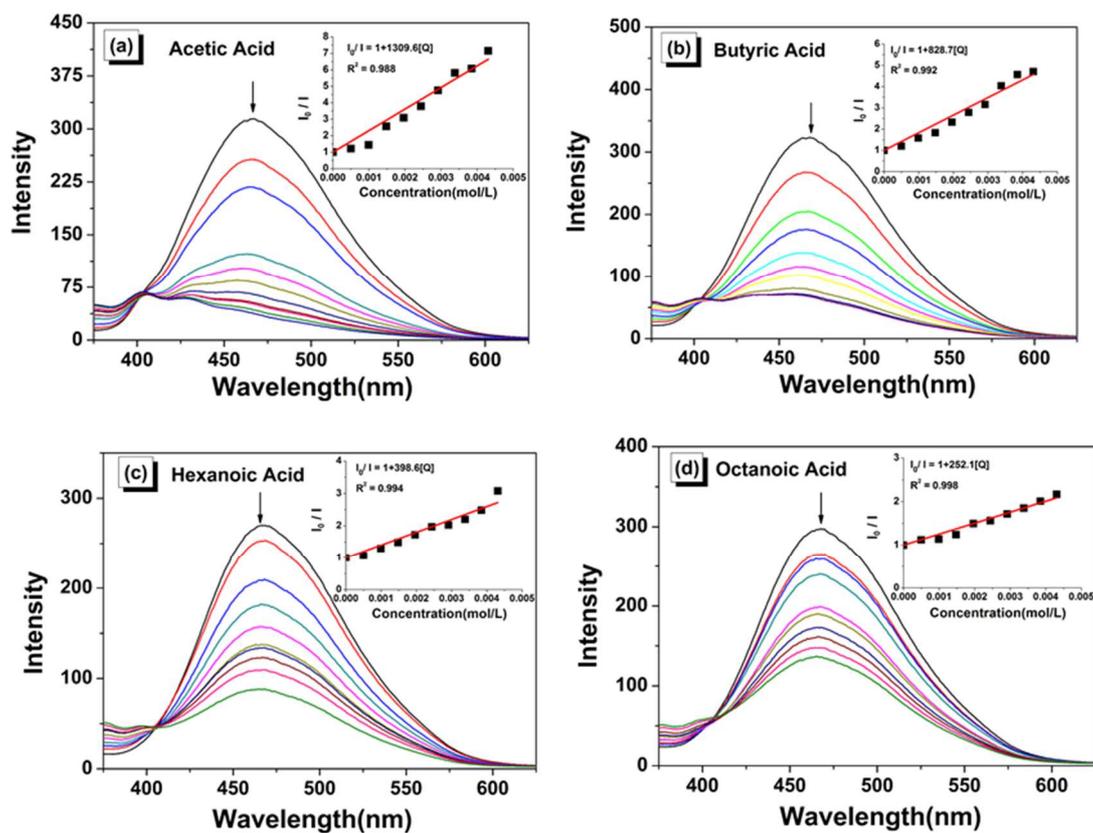
**Fig. S3** UV-Vis absorption spectra of TPE-2COOH dissolved in alcohol/water mixtures with different water fractions.



**Fig. S4** XRD and morphology of PSS-capped TbPO<sub>4</sub> nanowires.



**Fig. S5** Fluorescence of the frozen diluted TPE-2COOH solution ( $1.95 \times 10^{-10}$  mol/L) and TPE-2COOH modified TbPO<sub>4</sub> nanowires upon addition of oleic acid ( $4.98 \times 10^{-4}$  mol/L) respectively.



**Fig. S6** Fluorescence spectra of TPE-2COOH modified TbPO<sub>4</sub> nanowires upon addition of acetic acid (a), butyric acid (b), hexanoic acid (c) and octanoic acid (d) dispersed in absolute alcohol (Inset: Stern-Volmer plots of quenching by different acid respectively).