

Quarterly report on the activities of The Centre of Excellence for Green Energy & Sensor Systems (CEGESS) – Jan 2014

Dear Alumni 1981 Batch,

I am extremely happy to send you the report on the activities of The Centre of Excellence for Green Energy & Sensor Systems (CEGESS), under the dynamic leadership of Prof Hiranmoy during the last quarter. I convey my heartfelt thanks to you for instituting a Chair in the Centre, which has indeed helped the university very significantly in carrying out research and education in the area of Solar Energy in our university. Prof Hiranmoy Saha has contributed very significantly in putting our university in the national and also international map of solar activities.

I am happy to inform you that Dr. Anil Kakodkar, Ex-Chairman, Atomic Energy Commission and Chairman, Solar Energy Commission has inaugurated the Solar Photovoltaic R&D Unit of the Centre on 12 Dec,2013 in presence of many national experts. He was extremely happy to witness the research facilities that have been generated and the level of research that is being carried out in this centre.

I will be extremely happy to invite you to this centre of excellence any day of your convenience. In my opinion this is a unique contribution to your alma mater, which has helped us in our strive to move for excellence. The contribution of your batch will be highlighted in this year's convocation report.

Best wishes to each one of you.
Ajoy Kumar Ray

The Centre of Excellence for Green Energy & Sensor Systems (CEGESS), under the dynamic leadership of Prof Hiranmoy Saha has made significant advancements in the last quarter.

A Report of Activities during the last quarter is appended below.

The centre has established excellent laboratory facilities with all equipments installed for fabrication & characterization of both crystalline and amorphous silicon solar cells of industry prototypes under the current two ongoing projects funded by DST and MNRE , Govt. of India. Crystalline solar cells of high efficiency are now being fabricated in the centre and process optimizations are currently underway to increase the baseline efficiency. Amorphous silicon solar cells with novel structures have also been fabricated . Several innovative structures involving metal plasmonic and dielectric nanoparticles are now being explored for enhancements in efficiency of such cells. The centre has already achieved a relative enhancement of about 7 % efficiency over high efficiency superstrate type amorphous silicon solar cells by application of indigenously developed silica nanoparticles.

In recognition of the brilliant work carried out at the Centre, DST, Govt. of India has approved an additional grant of Rs. 3 crores for purchase of sophisticated surface conformal lithographic system for further advanced work on solar cells.

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In the Rabi Kuthir, state of the art research and development work is being carried out there in the field of solar photovoltaic systems like Pre-commercial Grid tied single phase and three phase 1-10 KW string inverter type modular PCUs for SPV systems as per Industry /MNRE Specifications. Also Data loggers for Remote health monitoring and fault diagnostics of PV array with Open Source software platform has been designed and prototyped for testing.

The centre has published about 2 international journal papers and 3 international conference papers and three invited talks in the last quarter.

MNRE, Govt. of India has selected one highly prestigious “MNRE Research Fellow” this year and the selected fellow , Dr. Chandan Banerjee has joined the centre this January and has started contributing significantly to solar cell research. DST, Govt. of india has also sanctioned a research project entitled “Development of Multilayer TCO for High Efficiency Thin Film Solar Cell” to our faculty member , Dr. Sumita Mukhopadhyay.

Prof Saha has initiated collaborative activities with academic institutions and industries such as IIT , Kharagpur, MSIT , Kolkata , IACS , Kolkata , HHV, Bangalore. The centre has , in this quarter , extended the collaborative activities by signing MOU and taking up joint R & D activities with institutions and industries such as Charusat Institute of Science and Technology , Gujrat.

It is extremely heartening to note that Newtown Kolkata Development Authority (NKDA), Government of West Bengal has been working with CEGESS for providing them the necessary technical guidance and advise for implementing their Solar City program under MNRE, Government of India.

The centre has already installed several “Solar trees” in Eco Park, Newtown Kolkata and also prepared a detailed project report (DPR) for 500 kW solar photovoltaic power plant to be installed over a canal in NKDA area.

Howrah Municipality Corporation (HMC) has also involved CEGESS for providing the necessary technical guidance and advise for implementing their Solar City program under MNRE, Government of India. Prof Saha and his team members have also recently prepared a pre-feasibility report (PFR) for 250 MW solar PV plant for integration with Purulia pump storage system.

A National workshop on” Promotion of Roof-top Solar Photovoltaic Systems in the State of West Bengal” has been organized by the centre during Feb 6-7, 2014 in collaboration with WBREDA , Govt. of West Bengal with the participation of the representatives from MNRE, WBREDA , Dept. of Power ., Govt . of West Bengal and a large number of people from academic institutions and Industries.