Title:
designing and simulation of plasmonic nano structures with optofluidic integration

Abstract:
Photonics and electronic technology is developing increasingly. One of the new field research is the integration of photonics and electronic and the result is called plasmonic. Plasmonic is related with surface plasmon resonance in thin layers and metallic nanostructure. A surface plasmon is a quantum of an electron concentration wave that can exist at a dielectric. The surface plasmon propagates along the metal surface and decays exponentially into both media. The important idea in the fabrication and designing plasmonic nanostructure is engagement between confinement and dispersion of light. Today applications of surface plasmonics include the utilization of metal nanostructures used as nano-antennas of optical probes in biology and chemistry or the development of efficient solar cells. In this project we investigate the application of plasmonic in optical biosensors and solar cells. We present scheme for identification biomolecules with plasmonic nanostructures containing resonator gold nanoparticle array for the improvement of ideal optical response with the use of optofluidic technology. The method of simulation is finite-difference time-domain (FDTD). Optofluidics is the new field that use light and micro fluid simultaneous and this technology is developing for sensing light, photonic crystal wave guides, and laser.

Keywords:
Surface Plasmon resonance, Optical biosensors, Finite-Difference Time-Domain (FDTD), Optofluidic, Microfluidic.