

## A novel poly-crystalline silicon nanowire field-effect transistor biosensor for potential biomolecules screening

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### Abstract

The Screening of biomolecules in wide spectrum applications like life science and medical diagnosis is a critical concern. Thus, it is a necessity and concerned for the diagnosis and direct monitoring of cancers, diseases, flu and emergency outbreak like Ebola, Dengue viruses, especially in the developing nations. Therefore, with an indispensable need for developing novel detection mechanisms with high sensitivity and specificity is paramount, since the conventional mechanisms require lengthy time, with less sensitivity, specificity, and high-cost burden for developing nations. Among several approaches, our silicon nanowire field-effect transistors (SiNW FET), possess several advantages over the conventional approaches, in term of label-free, real-time response, high sensitivity, and specificity. Thus, through the integration of electronics, semiconductors, biotechnology, and biochemistry, the biosensor chip can be a life-saving sensor/chip which could be developed as a personal portable detection device. The exposure of the nanoscale on silicon on insulator (SOI) wafer as a substrate for single crystal silicon nanowire was ignored, and our side-wall spacers technique was utilized to fabricate a poly-crystalline SiNW. This approach eliminates the use of SOI wafers, avoiding exposure of expensive nanoscale, and significantly reducing production costs without affecting device properties. With our fabrication technique compatible with the commercially available semiconductor process technology.

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### Biography

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