SURFACE PLASMON RESONANCE: A VERSATILE TECHNIQUE FOR BIOSENSOR APPLICATION

PATENT NO.: PI2012003191

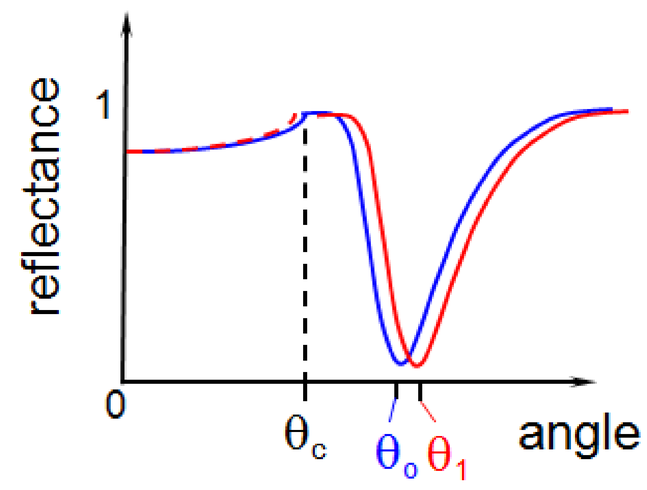
PROBLEM / ISSUE

Metal ions, e.g. Zn2+, Mn2+, Cu2+, Co2+,
are essential to maintain the metabolism of human body.
However, if consumed over the daily limit will be potential for toxicity or even DEATH!!!

NEED ALTERNATIVE TO MEASURE THE METAL ION

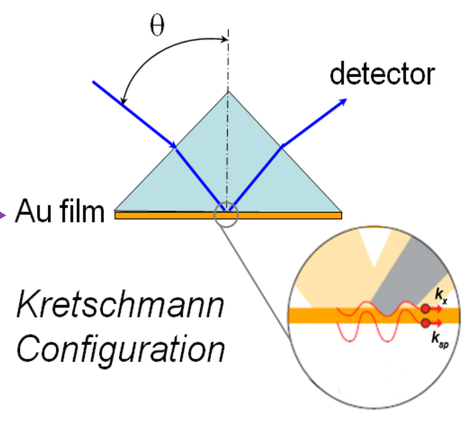
WE PROPOSE: SURFACE PLASMON RESONANCE (SPR)

Existing sensors / detection techniques: AAS, ICPMS, XRF, INAA, ASV, etc
Expensive, complicated sample treatment, need long measuring period

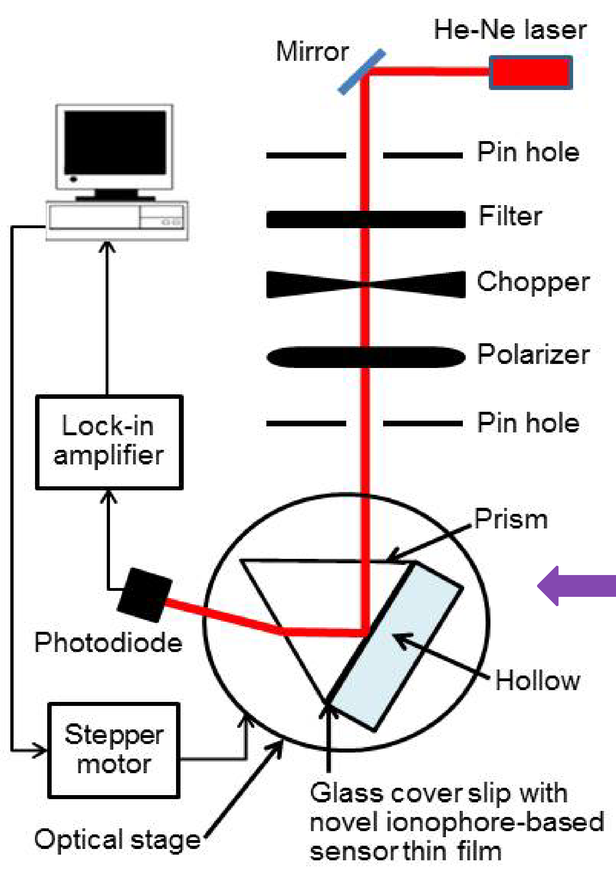


UNIQUENESS / NOVELTY

- Modify the gold film with Novel ionophore-based active nanolayers for biosensnor application (eg. Sensitive & selective detection of metal ion)
- Investigate spr method for bilayer thin films based on kretschmann configuration

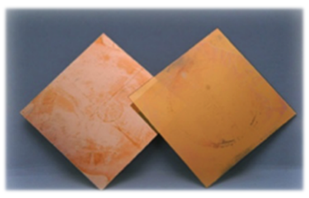


THE INNOVATION / APPROACH



Ionophore
Chitosan (as matrix)
Graphene Oxide

Ionophore-based sensor material
↓
Deposited on the gold surface layer



Attached to prism in the optical sensor

BENEFITS/ADVANTAGES

- Low cost, simple and easy to use
- Environmental friendly
- Fast measurement capability
- No sample treatment required
- Non-destructive sensor device
- High accuracy and pecision
- High sensitivity and repeatability
- Label-free detection
- Monitor molecular interaction in real-time

POTENTIAL MARKET

- High potential in R&D sections in medical diagnostic industry, food & drinking water industries, evironmental monitoring.
- Immobilize the novel ionophore-based material onto the commercialised Biacore sensor chip (CM5) to integrate with Biacore X100 for sensitive & selective detection.

COMPETITORS / CURRENT PRACTICE

Local Player: No other local player except our group
Global Player: AAS, ICPMS, XRF, INAA ⊠ High cost

IMPACT

PATENT FILING | **Q1 & Q2 PUBLICATION**

- Contribute novel fundamental knowledge for biosensor application using optical technique.
- Give an important idea to develop a cost reduction, high sensitive and selective sensor.
- Worldwide market for the potential novel ionophore-based selective optical sensor.

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