



NCPRE NEWS



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National Centre for Photovoltaic Research and Education

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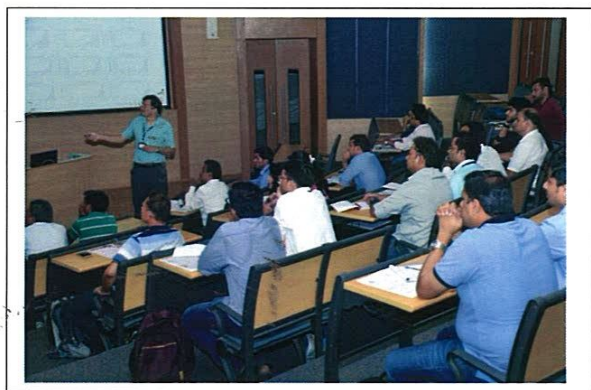
A Project of the Ministry of New and Renewable Energy at IIT Bombay

Solar PV Education and Training at NCPRE

NCPRE has an important role to play in developing a strong workforce required for a sustainable solar industry in India. In order to do that, MNRE has defined many 'Education and Training' objectives for NCPRE. These include:

- Developing a new course on Solar PV Technology
- Training 300-400 students (B.Tech, M.Sc, M. Tech and PhD) in Solar PV
- Conducting ten short term courses on advanced topics for 400 participants.
- Training of solar entrepreneurs and handholding of start-up companies.
- Releasing Book(s) /Monographs on solar PV

This year a new graduate level course entitled "Crystalline Silicon Solar Cells: Theory and Practice" was introduced by NCPRE. This course covered characteristics of silicon solar cells, optical design of cells, junctions, passivation, and impact of these parameters on IV characteristics, and quantum efficiency. It also covered fabrication of low-cost industrial full area Al-BSF and local area Al BSF (PERC) cells. The students were given demonstrations of cell fabrication steps and characterization tools. Several problems based on actual data collected from the NCPRE cell fabrication were discussed. Hands-on session included simulations using PC1D and other free simulation tools available in PV lighthouse and NREL (SAM) for developing a deeper understanding of experimental problems. A broadcast version of the course will also be released.



Currently, NCPRE has 11 PhD students of which 3 are working in Si Solar Cells, 2 in Module

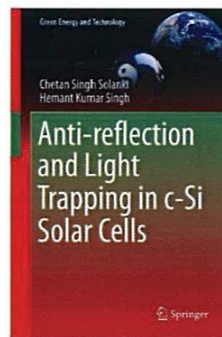
Reliability, 2 in power electronics, 2 in Thin Films and Advanced Materials and 2 in Battery Storage. NCPRE has also taken 5 MTech students.

Four short term courses listed in Table 1 were organized by NCPRE in different areas of Solar PV technology. These courses received a great response from Industry and Academia.

| No. | Title of the course |
|-----|--|
| 1 | Assessing Performance of PV Modules in the Field |
| 2 | Power Electronics Interface for Solar PV Integration |
| 3 | PV System Design and Installation |
| 4 | Perovskite Solar cells |

These courses were attended by participants from academic institutions including faculty and students, as well as from various members from solar industry.

Training of solar entrepreneurs and support for start-up companies is currently in the planning phase.



In July of this year, a new book titled "Anti-reflection and Light Trapping in c-Si Solar Cells" has been published by Springer. The book is co-authored by Dr. Chetan Singh Solanki who is a Principal Investigator at NCPRE and Dr. Hemant Kumar Singh, who is currently working as Senior Project Engineer with NCPRE. The book offers essential insights into c-Si based solar cells and fundamentals of reflection, refraction, and light trapping. This is the only book published on this topic and is a valuable guide for graduate students, researchers and professionals interested in the latest trends in solar cell technologies.