



Research Initiative Workshop

UNDERSTANDING DNA BIOMOLECULE FOR LAB-ON-CHIP APPLICATION

**27th June 2011
Seminar Room Tun Za'ba**

Initiated by:

**Institute of Nano Electronic Engineering
Universiti Malaysia Perlis**

'UNDERSTANDING DNA BIOMOLECULE FOR LAB-ON-CHIP APPLICATION'

Wide-scale DNA testing requires the development of small, fast and easy-to-use devices. This presentation describes the preparation, operation and applications of DNA biosensors which provide fast, sensitive and selective detection of DNA hybridization. Various new strategies for DNA biosensors are examined, along with recent trends and future directions. The integration of hybridization detection schemes with the sample preparation process in a 'Lab-on-a-Chip' format is also covered. While the use of DNA biosensors is at an early stage, such devices are expected to have an enormous effect on future DNA diagnostics.

Profile:

Assoc. Prof. Dr. Nor Azah Yusof
Senior lecturer in Chemistry Department,
Faculty of Science, UPM

Postdoctoral in Institute of Biotechnology,

University of Cambridge under Professor Elizabeth A.H. Hall, 2008

Ph.D. in Analytical Chemistry, Universiti Kebangsaan Malaysia, Bangi, 2002.

(Development of An Optical Fibre Chemical Sensor for Co(II) and Pb(II) Ions Based on Flow Injection Analysis)

B.Sc. (Hons) in Chemistry. Universiti Kebangsaan Malaysia, Bangi , 1998.

Areas of research: Chemical Sensor, Biosensor, Molecular Imprinted Polymer.



Objective

This workshop covers the basic principles and latest advancement in the development of DNA biosensor. It is targeted for post graduates in Science and Engineering fields, and research community focusing on Nano technology devices for biomedical applications. Participants will be exposed to fundamentals of DNA structures, preparation of DNA, basic analysis of DNA and development of probes/primers. The sensing principle of the main transducers in development of DNA biosensor, which includes electrochemical, optical and magnetic properties, will be discussed. Preparation of the sensing material, including immobilization procedure and related problems will also be described thoroughly. Latest advancement and up to date progress in development and application of DNA biosensor will be reviewed. Some practical aspects of preparation of the sensing material will also be demonstrated.

Program Itinerary

0830 – 0900	Registration
0900 – 0910	Opening
0910 – 1030	Basic understanding of DNA and standard DNA analysis
1030 – 1100	Break
1100 – 1230	Introduction to DNA biosensor Part 1
1230 – 1400	Lunch
1400 – 1530	Introduction to DNA biosensor Part 2
1530 – 1630	DNA Biosensor : Future Trends and Related Issues
1630 – 1730	Practical Session and Video
1730	Closing