

**International Conference on Nanomaterials for Frontier Applications
(ICNFA 2015)
2 – 4, December 2015**

Report

The International Conference on Nanomaterials for Frontier Applications organized by Coimbatore Institute of Technology, India and Bergen University College, Norway in association with Institute for Energy Technology, Norway, University of Bergen, Norway, University of Oslo, Norway and University of Exeter, United Kingdom was inaugurated by Prof. Geir Anton Johansen, Dean, Bergen University College, Norway on 2nd December 2015. In his inaugural address he stated that he was very happy to note that Coimbatore Institute of Technology and Institutions of Norway are having a close network and are doing a very good academic and research collaborative work. The first invited talk of the conference was delivered by Dr. Dhayalan Velauthapillai of Bergen University College, Norway, and he spoke in detail about the enhancement of Indo-Norwegian Research Collaboration. Dr. Dhayalan elaborated about the ways and means to be adopted to strengthen the collaboration further and explained the significance of submitting joint research proposals to the international funding agencies. The first invited talk of the afternoon session of the first day of the conference was delivered by Dr. S. Zh. Karazhanov, Institute for Energy Technology, Norway, and he gave a detailed review about the photochromic materials and their applications. The next talk was about comparative account of plasmonic photocatalysis under visible light irradiation by Professor Tarasankar Pal of Indian Institute of Technology, Kharagpur, India.

The second day (3rd December 2015) of the conference started with a talk on computational materials design and characterization for energy harvesting and energy storage materials by Dr. P. Vajeeston of University of Oslo, Norway, which was followed by an interesting presentation by Prof. R. Mendez of Department of Materials Physics, Universidad Complutense de Madrid, Spain about how shaping of semiconductor oxides in a nanostructure way by doping will enhance the performance of devices based on these materials. The third talk of the morning session was delivered by Prof. Hari Upadhyaya of Heriot Watt University, United Kingdom. Prof. Hari Upadhyaya described in detail about the different generation solar cells. He also discussed about the opportunities and challenges the third and fourth generation solar cells have in the solar market which is ruled by silicon solar

cells. The first talk of the afternoon session of the second day of the conference was by Dr. Elif Arici of Energy Institute, Istanbul Technical University on $\text{Cu}_2\text{ZnSnS}_4$ semiconductor material. In her talk she discussed about the current status of the theoretical and experimental research related to CZTS and the growth of crystalline phases in CZTS and how to use the post treatment processes effectively to avoid defect states and impurities in CZTS films. The second talk of the afternoon session was by Dr.G.Mohan Rao, IISc, India and he discussed about graphene based nanostructures and described how they can be effectively used for energy storage applications. The next talk was by Dr.Vishnukanthan Venkatachalapathy of University of Oslo, Norway, about doping in wide band gap $\text{Mg}_x\text{Zn}_{1-x}\text{O}$ for deep UV- detector applications. This was followed by the poster presentation session in which the participants presented their research work in poster form in a lucid and attractive manner.

Dr. Ana Cremades, Universidad Complutense de Madrid, Spain delivered the first talk on the third day (4th December 2015) of the conference. She described about the synthesis and properties of small dimensional structures of transparent conducting oxides obtained by vapor-solid growth process. She explained how transparent conducting oxides like indium, tin and titanium oxides in one dimensional nanostructure form exhibit wave guiding behaviour and other interesting properties. The second talk of the third day was delivered by Dr. Vandana of NPL, India. She explained how surface recombination velocity in silicon solar cells can be reduced to a great extent by passivation of silicon layers using aluminum and hafnium oxide thin films prepared by thermal atomic layer deposition technique. The next talk was by Dr.A.Pishtshev of Institute of Physics, University of Tartu, Estonia. In his talk Dr.A.Pishtshev presented about the computational studies carried out on magnesium and calcium hydroxides and he stated that these oxides possess specific crystal chemistry design, which is completely different from the design native to these oxides. The first talk of the third day afternoon session was delivered by Dr.P.K.Singh, Head, Photovoltaic Group, National Physical Laboratory, India and he presented a detailed view about the traceability chain for solar cell measurement. Dr.P.K.Singh in his talk focused on how uncertainty in solar cell device efficiency measurement may lead to ambiguity in the product value assessment both in technical and financial terms.

In addition to the thirteen invited talks delivered in the conference by eminent scientist in their respective fields, 144 research papers were presented in the conference by the

participants which were from different areas of nanotechnology, covering different nanomaterials and their preparation aspects, characterization techniques and application of nanomaterials in the field of solar energy, dilute magnetic semiconductors, water purification, and medicine. The presentation sessions were carefully planned for maximum participation and optimal use of time by having two parallel oral presentation sessions on the first day afternoon and second day morning and third day morning totaling to six oral presentation sessions. There were also two poster presentation sessions one on the second day afternoon and the other on the third day afternoon. The valedictory function of the conference was held during the evening of the third day and Dr.M.Arularasu, Principal, Thanthai Periyar Government Institute of Technology, India delivered the valedictory address. The participants and delegates gave their feedback about the conference during the valedictory function and they stated that it was an excellent conference arranged in a meticulous way, the hospitality was great and the conference provided much details about the technological components and technical progress taking place in the field of nanoscience and nanotechnology.