Supporting information

New method to amplify colorimetric signals of paper-based nanobiosensors for simple and sensitive pancreatic cancer biomarker detection

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Materials and Chemicals

SU-8 was obtained from MicroChem, while PEAK 1 recombinant protein and Anti PEAK1 were obtained from MyBiosource Inc. Whatman #1 Chromatography paper, AuNPs with 20 nm diameters, hydroxy naphthol blue, phosphate-buffered saline, $NaBH_4$, and bovine serum albumin were purchased from Sigma and used as received. All of the solutions were prepared with ultrapure Milli-Q water (18.2 M Ω cm) from a Millipore Milli-Q system.

Preparation of AuNPs-tagged Anti PEAK1 Bioprobes

Bioconjugation of AuNPs to Anti PEAK1 was carried out through a simple physisorption method. Briefly, AuNPs-tagged Anti PEAK1 were synthesized by adding 10 μL of 20 μg/mL Anti PEAK1 solution in 0.01 M phosphate-buffered saline (PBS, pH 7.2) to 100 μΛ οφ 20 νμ διαμετερ AuNPs solution in PBS, followed by gentle mixing at 4 ^{o}C for 12 h. After mixing and centrifugation, the obtained AuNPs-tagged Anti PEAK1 was incubated with 0.5% bovine serum albumin (BSA) to block any possible remaining active sites to avoid any non-specific absorption. The prepared AuNPs-tagged Anti PEAK1 bioprobes were stored at 4 ^{o}C until use.

Data Analysis

Once an image of the paper-based detection zones was captured, average brightness of each detection zone was measured using the ImageJ software, distributed for free by NIH (http://rsb.info.nih.gov/ij/download.html). RGB images can be converted to the gray scale using the formula gray = (red + green + blue) / 3. The display range in ImageJ from minimum to maximum is scaled from 0 to 255 (8-bit). The brighter, the higher gray value is.

Figure S1.

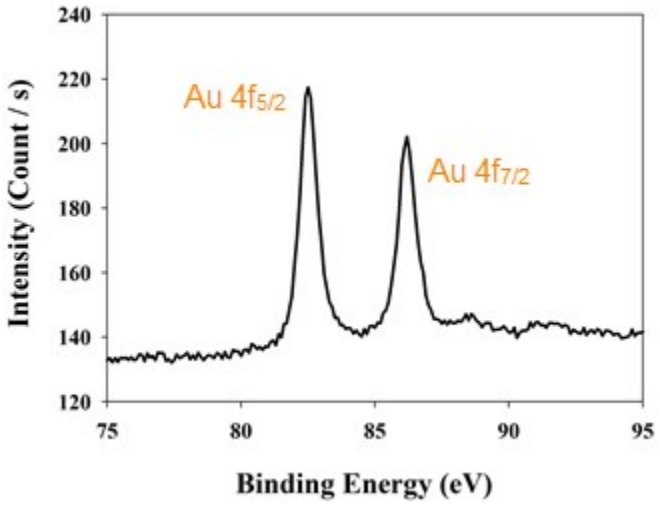

Figure S1. Deconvoluted Au 4f XPS spectra for the immunosensor.