



# Institute Lecture

## *Road to Grid Parity with Silicon PV*

Ajeet Rohatgi

Regent's Professor

Georgia Institute of Technology, Atlanta, USA

***Monday, 27<sup>th</sup> December, 2010; Time: 5:00 PM, Venue: L-17, New Lecture Hall Complex***

### **Abstract**

Crystalline silicon has been the workhorse of the PV industry from its inception in the mid 1950's and is primarily responsible for its spectacular growth and cost reduction since 1975. Silicon (Si) PV is currently facing stiff competition from other materials, especially thin films, because of its higher manufacturing cost. This talk will show how Si PV is responding to this challenge by reinventing itself to become more cost effective in order to reach grid parity. Significant innovations are taking place in the areas of feedstock preparation, crystal growth, ingot slicing, and low-cost manufacturable technology development to increase cell efficiencies and reduce cost. Even though laboratory efficiencies had reached 24.7% by the end of the 20<sup>th</sup> century, most production cell efficiencies are still below 20%. Currently high efficiency laboratory cells are too expensive and production cells are not efficient enough for grid parity. On a positive note, the PV market, which grew at a rate of ~ 13% per year during 1982-1996, exploded with an average annual growth rate of ~ 40% during 1996-2010. PV learning curve since 1975 shows that doubling of the installed PV in the world leads to 20% reduction in cost. Since cost of PV generated electricity is within a factor of two of fossil fuels, at the current rate of growth, PV is expected to become competitive with fossil fuels by 2015. This talk will review the promising technologies and trends in Si PV that can lead to further cost reduction and efficiency enhancement.

### **About the speaker**

Dr. Ajeet Rohatgi is a Regents' Professor and a Georgia Power Distinguished Professor in the School of Electrical Engineering. He is the founding director of the University Center of Excellence for Photovoltaic Research and Education at Georgia Tech and the Founder and CTO of Suniva Inc. He received the B.S. degree in Electrical Engineering from the Indian Institute of Technology, Kanpur, in 1971, the M.S. degree in Materials Engineering from the Virginia Polytechnic Institute and State University, Blacksburg, VA in 1973, and the Ph.D. degree in Metallurgy and Material Science from Lehigh University, Bethlehem, PA, in 1977. Before joining the Electrical Engineering faculty at the Georgia Institute of Technology, Atlanta, in 1985, he was a Westinghouse Fellow at the Research and Development Center, Pittsburgh, PA. His current research interests include development of cost and efficiency roadmaps for attaining grid parity with Silicon PV, understanding of impurity effects in silicon solar cells, gettering and passivation of defects in solar grade silicon, rapid thermal processing of solar cells, design and fabrication of low-cost high efficiency cells on mono and multicrystalline silicon, and design, performance and economics of photovoltaic systems. As part of the 1996 Olympics in Atlanta, Dr. Rohatgi and his group designed and installed the world's largest grid-connected, roof-top PV system on the Georgia Tech Aquatic Center built for the Olympics. Dr. Rohatgi is an IEEE Fellow. He has published over four hundred technical papers in this field and has been awarded thirteen patents.

**All interested are welcome.**

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K. Muralidhar  
Dean: Research and Development



# Institute Lecture

## *The amazing World of Astronomy*

### **Jayant Vishnu Narlikar**

***Tuesday, 30<sup>th</sup> March, 2010; Time: 6:15 PM, Venue: L-1, Lecture Hall Complex***

#### **Abstract**

This talk highlights why astronomy has always been an important component of human knowledge and culture. In his proposed talk the speaker will be referring to India's achievements but in the context of how useful astronomy has been worldwide.

#### **About the speaker**

Jayant Vishnu Narlikar was educated in the Banaras Hindu University and later in Cambridge University where he got his Ph.D. and Sc.D degrees. After working in Cambridge for a few years, he returned to India and worked at the Tata Institute of Fundamental Research (TIFR) as Professor of Astrophysics. He later moved to Pune to set up the Inter-University Centre for Astronomy and Astrophysics (IUCAA). He is well-known for his work on astrophysics and cosmology as well as for his popular science writings.

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**All interested are welcome.**

K. Muralidhar  
Dean: Research and Development



# Indian Institute of Technology Kanpur National Science Day

## Theme: Gender Equity for Prosperity with Peace

### Programme

8.00 a.m.: Registration  
8.30 a.m.: Inauguration  
8.35 a.m.: Welcome Remarks by  
**Prof. K. Muralidhar**,  
Dean, Research and Development.  
8.45 a.m.: Address by **Prof. S. G. Dhande**,  
Director, IIT Kanpur  
9.00 a.m. - 9.30 a.m.: Speech by the Chief  
Guest, **Mrs. Amita Sharma**, Joint Secretary,  
Ministry of Rural Development,  
Government of India  
9.30 a.m. Vote of Thanks  
9.45 a.m. High Tea



### Invited lectures

11.00 a.m. - 11.30 a.m.: "Being a woman  
in Science" by **Dr. Jonaki Sen**, Biological  
Sciences and Bioengineering.

11.30 a.m. - 12.00 noon: "Women's  
Participation in Science: Who benefits?"  
by **Dr. Nandini Gupta**, Electrical  
Engineering.

12.00 - 12.30 p.m.: "Gender disparity:  
From womb to tomb" by **Dr. Rohini  
Ghosh**, Humanities and Social Sciences.

12.30 p.m. - 1.00 p.m.: "A chequered path  
with gems along the way" by  
**Dr. Jamuna R. Subramaniam**,  
Biological Sciences and Bioengineering.

### Keynote lecture

10-00 a.m. - 11-00 a.m.: "My journey  
into understanding how cells and  
organisms are made" by **Prof. Usha  
Vijayraghavan**, Indian Institute of  
Science, Bangalore.

### Profile:

Prof. Usha Vijayraghavan is a  
Professor in the Department of Cell  
Biology and Microbiology, Indian  
Institute of Science, Bangalore.

Fellow, Indian National Academy of  
Sciences.

Recipient-  
International  
Fellowship

Wellcome  
Senior

Trust  
Research

**Date:** March 30<sup>th</sup> 2010 **Time:** 8.00 a.m. to 1 p.m. **Venue:** Outreach Auditorium

### For registration contact:

**Dr. Jamuna Subramaniam**, jamuna@iitk.ac.in, Department of Biological Sciences  
and Bioengineering, Indian Institute of Technology Kanpur