

Reports of the International Conference (ICANOPA-2020):

A three days **INTERNATIONAL CONFERENCE ON ADVANCES IN NANO OPTOELECTRONICS AND ITS APPLICATIONS (ICANOPA-2020)** was held successfully at the department of Physics, Rajiv Gandhi University, Rono Hills from 12th to 14th October 2020. In the conference there were more than 100 participants applied for the conference out of which 53 participants were selected for oral and poster presentations mostly from all over our country.

On the 12th October 2020 Monday, the conference was graced and inaugurated by Honorable Vice chancellor, Prof. Saket Kushwaha where he stressed on the application of nanotechnology in day to day life and solution for present health crisis all over the world. Further Vice chancellor and Registrar of the University, Dr. N.T.Rikam raised our concerns over the unprecedented situation of covid-19 and requested all researchers to play vital role to contribute suitable solutions for the prevailing covid-19 situations. Prof. Amitav Mitra, Pro Vice Chancellor of RGU well explained how the physics is linked with the economics. He highlighted the importance of Physics and its association with economics to solve the recent time problems in economics. **Prof. Amarjyoti Choudhary-former Vice Chancellor of Gauhati University and Pro-VC of Tezpur University** gave a virtual key note address entitled “*Semiconductor Nanomaterials for Magnetic and Optoelectronic Applications*” in the inaugural secession of the conference. He discussed the fundamentals of nanoscience and nanotechnology and highlighted the ongoing research work in recent times related to nanotechnology that should be given more emphasized to meet the modern requirements to address the unsolved problems of life. Prof. Choudhury also discussed the key role now playing by present day nanotechnology for drug production especially in this pandemic era.

Earlier Prof. P K Kalita, Convener of the conference gave the welcome address and highlighted the objectives of this International conference to the dignitaries and participants. He pointed out the recent trend of development in nano-optoelectronics and its future prospects. Prof. Sanjeev Kumar, HOD of Physics spoke on the relevance of nano-optoelectronics in recent times on this occasion. An *E-Abstract book* was also formally launched by Vice-Chancellor, Prof. Saket Kushwaha in the inauguration function. The Vote of Thanks was delivered by Dr. H Shanjit Singh, Joint coordinator of the conference.

All the 11 invited speakers delivered their talks as per program schedule in the conference for three days. We kept for break time for participants and invited speakers to run the virtual program properly.

Day-1: (12th October 2020 Monday)

In the first day after the inaugural function, three different invited talks were delivered by two professors from India and one from USA on different themes. All the participants were given time for open questions from the invited speakers and they had good discussions.

In the first invited talk, were given by **Prof. K.K. Chattopadhyay, Jadavpur University, India** on the topic “*Valence band engineered metal oxide nanomaterials for transparent electronics*”. Prof K.K. Chattopadhyay highlighted the present research in synthesis, characterization, and applications of transparent oxide nanomaterials. All the participants were very much interested as per their comments in the chat box and direct open questions in his talk and made several queries to know the frontlines of research area which were addressed by Prof Chattopadyay had meaningful discussions.

The second invited talk “*Towards optical super resolution in a scanning optical microscope*” was presented by **Prof. Basanta R Baruah, IIT, Guwahati** where he stressed on the importance of confocal microscopy, its recent developments and the scope as potential characterization technique in material science. In the third invited talk, **Dr. Samaresh Guchhait, Howard Univeristy, Washington DC, USA** delivered on the theme “*Molecular Modelling is a Killer Application of Quantum Computing*”. He explained about the classical computer memory storage with the help of bit and qubits. The difficulties in imaging biological proteins were highlighted in his talk. All the participants had good discussion in his talk.

We had *Technical session-1* under Chairperson **Prof. Kanak Chandra Sarma, Guwahati University, India**. Altogether 9 presenters were giving their presentations on different areas. The Chairperson and convener monitored their talks and questioned on their works and made a useful discussion upon their ongoing research.

Day 2: (13th October 2020 Tuesday)

As per our conference schedule, in the morning session, we had special invited speaker, **Dr. Gowhar Ahmad Naiko, Dhofar University, Sultanate of Oman**. He delivered a one hour talk on “*Hybrid Nano porous Composite Materials for the development of 4th Generation Non-Enzymematic Glucose Sensors*”. Later on participants got benefited for their research works by sharing open questions and answers as per the participants’ response in chatting box and queries.

The next invited speaker was **Prof. B. Indrajit Sharma, Assam University**. Prof. Indrajit delivered on the topic “*Density Functional Theory: Material Science*” where he discussed the fundamentals of Density Functional Theory and explained the systematic procedure adopted for determination of band structure and band gap energy, band gap engineering with doping and a comparison with the experimental results.

Dr. Kazi Haniun Maria, University of Dhaka, Bangladesh lectured on the topic “*Formation of Metal chalcogenide thin films by Chemical Bath Deposition and an effective liquid phase exfoliation approach to prepare transition metal dichalcogenide 2D nano flakes for gas sensing applications*”. She explained to the participants about the, structural, electrical and optical properties of ZnS:Al and preparation technique through exfoliation to synthesis SnS₂ nano flakes.

Prof. Pranayee Datta's talks on “*Next Generation Circuit at Nanoscale ----From concept to Reality*” was one of the interesting topic in recent time. **Dr. Datta, a retired Professor in the Department of ECT, GU** presented the experimental works on optical nanofilter using Bandpass and bandstop in co-relation to the transmission spectra of five different samples. She explained nicely about the basic electronic elements and the recent development of another fourth element named Memristor and a transformation of conventional electronics into nan-electronics. She interacted participants and meet the questions raised especially on how the memristors can store memory and the future prospects in information technology.

In the afternoon talk **Dr. Utpal Sarkar, , Department of Physics, Assam University** gave invited talk on “*Optoelectronic Applications of Pristine and Doped Graphyne*”. He shared his research areas on conceptual density functional theory background starting from energy of Thomas Fermi model. He explained on the H.K Theorems for the determination of the external potentials and the ground state energy and he adopted Kohn-Sham equation for knowing the ground state energy. He showed the stimulated optical properties of pristine and doped graphyne.

In second **Technical session-2**, there were 10 presenters. All presenters presented their research works on different areas. They were moderated and questioned by convener and the chairperson of day 2.

Day-3: (14th October 2020 Wednesday)

On the 3rd day in the morning session **Prof. T. Bezbaruah, Guwahati University, Assam** gave a talk on “*Nano-Opto-Electronics for Bio-Sensing and Health care Applications*” where he emphasized the mechanisms on how the biosensor works.

Dr. Gazi Ameen Ahmed, Department of Physics Tezpur University delivered his talk on “*Opto electronics application for image accusation*”. He explained initially about CCD-charged couple device and on the uses of MOSFET for the applications of it in imaging the astronomical objects and further explained on how MOSFET acts as a capacitor. He showed an array of 30 CCDs used the Sloan Digital Sky Survey telescope imaging camera.

Dr. K Mohan Raj, Manonmaniam Sundaranar University, Tamil Nadu, spoke about “PEC performance of CuAgZnSnSe₄ thin film by vacuum evaporation method” and highlighted the recent importance of those composites thin films for fruitful application in optoelectronic devices.

Prof. Ganesh Chandra Wary, Cotton University and Dr. Prasanta Saikia, Dibrugarh University, had conducted the **3rd and 4th Technical sessions** in the afternoon. All the papers were presented either as poster or as oral and there was a good interaction from the participants and the resource persons. The chairpersons and convener reviewed the paper presented in all the sessions and selected the prize for best poster and oral presentation.

Over hundred research scholars, faculties and scientists from all over the country participated in the conference. The participants were interacted with the resource persons and chairpersons of technical sessions with a great enthusiasm and wisdom. In the valedictory function on 14th October the vote of thanks was delivered by Dr. Upamanyu Das, Joint coordinator, ICANOPA-2020.
