

## **A dicyanoisophorone-based highly sensitive and selective nearinfrared fluorescent probe for sensing thiophenol in water samples and living cells**

**Yuanqiang Hao**

Henan Key Laboratory of Biomolecular Recognition and Sensing, College of Chemistry and Chemical Engineering, (Shangqiu Normal University, Shangqiu, China)

### **Abstract**

Thiophenol (C<sub>6</sub>H<sub>5</sub>SH, PhSH) is a widely used aromatic organosulfur in organic synthesis and in industrial chemistry. Therefore, facile and effective detection of this irritant and toxic compound is highly desired for environmental monitoring and assessment. Herein, we reported a novel nearinfrared (NIR) probe (1) for fluorescence turn-on detection of PhSH. The probe was obtained by coupling 2, 4-dinitrophenyl (DNP) to a hydroxy-substituted dicyanoisophorone based D- $\pi$ -A fluorophore. PhSH can specifically mediated a nucleophilic aromatic substitution (S<sub>N</sub>Ar) reaction with probe 1 to release the D- $\pi$ -A fluorophore, thus achieving a dramatic turn-on NIR fluorescence response (~200 fold,  $\lambda_{em}$ =693 nm) and a dramatic colour change of the probe solution from red ( $\lambda_{abs}$ =524 nm) to blueness ( $\lambda_{abs}$ =668 nm). This fluorescent assay based on probe 1 displayed a large Stokes shift (~133 nm) and a high sensitivity for PhSH sensing with a low detection limit of 34 nM. Moreover, probe 1 was successfully applied to monitor PhSH in real water samples as well as imaging PhSH in living cells.

### **Biography:-**

Yuanqiang Hao has completed his PhD at the age of 29 years from Central South University. He is currently an associate professor at Shangqiu Normal University. He has published more than 30 papers in reputed journals.

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