

Electronic Supporting Information

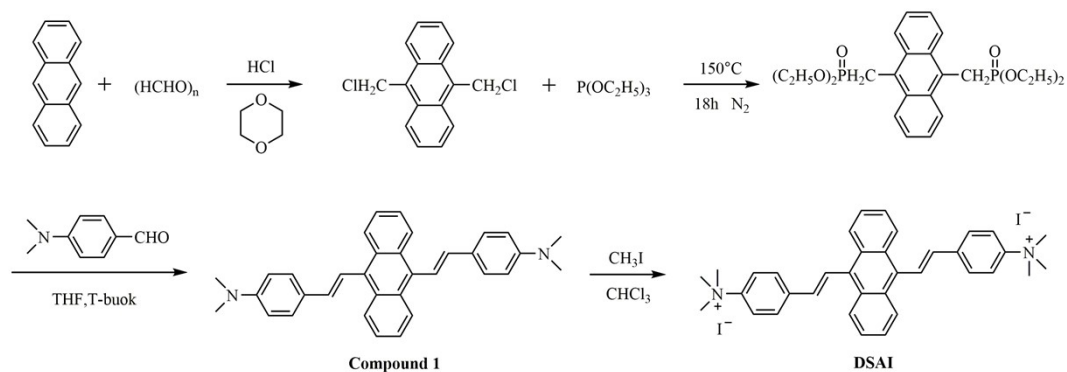
A Cationic On-Off Fluorescent Sensor with AIE Property for Heparin and Protamine Detection

Author

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Scheme. S1 Synthetic route of DSAI molecule.

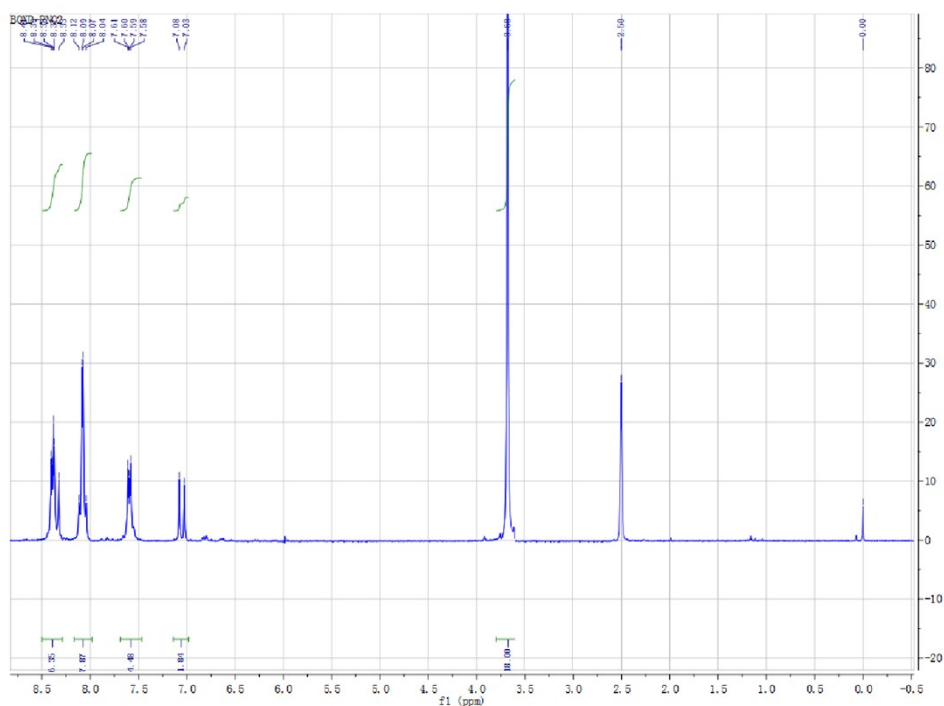


Fig. S1 ¹H NMR spectrum (300MHz, DMSO-d₆) of DSAI.

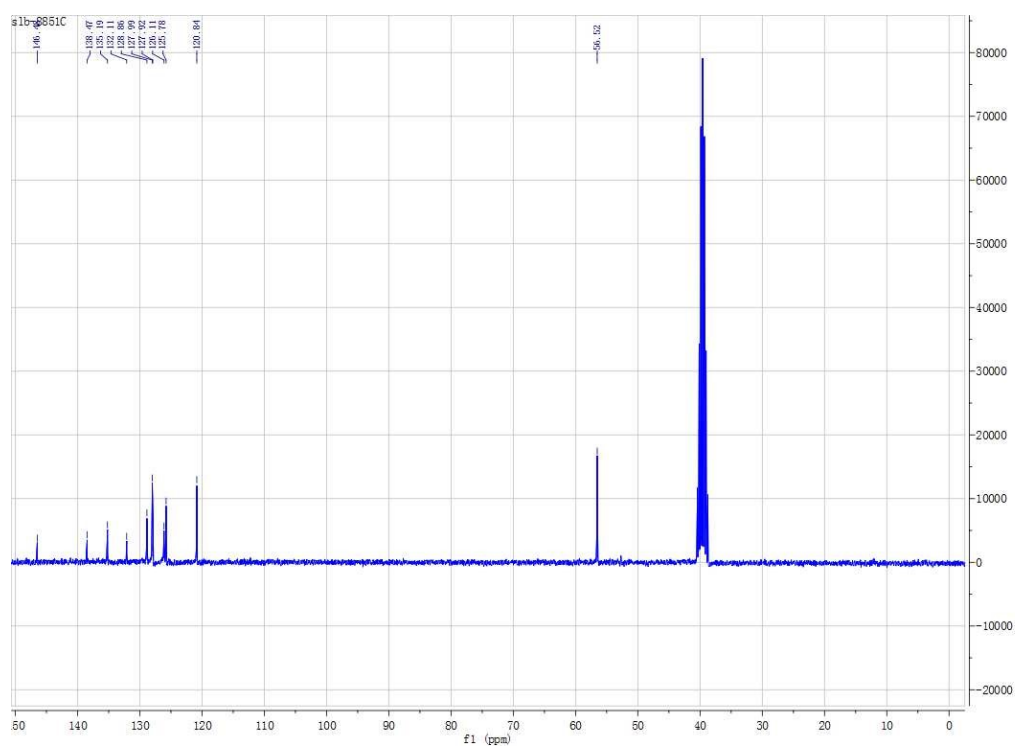


Fig. S2 ¹³C NMR spectrum (75MHz, DMSO-d₆) of DSAI.

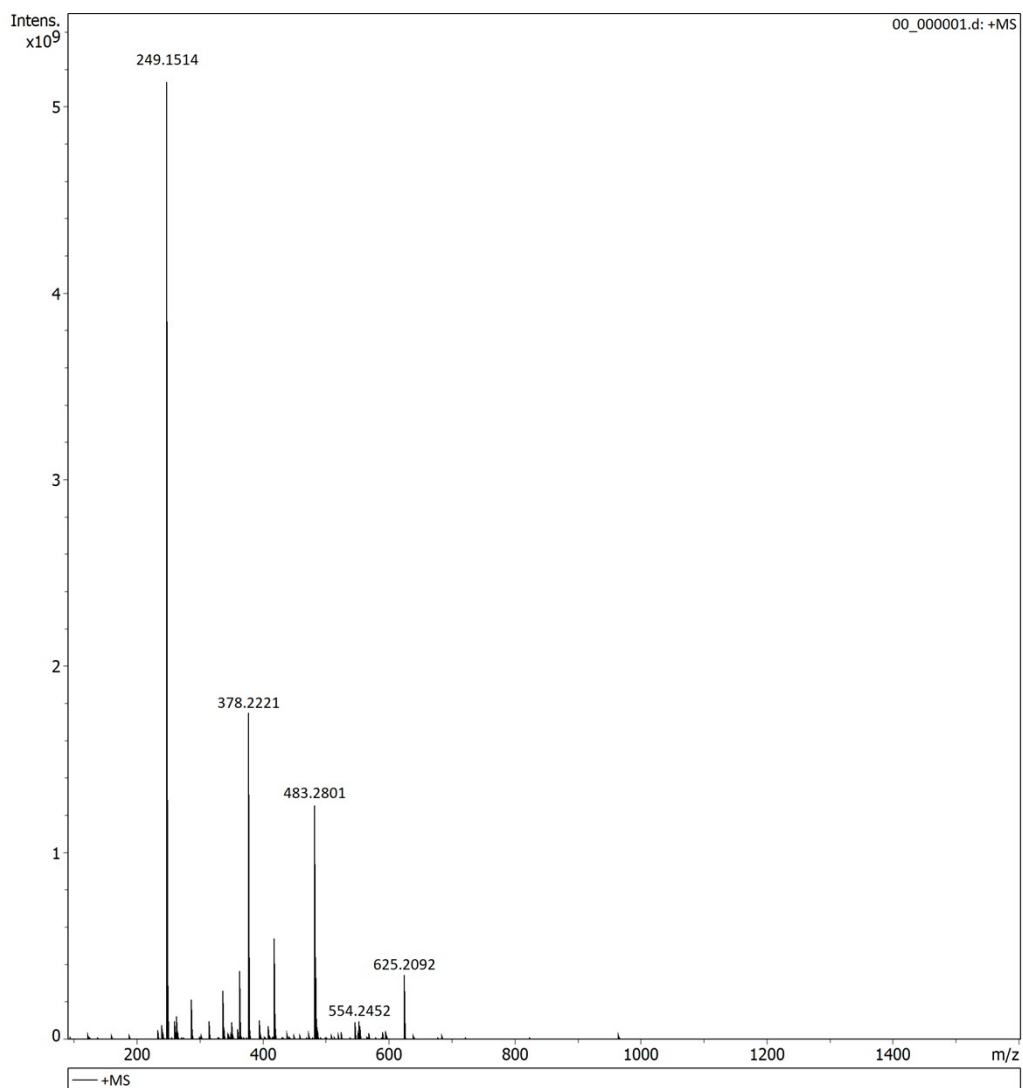


Fig. S3 High resolution mass spectrum of DSAI.

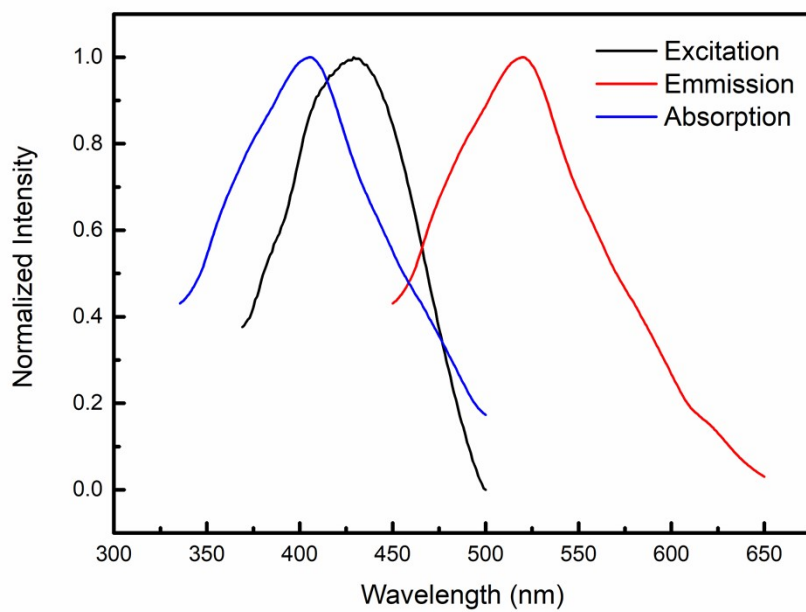


Fig. S4 Absorption, excitation, emission spectra of Compound 1.

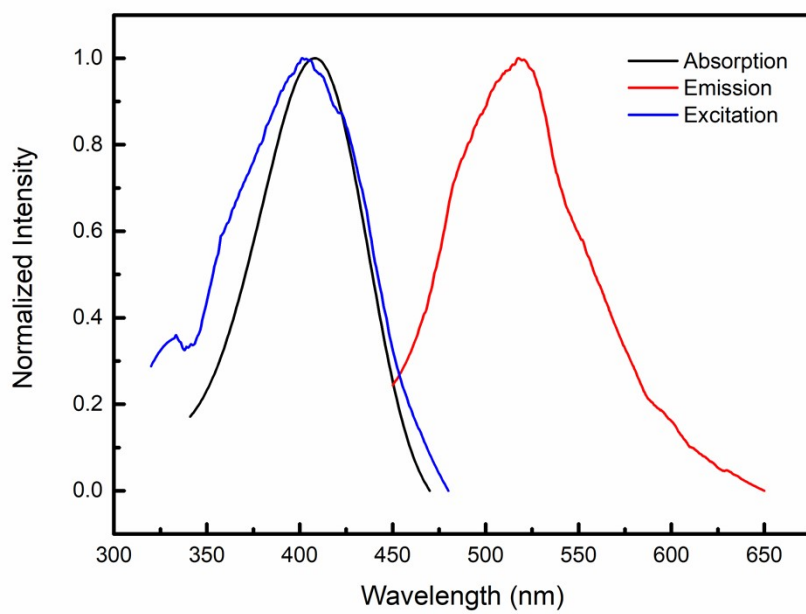


Fig. S5 Absorption, excitation, emission spectra of DSAI.

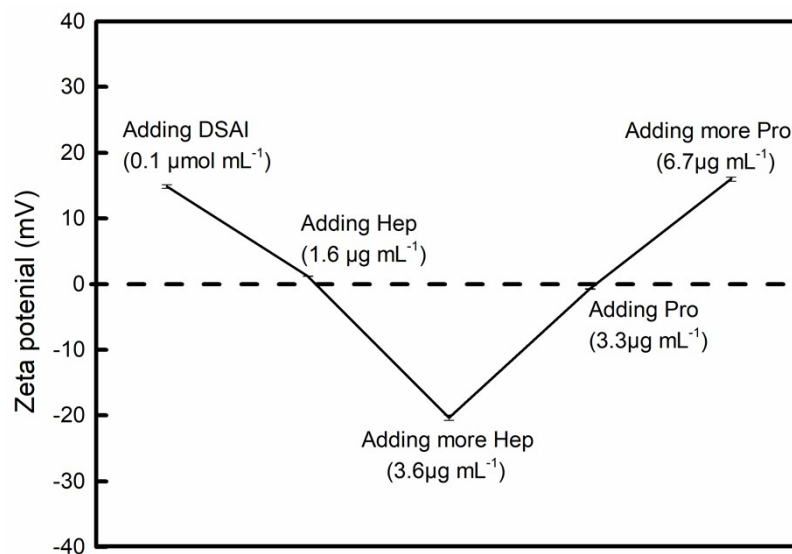


Fig. S6 Changes in zeta potential with the addition of heparin and protamine.

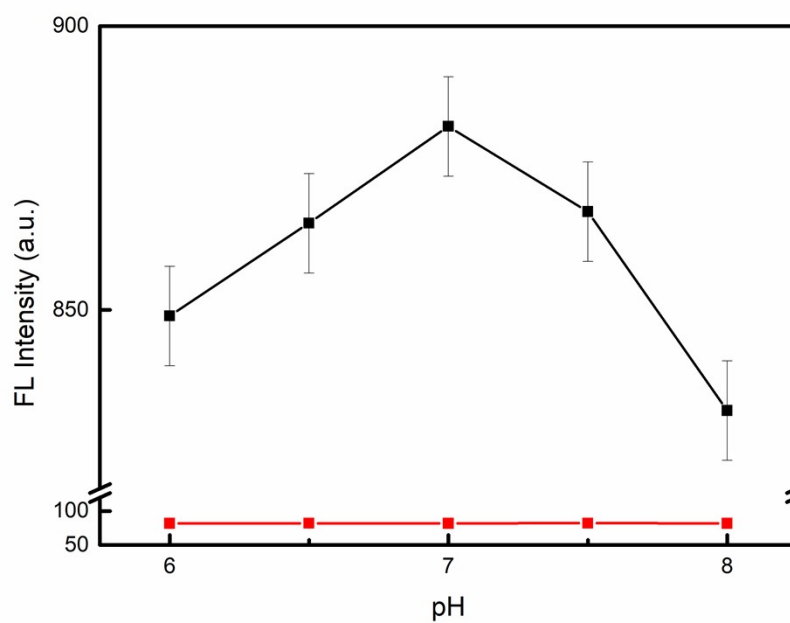


Fig. S7 The effect of pH on the fluorescence intensity, in 0.2 M phosphate buffer solution with 8 μL DSAI methanol solution (0.1 mmol L^{-1}) and $84 \mu\text{g mL}^{-1}$ heparin, $\lambda_{\text{ex}}=408 \text{ nm}$, $\lambda_{\text{em}}=519 \text{ nm}$.

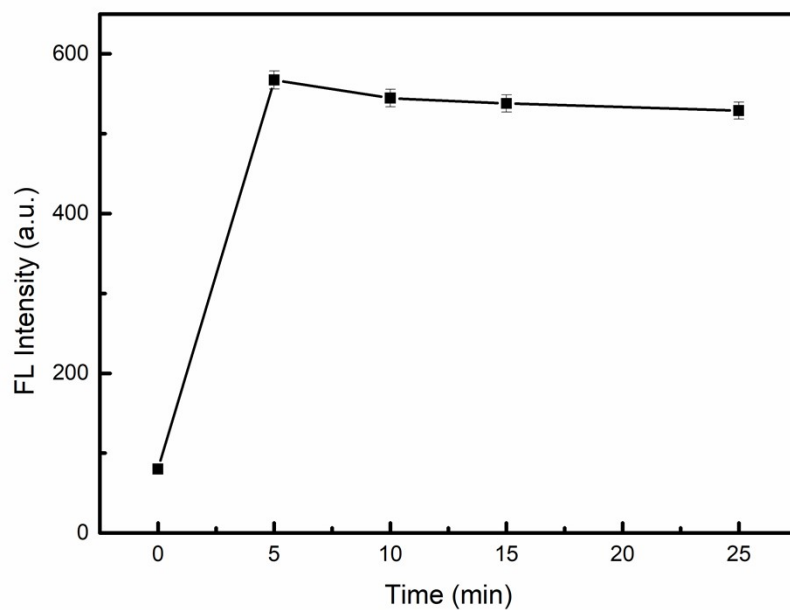


Fig. S8 The effect of reaction time on the fluorescence intensity, in 0.2 M phosphate buffer solution at pH 7.0 with 8 μL DSAI methanol solution (0.1 mmol L^{-1}) and $12 \mu\text{g mL}^{-1}$ heparin, $\lambda_{\text{ex}}=408 \text{ nm}$, $\lambda_{\text{em}}=519 \text{ nm}$.

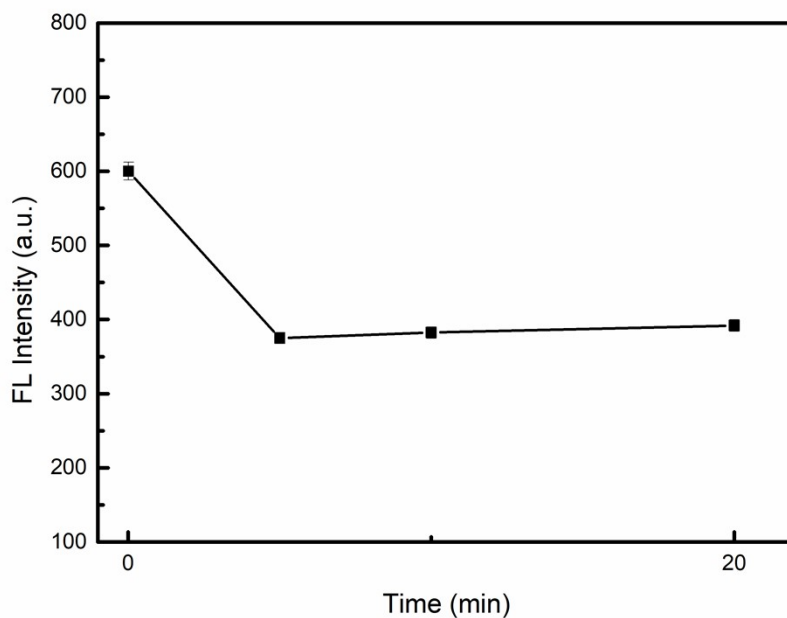


Fig. S9 The effect of reaction time on the fluorescence intensity, in 0.2 M phosphate buffer solution at pH 7.0 with 8 μL DSAI methanol solution (0.1 mmol L^{-1}), $12 \mu\text{g mL}^{-1}$ heparin and $5 \mu\text{g mL}^{-1}$ protamine, $\lambda_{\text{ex}}=408 \text{ nm}$, $\lambda_{\text{em}}=519 \text{ nm}$.

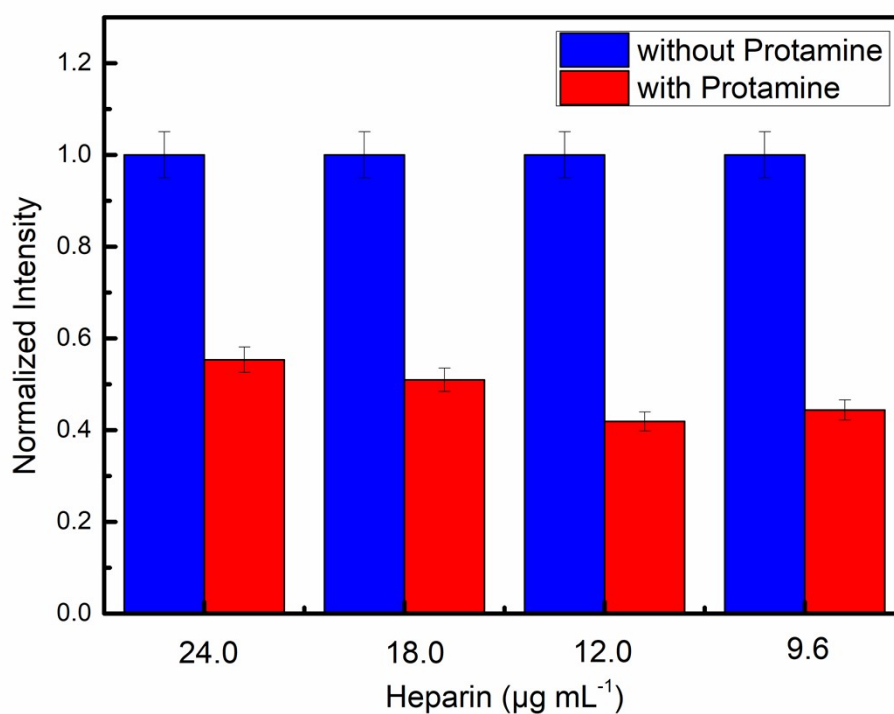


Fig. S10 The fluorescence of DSAI/Hep complex with different concentrations (24.0 $\mu\text{g mL}^{-1}$; 18.0 $\mu\text{g mL}^{-1}$; 12.0 $\mu\text{g mL}^{-1}$, 9.6 $\mu\text{g mL}^{-1}$) is quenched to varying degrees (0.45, 0.49, 0.58, 0.56) with excess protamine (100 $\mu\text{g mL}^{-1}$).

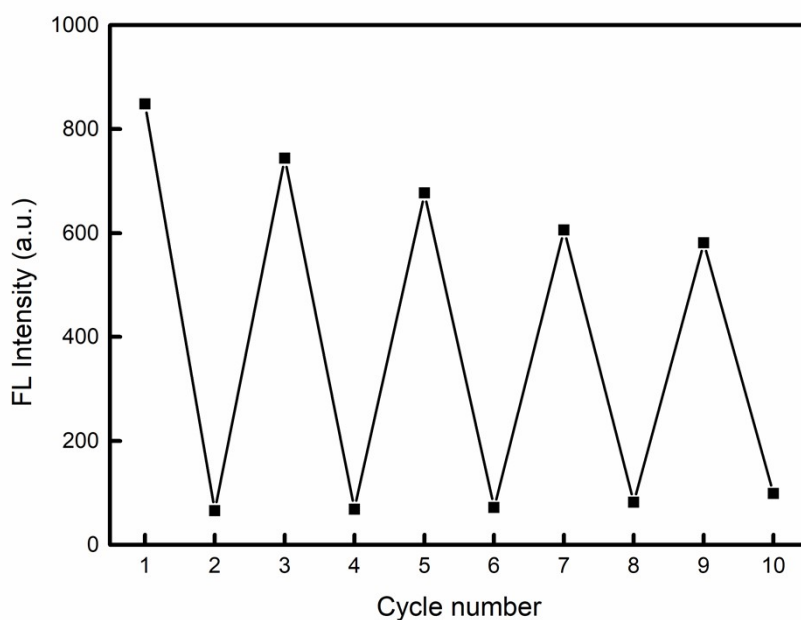


Fig. S11 The repeatability of the sensor to detect protamine and heparin. The concentration of heparin and protamine were 60 $\mu\text{g mL}^{-1}$ and 50 $\mu\text{g mL}^{-1}$.

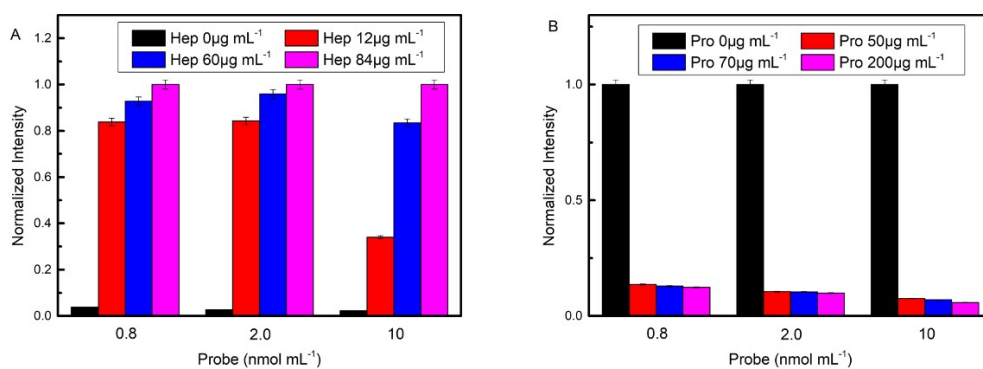


Fig. S12 (A) Detect different large concentrations of heparin under different concentrations of probes. (B) Detect different large concentrations of protamine under different concentrations of probes. The concentration of heparin was $60 \mu\text{g mL}^{-1}$.

Table S1 Recovery tests of DSAI/Hep complex in 3% goat serum.

Entry	Added ($\mu\text{g mL}^{-1}$)	Founded ($\mu\text{g mL}^{-1}$, n = 3)	Mean Recovery (%)	RSD (%)
1	0.36	0.36 ± 0.02	101	1.06
2	0.48	0.48 ± 0.02	99	1.28
3	0.60	0.60 ± 0.02	100	1.54
4	0.72	0.74 ± 0.03	103	1.96

Table S2 Recovery tests of DSAI/Hep/Pro complex in 3% goat serum.

Entry	Added ($\mu\text{g mL}^{-1}$)	Founded ($\mu\text{g mL}^{-1}$ n = 3)	Mean Recovery (%)	RSD (%)
1	0.50	0.50 ± 0.02	100	1.46
2	0.70	0.70 ± 0.03	100	1.77
3	0.80	0.78 ± 0.04	98	2.27
4	1.00	1.05 ± 0.05	105	4.16