

# The Office of Technology Management

UNIVERSITY OF TEXAS  ARLINGTON

Tech ID: UTA 09-15

## Nano-Scale Bridge Biosensors

INVENTOR: Seong Jin Koh

### TECHNOLOGY NEED

Detection of DNA is important for diagnosis of diseases and development of medicines. Current techniques for detecting DNA have considerable limitations such as low sensitivity for direct detection of ultra-small amounts of DNA and requires amplification by Polymerase Chain Reaction (PCR). PCR is indirect and done through monitoring signals from various markers (such as fluorescent, radioactive labels). The required operations for detection are slow and need expensive equipment which is not portable. Hence a need exists for the detecting device to overcome the above drawbacks and provide solutions that are inexpensive to fabricate and highly sensitive.

### INVENTION DESCRIPTION/SOLUTION

An inexpensive and highly sensitive device for detecting nucleic acid hybridization, including single nucleic base mutations at molecular level low concentrations is presented herein. The device uses capture units (nanoparticles attached single-stranded oligonucleotides) that are capable of hybridizing target oligonucleotides and reporter molecules without the use of labeling or target modification. The detection output is purely electrical as an assay output without transducers. The electrical output is advantageous over the conventional radioactive/optical outputs requiring sophisticated expensive instrumentations.

### APPLICATIONS

- Cancer detection
- Detection of bio-terror molecules
- Pathogens in humans, animals, and environment
- Bio-medical research
- Forensics

### KEY BENEFITS

- No amplification or target modification required
- Direct electrical detection of single DNA molecules
- High sensitivity
- Easy to use and portable device
- Inexpensive fabrication technique

### STAGE OF DEVELOPMENT

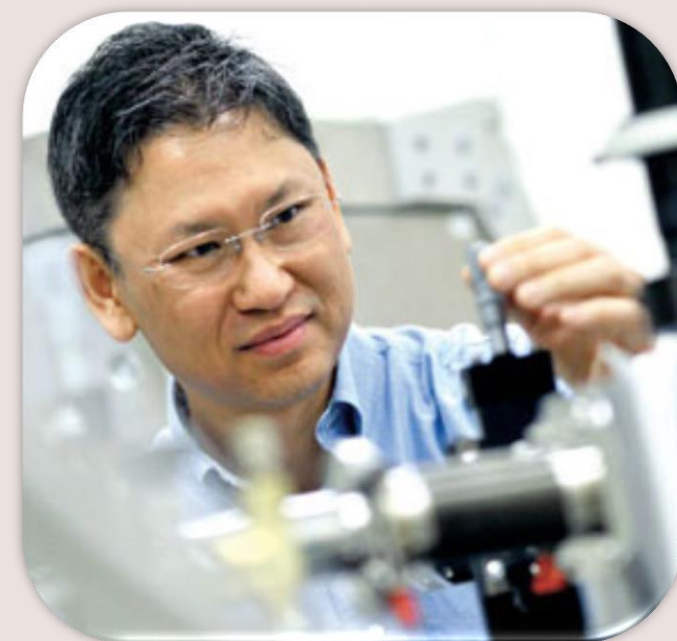
Prototyped

### INTELLECTUAL PROPERTY STATUS

Granted US Patent [US 8106428 B2](#)

### RELATED TECHNOLOGY

[UTA 16-07 Single-particle bridge assay for amplification-free electrical detection of Ultralow-concentration biomolecules](#)



**More about the Inventor:**  
[Seong Jin Koh](#)

### Contact information

For licensing, please contact

Sharon Ngwenya, Ph.D.  
(Licensing Associate)

[sngwenya@uta.edu](mailto:sngwenya@uta.edu)

[otm@uta.edu](mailto:otm@uta.edu)

P: 817.272.1130

### Our mailing Address:

The Office of Technology Management  
701 S Nedderman drive,  
Suite 333, Arlington, TX  
76019

Connect with us:

