Supporting Information for

One Step Quick Detection of Cancer Cell Surface Marker by Integrated NiFe-based Magnetic Biosensing Cell Cultural Chip

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Fig. S1 The FT-IR spectra of different samples: (A) Fe₃O₄ nano-particles; (B) Chitosan; (C) Fe₃O₄@chitosan), respectively.

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Fig. S2 SEM image of Fe₃O₄@chitosan nanoparticles.

Fig. S3 SEM and EDS measurements of sputtered NiFe thin films.

Fig. S4 The magnetization curve and domain structure photo of the sputtered NiFe film. The hysteresis loop of the sputtered NiFe thin films shows nearly null coercivity and remanence. The domain structure of sputtered films shows the uniform transverse anisotropy.
Fig. S5  DC voltage response of the NiFe/Cu/NiFe array at the different measuring current from 0-500 mA; In the current range of 340-420 mA, an increasing and decreasing output voltage shows very small deviations maybe due to the Joule contribution in the sensing element that generated by the measuring current and the inhomogeneous magnetic structure of NiFe film. In future work, we will use $U-I$ response instead of GMI ratio ($Z-H$) to express the sensitivity of NiFe sensor to cell samples. It is easier to gather, store and display the U-I data using IC chip, MCU and LED screen.