

# Evanescent field based plasmonic sensing platforms for healthcare applications

At the Photonics Laboratory in IIT Bombay, we are developing various photonic devices based on different spectroscopic techniques. They are tailored for various opto-electronic and sensing applications in the agricultural, healthcare and environmental sector.

## Motivation

- A need for a healthcare monitoring system with fast detection response and reduced device footprint which is non-destructive for the sample, and also immune to external electromagnetic interference

## Novelty

- Easy integration of the developed sensing platforms with LEDs and photodetectors developed in our Photonics lab
- Ability to miniaturise the sensing platform and detectors onto a single chip, made entirely of the same polymer

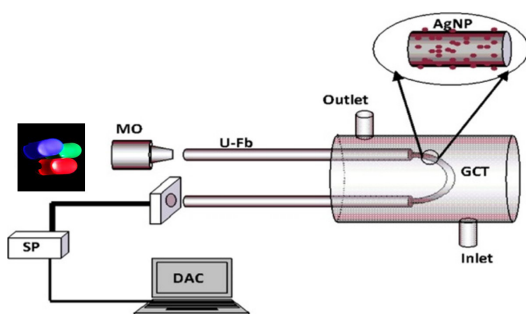


Fig.1: Optical source (LEDs) with U-Bent fiber sensors platform; Image courtesy: Rani Dutta; Bhanu P. Singh; Tapanendu Kundu; J. Phys. Chem. C 2013, 117(33), pp 17167-17176.; DOI: 10.1021/jp401542a

## Salient features

- Tunable performance via tailoring the geometry (as in case of U-Bent fibre sensor Fig. 1) or by changing compositional properties of the constituent materials (as in case of polymer waveguides Fig. 2)
- Operation can be tuned to offer multimodal response to monochromatic as well as broadband sources

## Applications

- Sensing platform constituting the waveguide can be chemically activated for different and specific bio-organisms
- The sensing platform developed can also be used for detection of various human and plant pathogen detection

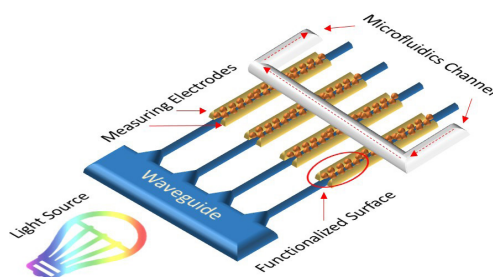


Fig.2: Polymer based multimodal waveguides with microfluidics channel