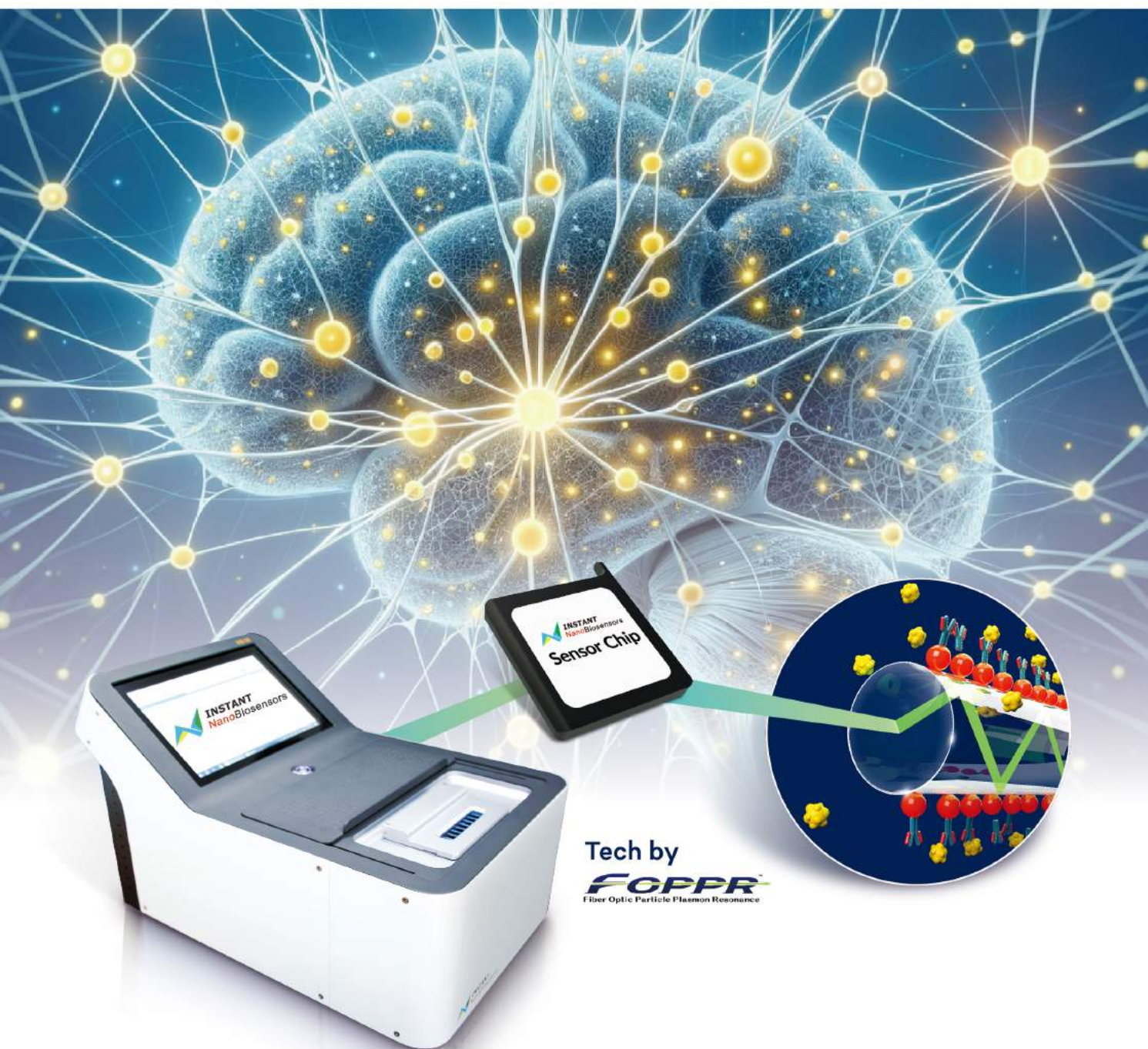




Tech by
FOPPR
Fiber Optic Particle Plasmon Resonance

Light Sensing Biomarker Analyzer

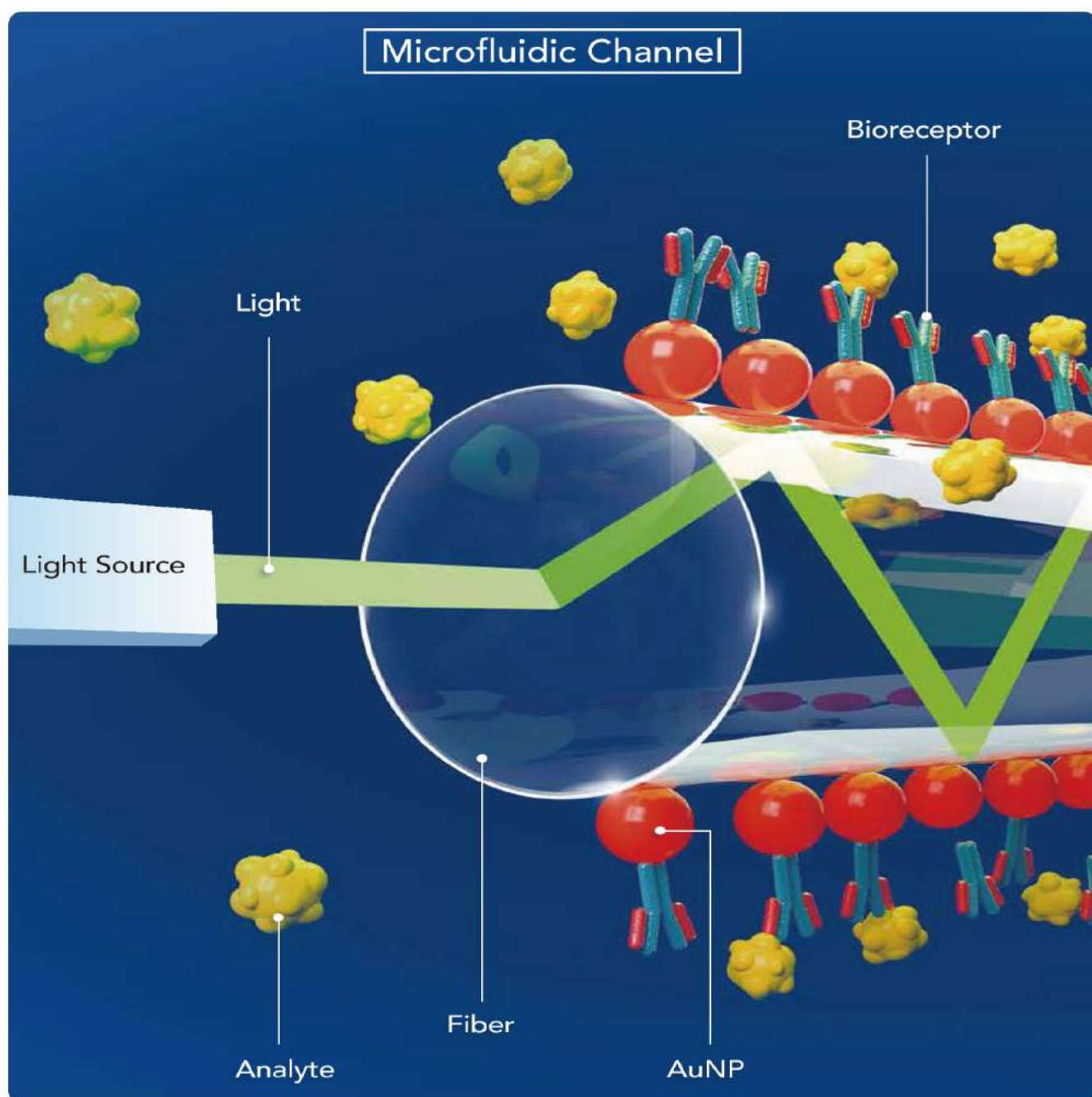
INB-D8

2 in 1: From Characterization Analysis to
Ultra-Sensitive Biomarker Detection

FOPPR™ Technology



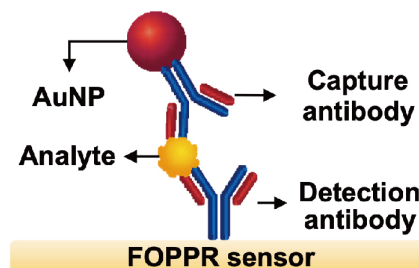
FOPPR™ is an ultra-sensitive detection technology that integrates nanoparticles, optical fibers, and microfluidic channels. The light propagates within the optical fiber, and total internal reflection (TIR) results in electrons of AuNPs undergoing collective oscillation to induce particle plasmon resonance (PPR). By conjugated with antibodies, the AuNP-antibody complexes form biosensors. Therefore, the analyte can be precisely monitored by measuring the light's signal changes in the optical fiber.



INB-D8, Enables Ultra-Sensitive Detection in Body Fluids. Furthermore, It Confers Antibody Pair Optimization and Kinetic Quantitative Assessment

Ultra-Sensitive Detection

Capture and detection Ab cooperates to recognize the analyte in the matrix precisely



Assay Development Process

Step 1: Kinetic Analysis

- Measurement: acquire equilibrium constants (k_a , k_d , K_D) for quantitative affinity
- Screening: keep antibodies with higher affinity to analytes



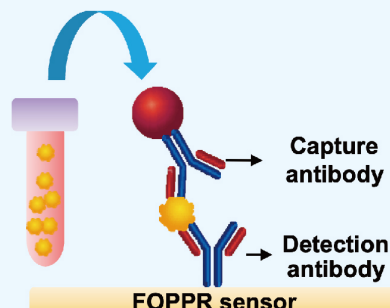
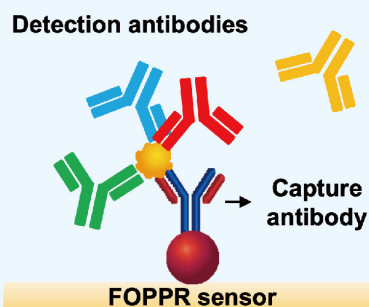
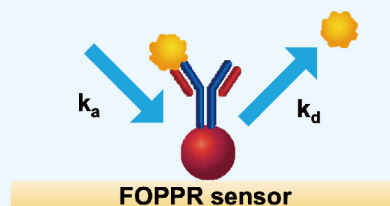
Step 2: Epitope Binning

- Verification: check Ab's epitope to analytes; up to 4 Abs could be examined
- Selection: choose the Ab with the distinct binding site to the analyte



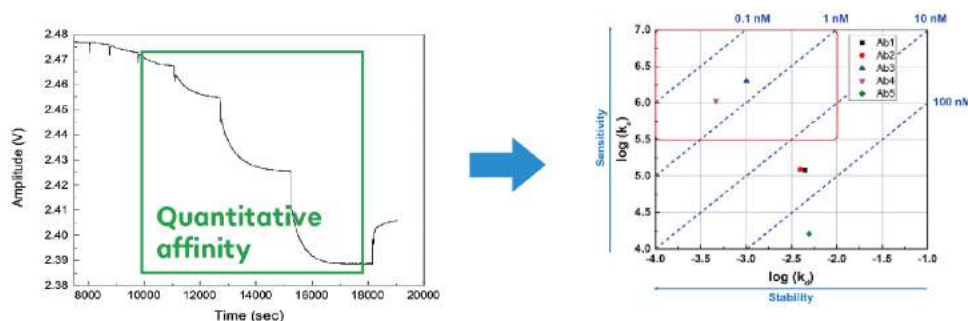
Step 3: FONLISA Assay

- Validation: the capacity of the chosen Ab pair for recombinant protein detection
- Clinical sample: performance evaluation in specimens



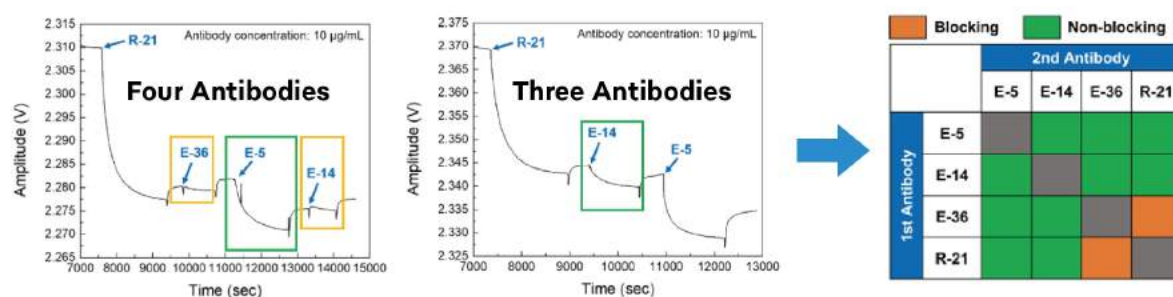
Kinetics Analysis

Compared to surface plasmon resonance (SPR), FOPPR enables a mild and close to physiological condition for the interaction between antibodies and analytes. While analytes interact with the capture antibodies, it changes the light refractive index, leading to measurable optical signals proportional to the concentration of the analytes. Kinetic rate constants (k_a and k_d) and equilibrium dissociation constants (K_D) are available through the specialized algorithm.



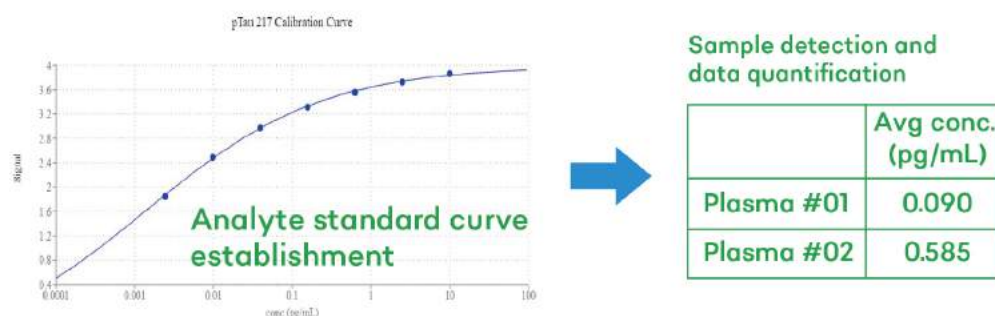
Epitope Binning

For ultra-sensitive detection, the capture and detection antibodies are ideally bound to distinct sites of the analyte. Epitope binning is required to determine this antibody pair, which generally costs lots of time and materials through SPR. Unlike that, FOPPR accelerates and simplifies the epitope binning process by sequentially introducing different antibodies, allowing for the handling of up to four antibodies at once and displaying their interactions within a three-dimensional space.



Ultra-Sensitive Detection (FONLISA Assay)

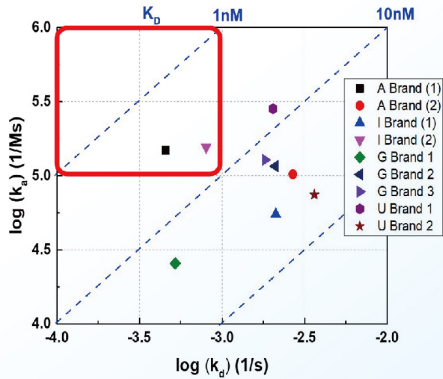
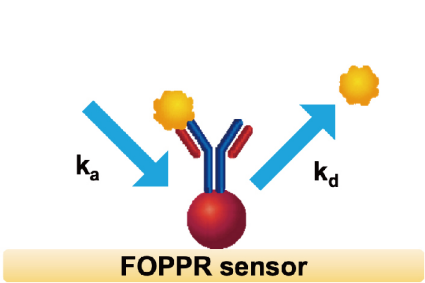
Capture antibodies are fixed onto the unclad optical fiber, while detection antibodies are bound to the AuNPs. During detection, capture and detection antibodies recognize analytes through distinct epitopes. The AuNPs in the sandwich-like complexes contribute to sensing the optical signal changes. FONLISA assay detects pg/mL to fg/mL concentrations of analytes.



Bring the Ultra-Sensitive Blood Test of NFL into Reality

Step 1 Kinetic analysis to screen proper NFL antibodies

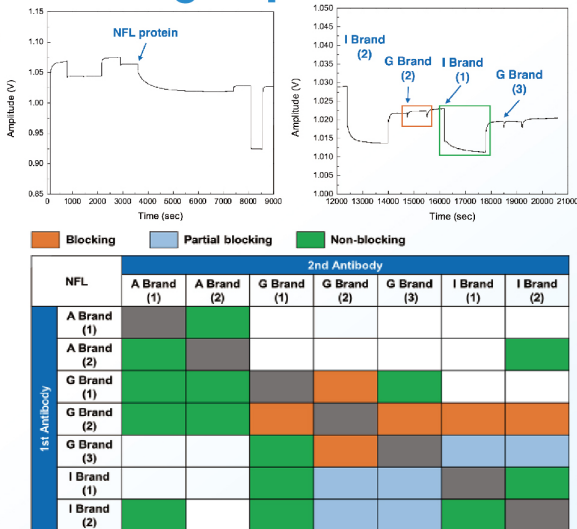
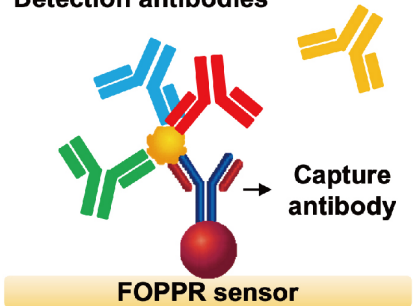
1



Step 2 Epitope binning for choosing capture and detection antibody

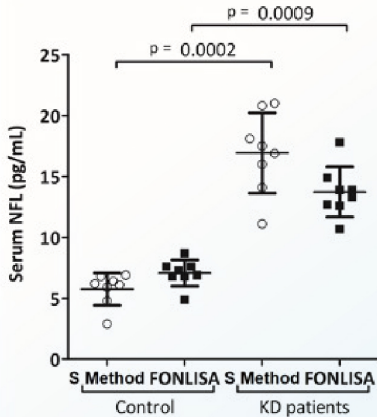
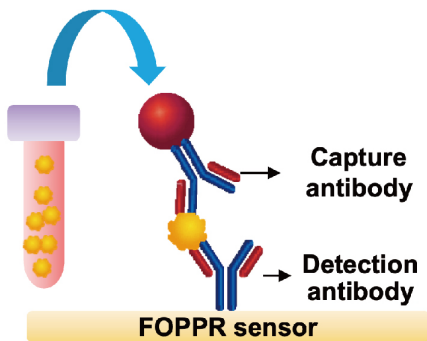
2

Detection antibodies



Step 3 Performance validation in clinical specimens

3





Multifunction

The unique device enables ultra-sensitive detection, kinetics analysis, and epitope binning.



Flexibility

A chip for a single test, no need to wait for all samples ready, one sample is acceptable.



Low Maintenance

No pumps and tubes, ready-to-use modules for replacement promptly.



Product Specification

Model Name	INB-D8
Sensing Technology	Fiber optic particle plasmon resonance (FOPPR)
Sample Type	Blood, serum, plasma, cerebrospinal fluid, protein solution
Analyte	Proteins and molecules recognized by antibodies
Throughput	Up to 8 samples
Sample Volume	10 – 80 μ L, 10 μ L is suggested generally
Sensitivity	Less than 10 pg/mL
Dynamic Range	More than 4 logs
Operator Interface	10.1" multi-color touch screen
Language	English
Operating Conditions	10 - 40°C; RH < 80%
Transport/Storage Temperature	RT
Dimensions	488 mm * 304 mm * 318 mm
Net Weight	11.2 kg
Power Supply	12 W, AC 100-220 V, 50/60 Hz
Assay Flexibility	Open platform can develop custom or homebrew assays



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