

Electric field induced bandgap modulation of graphene oxide for development of novel photonic devices

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.

Multispectral

- Modulate the band gap of graphene oxide (GO) and optimise it for desired sensing in characteristics optical range

Novelty

- Easy process exploiting electric field induced reduction approach for tuning the bandgap of GO leading to development of novel photonic devices

Salient features

- Photoresponsivity ranging from UV-Vis to near Infrared region having photocurrent of the order of μA
- Surface of GO is easily functionalisable for various chemical and biochemical applications
- Tunable photo-sensitivity in desired wavelength range extending from UV to near Infrared
- The developed photonic micro-devices can easily be extended to prototype devices for various applications

Applications

- Broadband on-chip Photodetector (Fig. 1)
- On-chip photonic sensing platform using spectroscopic techniques (Fig. 2)

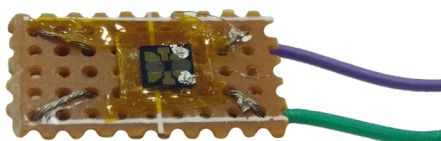


Fig. 1

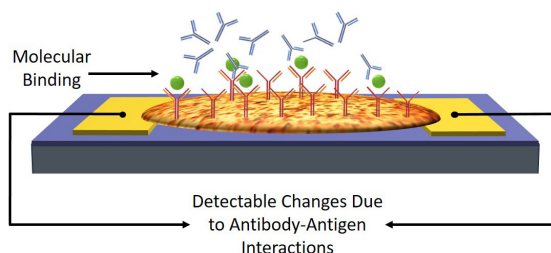


Fig. 2