

# Organic Light Emitting Diodes (OLEDs)

## for future lighting and displays

### Overview

Discovery of organic semiconductors brings a lot of promises in the world of electronics, which is currently dominated by the inorganic semiconductors. It is well known fact that organic materials are more environment friendly and can be processed in less complicated way than the inorganic semiconductors. They are flexible in nature in contrary to the inorganic semiconductors which are crystalline. Flexibility of organic semiconductors paved the way for the development of flexible electronics. Different devices are being fabricated using organic semiconductors. The field of optoelectronics has adopted organic semiconductors with more emphasis in comparison to other field of electronics. A lot of research and development in the field of solar cells, LEDs, optical detectors etc. based on organic semiconductors is going on very rapidly. Some of the organic semiconductor based optoelectronic devices have already hit the market and successfully fulfilling their promises.

India is one of the fastest growing countries of the world. Energy needs of India are increasing day by day but the supply is limited. There are several villages and towns where average availability of electricity is less than 6 hours per day. Most of the households are using the conventional incandescent lamps in which there is a huge loss of energy in form of heat. So, efficient use of energy is one of the most important aspects along with the development of new sources of energy. Solid state lighting, especially the organic light emitting diodes has the potential to replace the conventional lighting because of their flexibility, low cost, easy fabrication etc. OLEDs are not only expected to revolutionize the lighting solutions, but they are also providing various unique transformations to display technologies. Past few decades have witnessed a lot of trend changing developments in this field. Different display technologies have come up with their respective features, but LED based displays have taken up almost entire display market. OLED based display technology is relatively early child but it shows extraordinary promising features. Use of OLEDs in displays not only provides a significant reduction in the cost, but opens the ways for an entirely new concept of flexible displays. Research and development is going on to improve the efficiency of these displays and it is expected that OLED based displays will become the leader of the display market in a very near future.

Keeping in view of the importance of OLEDs, it is desirable to have trained manpower in this field for research as well as industry domain. The proposed course will not only provide the basic understanding of OLEDs but it will also provide a deep understanding of the advanced technologies related to this promising field. Professor Jwo-Huei Jou is well known scientist in the field of OLEDs and is expected to provide a lot of knowledge about OLEDs and their fabrication to the participants.

<b>Modules</b>	<b>A: Introduction and History of Organic Light Emitting Diodes</b> <b>B: Disruptive Advantages of OLEDs</b> <b>C: Emission Principle of OLEDs</b> <b>D: Approaches for fabricating high efficiency OLED</b> <b>E: Long Life-time Approaches</b> <b>F: Light quality index and natural light style OLED</b> Number of participants for the course will be limited to hundred (100).
<b>Dates</b>	<b>27<sup>th</sup> December 2017 – 31<sup>st</sup> December 2017</b>
<b>You Should Attend If...</b>	<ul style="list-style-type: none"> <li>• Executives, engineers and researchers from manufacturing, service and government organizations including R&amp;D laboratories.</li> <li>• Student students at all levels (B.Tech./M.Sc./M.Tech./Ph.D.) or Faculties from reputed academic institutions and technical institutions.</li> </ul>
<b>Fees</b>	The participation fees for taking the course is as follows: <b>Participants from abroad : US \$500</b> <b>Industry/ Research Organizations: INR 3000</b> <b>Faculty Members: INR 2000</b> <b>Research Scholars: INR 1500</b> <ul style="list-style-type: none"> <li>• The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility.</li> <li>• The participants will be provided with accommodation on payment basis.</li> </ul>

## The Faculty



**Prof. Jwo-Huei Jou** is professor in the Department of Material Science and Engineering, Chinese Taipei. Prof. Jou's research interest includes long lifetime, high-efficiency and natural light-style organic light emitting diodes (OLEDs), polymers, thin film stress, and expert system applications. He has filed and/or been granted 60 patents, published 116 papers, with 70 OLED-related journal papers with an average Impact Factor of 4.5, and 46 papers on solvent diffusion in polyimide films, thin-film stress, and polymer modification techniques, and presented over the last 5 years 34 invited talks in international conferences.

## Course Coordinator

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