

# **Design and process development of silicon nanowire based DNA biosensor using electron beam lithography**

## **Abstract**

Silicon nanowires (SiNWs) have their unique feature such as similar diameters to biomolecules, chemically tailorable physical properties, enable to apply in biomolecule detection and can be fabricated as a high performance field effect transistor (FET). This research describes the fabrication of silicon nanowire for DNA hybridization detection in biosensor application. The silicon nanowire with line-width of <100 nm is successfully fabricated by electron beam lithography and will follow by deposition of contact metals. Aurum is a suitable metal to make Ohmic contact with SiNWs and its exhibit electrical transport measurements of the devices. The presence of the hybridization DNA will induce electronic charge and changed the electronic properties of the transistor from which detectable electronic signals are generated.

## **Author Keywords**

Biosensor; DNA hybridization; Electron beam lithography; Nanowire