Electronic Supplementary Information

A Microfluidic Chip Electrophoresis Strategy for Simultaneous Label-free Multi-Protein Detection Based on Graphene Energy Transfer Biosensor

Fengming LIN[a], Xiaochao ZHAO[a], Jianshe WANG[a], Shiyong YU[a], Yulin DENG[a], Lina GENG*[a], HuanJun LI*

Experimental evidence

1. The AFM analysis of GO used in the experiment

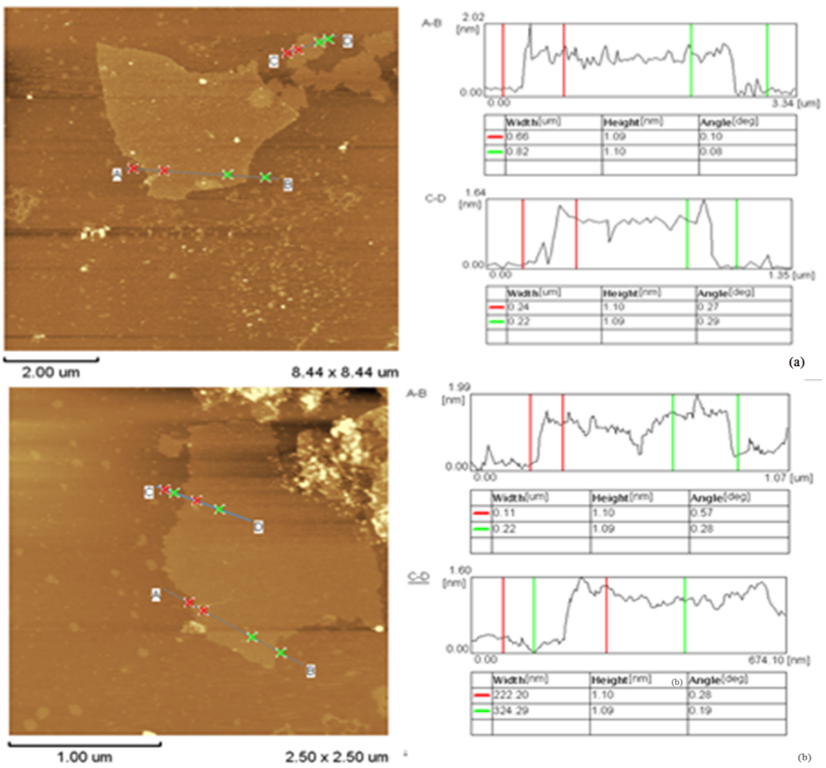


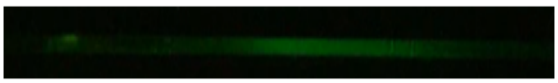
Figure 1 The AFM graph of different GO

2. The optimization of the ratio of GO and aptamer

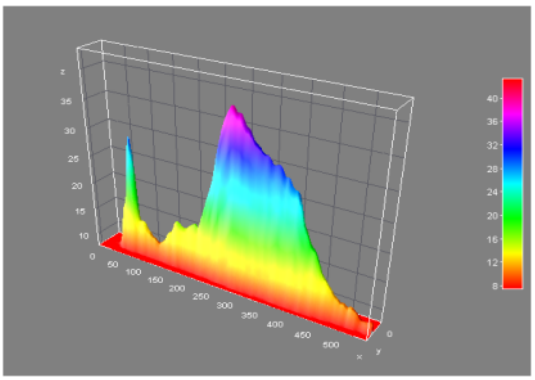
The experiment was carried out by comparing different ratio of GO and aptamer in mixture (The concentration of GO is 0.3mg/mL, 2μM aptamer targeting thrombin, 10μM aptamer targeting cytochrome c and 10μM aptamer targeting lysozyme). The optimal ratio of GO and aptamer () was chosen with the high gray value of the fluorescent peaks in electropherograms.

Ratio		2:1:1:1	1:1:1:1	2:3:3:3	1:2:2:2	1:3:3:3
Gray value of peaks in CE graphy	thrombin	0	10	25	38	40
	Cyto C	0	5	10	16	16
	lysozyme	0	5	11	17	18

3.The separation result of simple protein mixture with 1D IEF chip electrophoresis



(a)



(b)

Figure 2. (a) Fluorescent separation images using IEF; (b) the 3D plot spectrum of (a).