Supporting Information

One-step sensitive thrombin detection based on a nanofibrous sensing platform

Xiaoling Li[†], Yuyang Wu[†], Jingjing Niu[†], Dagang Jiang[†], Dan Xiao[†], Cuisong Zhou[†]*

[†]College of Chemistry, Sichuan University, Chengdu 610064, P. R. China

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Native PAGE analysis of CHA amplification process

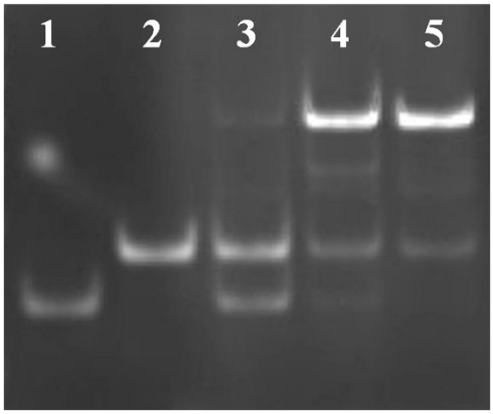

Fig. S1 Native PAGE analysis of CHA amplification. Lane 1: H1; Lane 2: H2; Lane 3: the mixture of H1 and H2; Lane 4: the mixture of H1, H2 and O; Lane 5: anneal of H1 and H2. The concentration of H1, H2 and O are 500 nM, 500 nM and 50 nM, respectively. The reaction time is 100 min at 25 ℃.

The fluorescence responses of the nanofibrous membranes

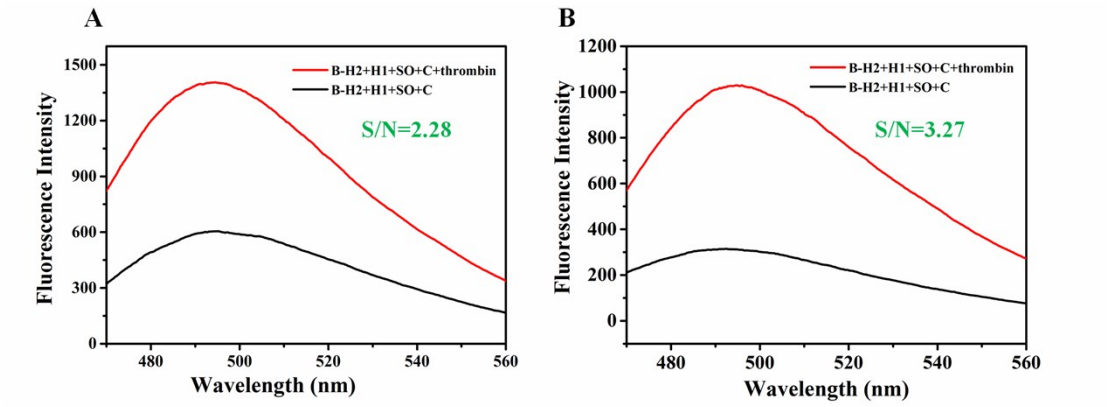

Fig. S2 The fluorescence responses of the nanofibrous membranes with (A) no-washing and (B) washing. The concentration of thrombin was 10 nM.

Optimization of detection system

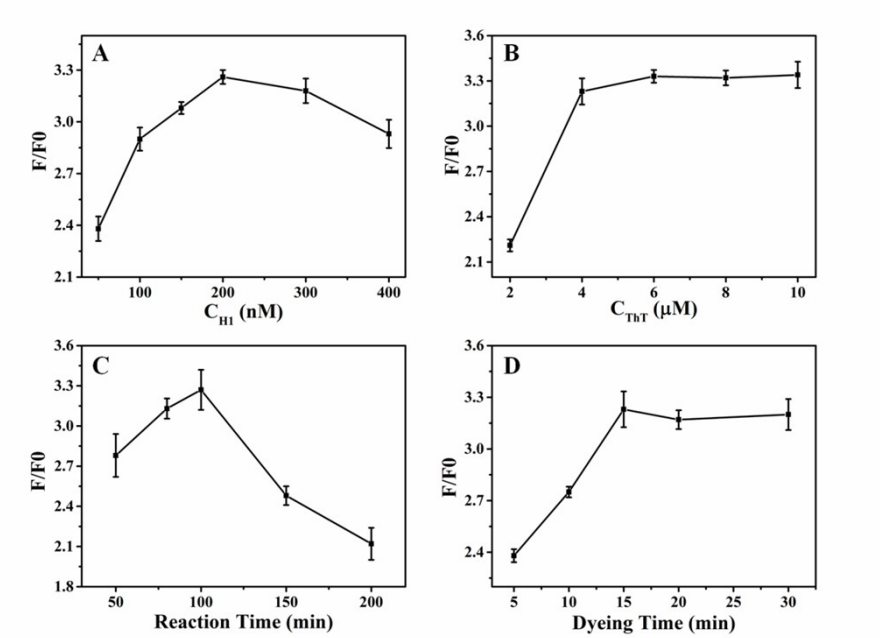

Fig. S3 Effects of various conditions on the signal-to-backgroud response of the nanofibrous membrane. (A) the concentration of H1, (B) the concentration of ThT, (C) reaction time and (D) dyeing time. F and F_0 refer to the response fluorescence intensity of 10 nM thrombin and 0 nM thrombin, respectively.

Comparison of multistep with one-step enzyme-free thrombin detection approaches

Table S1 Comparison of multistep with one-step enzyme-free thrombin detection approaches

detection step	sensing interface	analytical method	detection time	linear range	detection limit	ref
multistep	magnetic electrode	ECL	14 h	1.0 pM – 5.0 nM	0.12 pM	42
multistep	gold electrode	electrochemistry	120 min	10 pM – 50 nM	5.6 pM	5
multistep	gold electrode	electrochemistry	90 min	2 pM –20 nM	0.76 pM	43
multistep	PS-PSMA nanofibers	fluorescence	90 min	100 pM – 50 nM	10 pM	14
multistep	PSMA nanofibers	fluorescence	60 min	50 pM – 20 nM	42 pM	15
multistep	solution	colorimetric	7 h	2.5 pM – 2.5 nM	1.9 pM	7
one step	solution	FRET	40 min	0.05 pM – 200 pM	0.05 pM	24
one step	solution	fluorescence	35 min	2 nM – 20 nM	2.0 nM	44
one step	solution	FCCS	30 min	–	0.8 nM	22
one step	solution	fluorescence	30 min	0.3 nM – 11.1 nM	97 pM	23
one step	PS nanofibers	fluorescence	100 min	50 pM – 5 nM	1.0 pM	this work

PS, PSMA, ECL, FRET and FCCS refers to polystyrene, poly(styrene-co-maleic acid), electrochemiluminescence, fluorescence resonance energy transferand and fluorescence crosscorrelation spectroscopy, respectively.