

Supplementary information

2.1. Materials.

Fe₃O₄ MNPs modified with amino groups (TANBead[®] USPIO-101) with particle sizes of 6~10 nm and concentrations of 10 mg/ml (1.4×10^{16} MNPs/ml) were obtained from Tanbead. The MNP surface was further reacted with a cross-linker, sulfosuccinimidyl 4-(N-maleimidomethyl) cyclohexane-1-carboxylate (sulfo- SMCC, Thermo scientific Prod# 22322). Modified oligonucleotides were purchased from Proligo. The oligonucleotide sequences are listed in Table S1.

Fig. S1 (a) Fabrication process of gold nanoslits (nanoimprinting lithography), (b) SEM image of gold nanoslits.

Figure S2 Control tests. (a) An MNP suspension that was not incubated with the target molecule (blank sample) is introduced to the SPR chip. The dynamic SPR response is shown. No shift in the SPR spectrum position was observed within 30 minutes after introduction of the sample. (b) Seven microliters of 10 μ M non-complementary target was mixed with 7 μ l of MNP suspension and allowed to react for 30 minutes. MNPs were isolated and introduced to the SPR chip. A 0.7 ± 0.14 nm shift in the SPR spectrum position was observed after the introduction of MNPs carrying a non-complementary target molecule.

Table S1 Sequences of probes, synthetic target, non-complementary targets and primers for PCR.

Figure S1

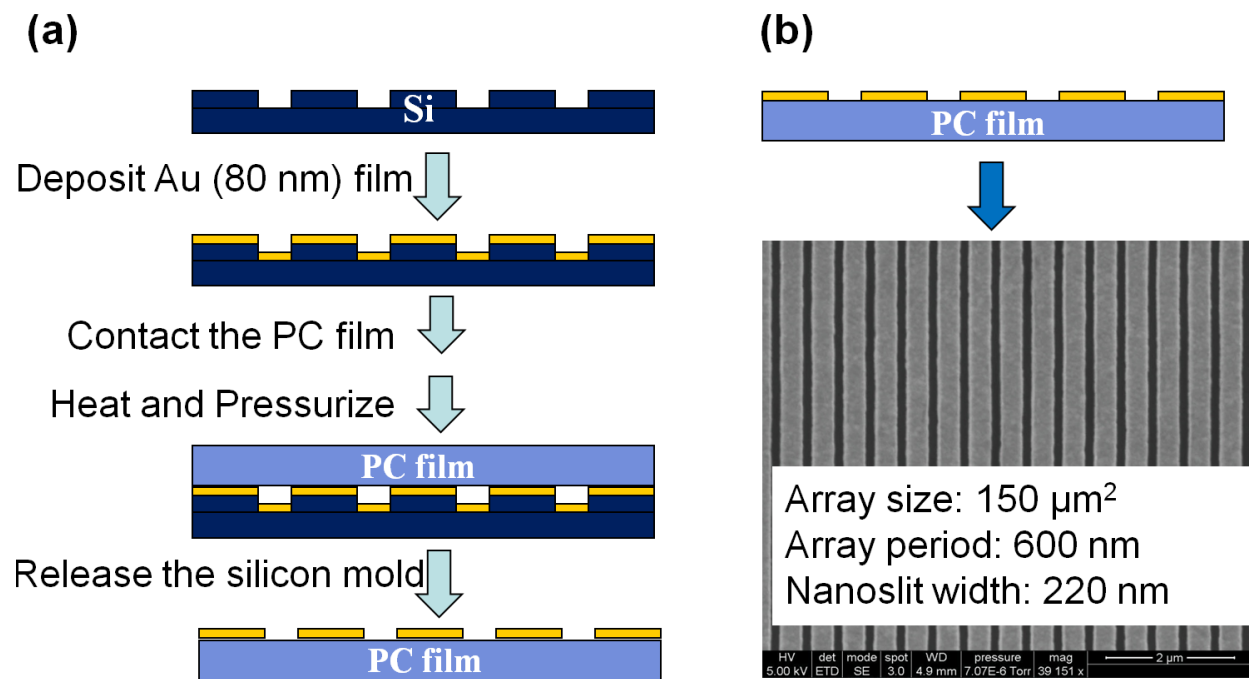


Figure S2

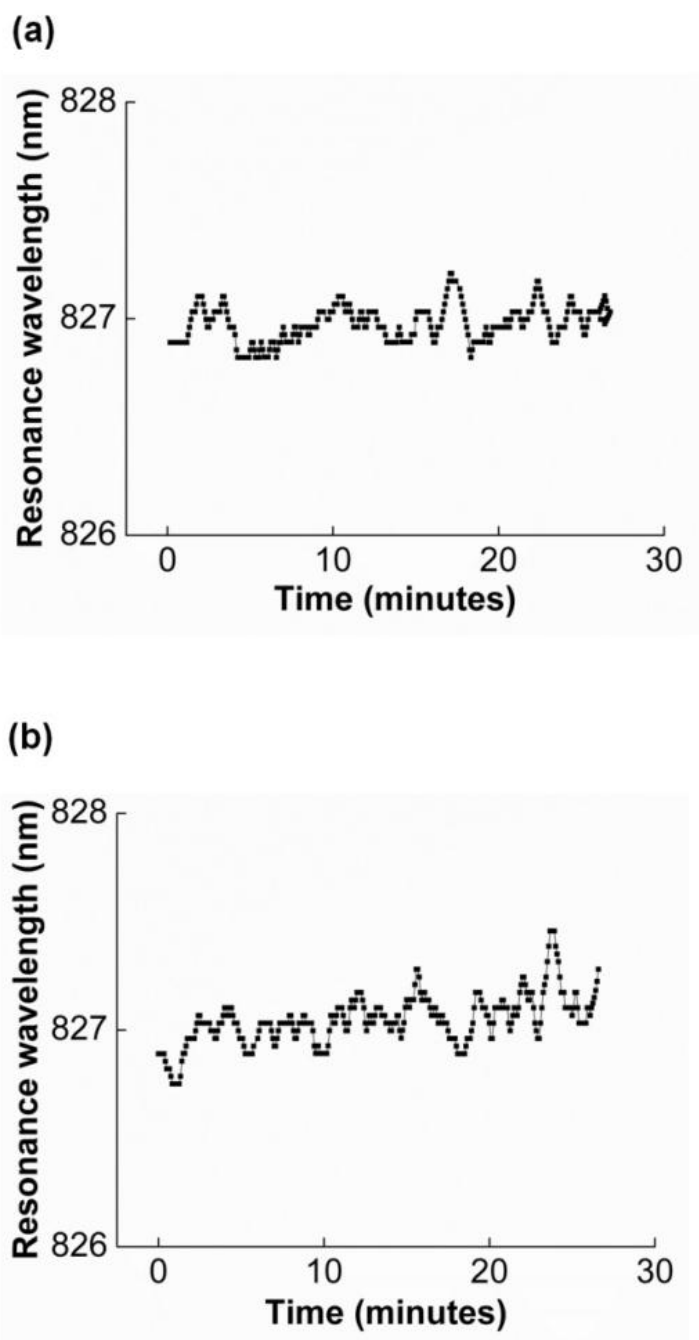


Table S1

Oligonucleotide	Sequence (5' → 3')	Modification
Probe I ¹	G TTCCTTTTCTCTCTTTTTTCTCTCCAAAG	5' modification (C ₆ SH)
Probe II ²	AACAGTTTCTAAAGTTTTTCTCCATCGCGGA	3' modification (C ₃ SH)
Target ³	TCCGCGATGGAGAAAAC TTTAGAAACTGTTTCCTTT GGAGAGGAAAAAGAGAGAAAAGGAAC	None
Non-complementary sequence (GAPDH) ⁴	ATGGCCTCCAAGGAGTAAGACCCCTGGACCACCAG CCCCAGCAAGAGCACAAGAGGAAGAG	None
Non-target 50% similar sequence ⁵	ACGGGGTTCGTGTATAGTATTGTATCAGATCCATA GCACACGTATATGTGTGTATACGTAG	None
Non-target 70% similar sequence ⁵	AGCGGGATCGAGTAAAGTTTTGAATCTGATCCATT GCAGACGAATAAGTGAGTAAACGATG	None
Non-target 80% similar sequence ⁵	ACCGCCATGGTGAAATCTTTTGAAAGTGTTTCCTTT CGAGACGAAATAGAGTGAAATGGAAG	None
Non-target 90% similar sequence ⁵	ACCGCGATGGTGAAAAC TTTTGAAACTGTTTCCTTT GGAGACGAAAAAGAGTGAAAAGGAAG	None
Forward primer	CCGCGATGGAGAAAAC TTTAGAAAC	None
Reverse primer	CAGCCATGGCAGCATCAACCT	None

1- Complementary sequence to the region of 242-271 of hnRNP B1 mRNA (Accession: NM_031243)

2- Complementary sequence to the region of 211-240 of hnRNP B1 mRNA (Accession: NM_031243)

3- Sequence of 211-271 region of hnRNP B1 mRNA (Accession: NM_031243)

4- Sequence of 1093-1152 region of GAPDH mRNA (Accession: NM_002046.3)

GAPDH mRNA is a commonly used housekeeping genes used in comparisons of gene expression data.

5-Four different sequences with different degree of similarity with target sequence