



## Microchip for point-of-care diagnostics (ROI #2013-05)

### Description

- A transparent nanostructured Fabry-Perot microscale interferometer (NanoFPI)
- The transducing signals of the NanoFPI are the reflectance or transmittance signals
- The nanostructures inside the NanoFPI are made of Al thin film, forming arrayed nanopores. The size of the nanopores can be tuned by changing fabrication parameters
- NanoFPI provides a *universal* technical platform for the detection of different biomarkers of different diseases, cancers, pathogens, circulating tumor cells

### Advantages

- Simple and easy to operate, suitable for applications in source-limited locations
- Inexpensive, one single device is in the range of a few cents and thus disposable, eliminating cross-contamination
- Universal platform for the detection of different biomolecules, from pathogens, biomarkers of diseases, cancers to circulating tumor cells
- Arrayed NanoFPI devices can be readily fabricated, offering multiplexing capability for drug screen and discovery
- Highlighted as newsbreak by Laser Focus World Magazine, 2010 (<http://www.laserfocusworld.com/articles/print/volume-46/issue-11/newsbreaks/polymer-ufpi-beats-semiconductor-based-designs-for-biosensing.html>)

### Areas of Application

- Point-of-care diagnostics
- Universal detection platform for a variety of diseases including cancer biomarkers, pathogens, circulating tumor cells
- A disposable high throughput platform for drug screen and discovery for pharmaceutical applications

### Patent Status

- Patent pending

### Publications

- Y. He, et al, "A transparent nanostructured optical biosensor," Journal of Biomedical Nanotechnology (in press), 2013
- T. Zhang, et al, "Nanostructured optical microchips for cancer biomarker detection," Biosensors and Bioelectronics, 38 (2012), pp. 382-388