



Healthcare, Nanotechnology

Research in IIT Bombay

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Centre of Excellence in Nanoelectronics
Centre for Research in Nanotechnology and Sciences

IIT Bombay

A Green Campus.. Lakes and Hills



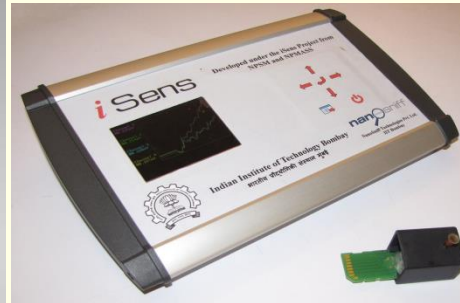
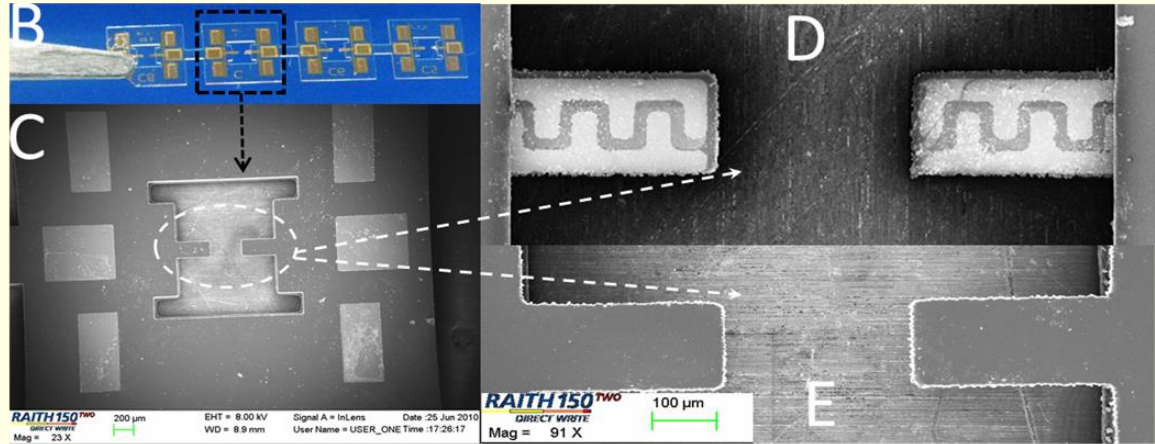
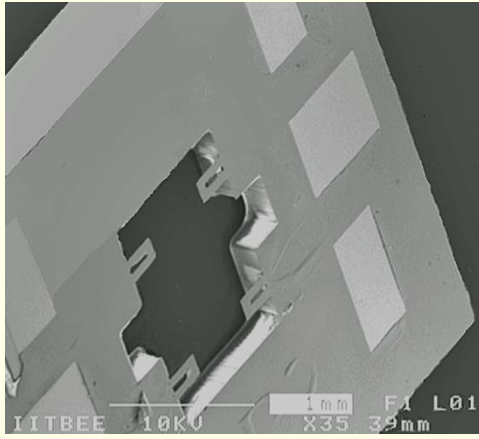
Nanotechnology Research

- **Center of Excellence in Nanoelectronics (CEN)**
 - Primarily Fabrication
 - Government funded about USD 30 Million (over 10 years)
 - Company funding about USD 10 Million (in cash and kind)
 - Health care research one of the deliverables
 - Open to anyone in India to use
- **Center for Research in Nanotechnology and Sciences (CRNTS)**
 - Primarily characterization
 - About USD 10 Million funding from Govt. and Institute
 - Additional funding into “Sophisticated Analytical Instruments Facility”- open to anyone in India and even abroad.

Health Care Consortium

- IIT Bombay does not have a medical school.
- Plenty of hospitals and Bio (Medical) research organizations in the western zone.
- A partnership to leverage on each other's capabilities making 1 and 1 equal 11.
- Members – Tata Memorial Hospital and Cancer Research Center, Hinduja Hospital, NIRRH, Strand Lifesciences, Span Diagnostics, InAccel, SRL, Drishti, etc.
- Seed funding from IITB to jumpstart collaborations.

Microcantilever based Sensors



Principal Investigator :
V. Ramgopal Rao (EE)
Co-Investigator:
S. Mukherji (BSBE)
Incubated Company:
Nanosniff

Surface Plasmon Resonance Instrument



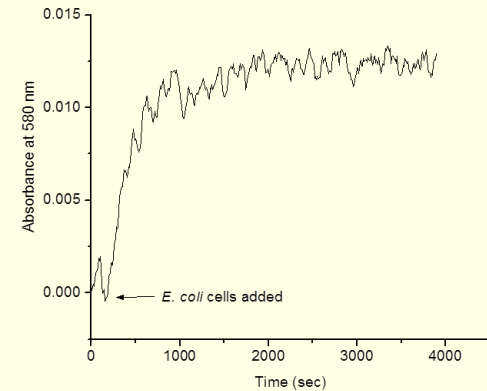
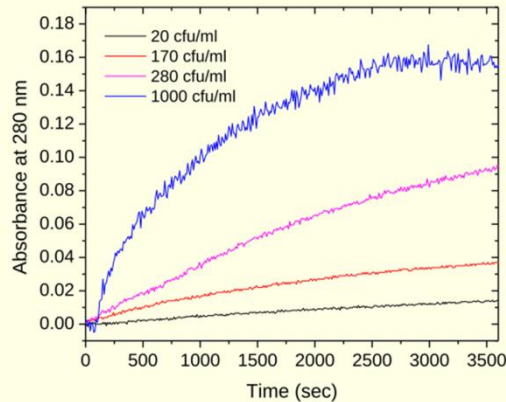
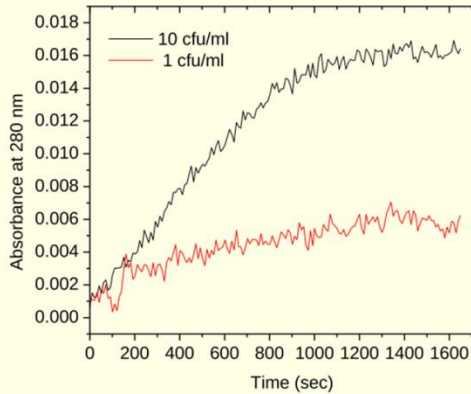
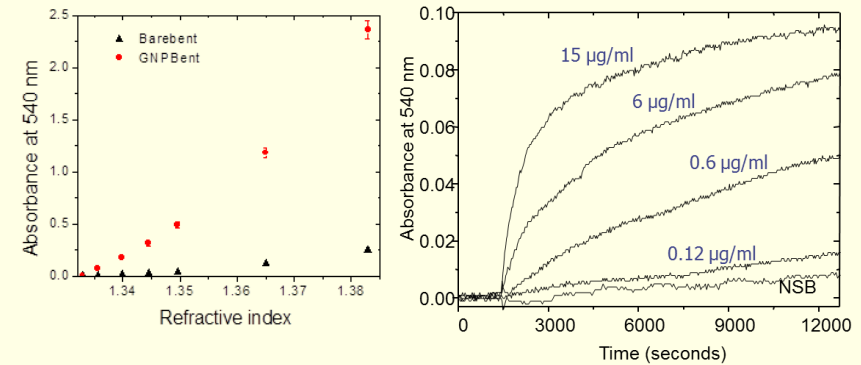
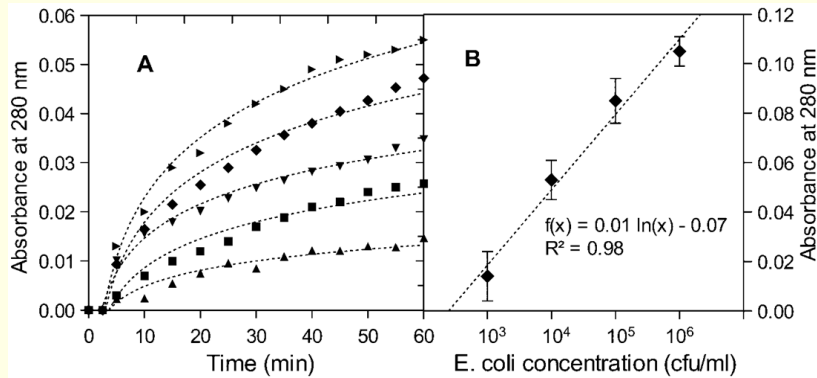
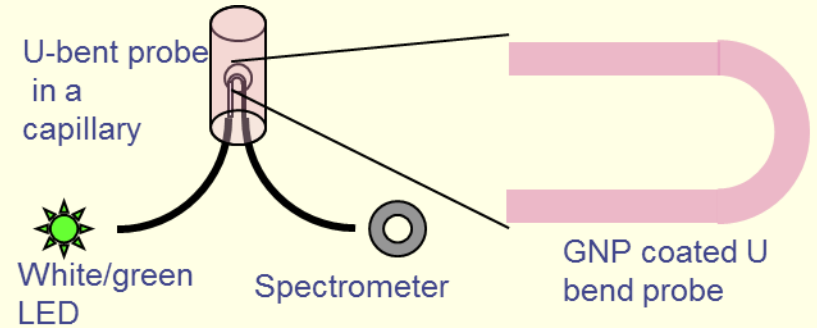
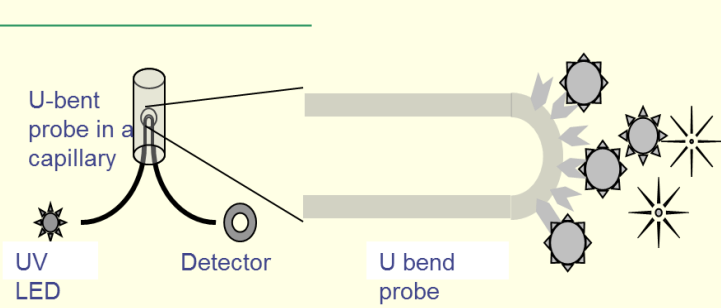
Technology developed with financial aid from NPSMS and NPMASS.

Objective was to develop a SPR system in-house for various sensing applications.

A completely manual SPR system has been developed.

Technology has been transferred to Robonik India Pvt Ltd. for a nominal upfront fee, and significant royalty considerations

Optical Fiber sensor



Embedded Curved Polymer Waveguide Biosensors

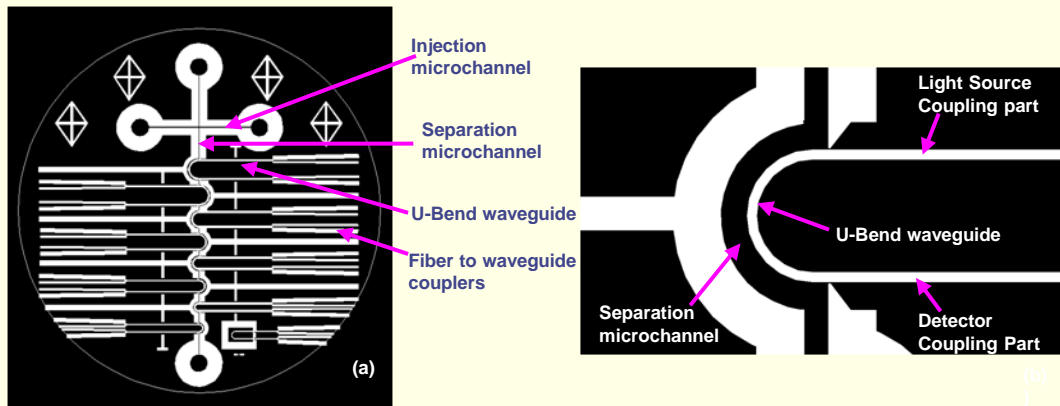
Why Embedded polymer waveguides ?

Can be microfabricated, thereby taking advantage of mass production. Analyte and reagent volumes also miniscule.

The waveguides form part of the wall of the microchannel. This is a completely novel concept. (1 paper published and 1 accepted in Lab on Chip)

Refractive index sensitivity tested for bare SU-8 waveguides. Sufficient for some biomolecular interaction detection.

Sensitivity improved further by attaching gold nanoparticles to waveguide surface



Mask design of device and a closer view of microchannel interfacing with U-bend waveguide.

