

Institute of Nano Electronic Engineering



Nanotechnology encompasses various scientific disciplines that are interrelated. This new field crosses a range of activities that include manufacturing, synthesis, processing, alloy sintering, quantum effects, sensors, surfaces, membranes, thin films and nano-structure measurements. As such scientific discoveries in nanotechnology can potentially generate technologies in a broad range of fields such as health, education, information technology, creation and usage of energy, safety, defence, biotechnology, food and agriculture, aerospace, manufacturing and environmental rehabilitation.

Institute

As such UniMAP has recently set-up the Institute of Nano Electronic Engineering (INEE), which is temporarily housed at both Automart and Pengkalan Assam. Prof. Uda, the brainchild behind its inception, is the institutes' first and current director. The main mission of this institute is in expertise, infrastructure, equipment and environment development such as to enable learning as well as research activities in the particular field and between fields too.

Justification

The reason behind the inception of the institute is that UniMAP has a ready pool of researchers in the field of micro- and nano-electronics, that are experienced and active in both teaching and research of microelectronics. Their combined experience of 15 years is deemed more than sufficient for them to spearhead, sustain and road-map micro- and nano-electronic engineering in UniMAP. In addition, the two clean-rooms for microelectronics and nanoelectronics, is well equipped and more than capable to handle research requirements.

Although there are other institutes of similar focus in the country, such as IMEN (UKM), Ibnu Sina (UTM) and Nano Science Institute (UiTM), INEE does not have overlapping or conflicting areas with any of these centres of excellence (COE). As its coined name reads, this institute has a specific interest in nanoelectronics.

UniMAP's Microelectronic Engineering programme, the only one of its kind in Malaysia, has gained recognition as well as becoming a reference point and consultation centre for industries alike. As an example, both Universiti Teknologi Tun Hussin Onn and UiTM have set-up laborato-

ries that emulate the UniMAP set-up. Additionally, Indonesian and Thailand universities have expressed their interest in working with UniMAP, as a result of the existing facilities, in related fields

On another note, Malaysia lacks a centre or institution where technicians, engineers and experts can be trained in microelectronic fabrication or nanotechnology. According to the Malaysia Industrial Development Authority (MIDA), related industries in Malaysia need about 1000 fabrication process engineers for the year 2008. Furthermore, nanotechnology has been gazetted as a technology focus area in the 9th Malaysia Plan.

Role and Objectives

The institute will be centre for the creation and dissemination of knowledge in microelectronic fabrication engineering that will focus on development and use of clean room technologies for current and future use. As regards microelectronic fabrication and related nanotechnology, the institute will be a reference point and consultation centre. An important aspect of the role of the institute is to advance and expand, research and development activities specifically related to microelectronic engineering, CMOS device fabrication, nano-devices, -structures and -electronics.

Furthermore, the institute will also promote and encourage intellectual publications in both micro- and nano-electronics, that will be of great benefit to the nation. Education related to research is seen as a service to the public. Training programmes for campus denizens and off-campus people will benefit the workforce in the semiconductor, CMOS device fabrication and nanoelectronic technologies.