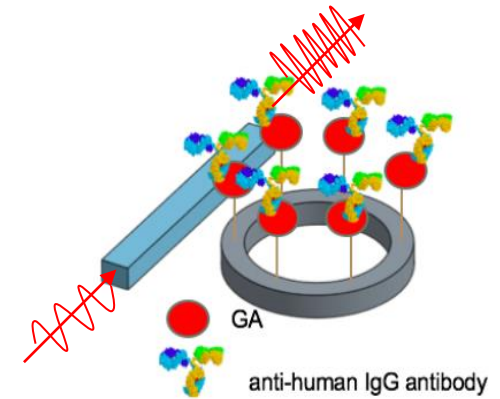


Title: Joint research project with 4-research institutes in Thailand for Si photonics biosensing technology

Background: Higher infectious diseases rate caused by reptiles, insects, parasites, etc. in rural areas, lung cancer rate due to air pollution in urban areas, and kidney disease rate due to high salt acquisition habit in northeastern areas, are big medical field issues in Thailand. Then, special blood tests such as for antigen / antibody abnormalities in the medical field are required through blood collection process, however it takes a certain time to obtain test results. It is desired for obtaining the test results shortly. In addition, there is also a problem of foreign substances being mixed into pharmaceuticals and cosmetics, and there are great expectations for high purity in those pharmaceuticals and chemical products. Therefore, the development of low-cost, highly accurate bio-sensing devices and system are expected.

Objective: To address these issues, this PJT will collaborate with four research institutes in Thailand to conduct joint research on biosensing fundamental technology. By sharing photonics device technologies in NICT with Thailand research groups, the high sensitive biosensing device and measurement system will be established.

Research content: Si photonics technology, which is mainly studied for mass-production aimed optical communication device technologies, is applied to the biosensing technology field for the purpose of producing low-cost disposable biosensors. We study the devices and its related technologies for high-Q optical resonating structure (see right figure), in which biomolecules such as antigens and antibodies are attached into the resonator efficiently. The device design, fabrication, and measurement are carried out in cooperation with four research institutes in Thailand. NICT provides overall supports in PJT.



Partners

Participating organizations and countries:

- Chiang Mai University (Thailand)
- Khon Kaen Unvisersity (Thailand)
- Chulalongkorn University (Thailand)
- Thai Micro-Electronics Center (Thailand)

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