

## SEMI AROUND THE WORLD

### SEMI and JPEA to Co-host the PV Technology Event and Exhibition

SEMI recently announced PVJapan 2008, a comprehensive photovoltaics event and exhibition. Co-organized with the Japan Photovoltaic Energy Association (JPEA), the event will be held July 30–August 1, 2008 at Tokyo Big Sight. Exhibitor registration opens this month.

PVJapan 2008 consists of a new technical exposition held in conjunction with the JPEA 25th Symposium on Photovoltaic Generating Systems, and is co-located with the Renewable Energy 2008 International (RE2008) Exhibition and Conference. The two events will fall under the name Renewable Energy World Fair.

A Total Photovoltaics Event  
**PVJapan2008**  
[www.pvjapan2008.org](http://www.pvjapan2008.org)

PVJapan 2008 will feature technical exhibits from a wide range of companies and executive-led programs focusing on new products, challenges and opportunities in the PV industry.

“Roughly 20 percent of SEMI members are already manufacturing, or making inroads into the development of photovoltaic technologies, so to support these companies, we are pleased to be an organizer of Japan’s premier photovoltaic technology event,” said Dennosuke Uchida, acting president of SEMI Japan. “I am confident that through the cooperation and support of our partners, PV Japan, will provide the industry with an international venue for the delivery and exchange of information, and ultimately contribute to the overall growth and success of the photovoltaic industry.”

For more information, visit [www.pvjapan2008.org](http://www.pvjapan2008.org) •

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## The Old and the New

**JAPAN’S SEMICONDUCTOR** industry remains healthy, propelled by a strong market for consumer electronic products and the continued trend for the region’s device makers to invest in the future. It has also long been the single largest regional market for semiconductor equipment and materials.

Japan is a significant consumer of semiconductor devices, accounting for 17 percent of the world market. IC consumption in Japan is expected to grow from \$35 billion in 2007 to \$40 billion by 2010, according to IC Insights. In terms of global wafer fab capacity, Japan leads the world with 23 percent of capacity, according to the SEMI Fab Futures Database. As a group, Japanese chipmakers will spend an estimated \$7.7 billion on semiconductor equipment this year, just behind Taiwan at \$8.7 billion.

As well as being a major force in the purchase of new semiconductor production equipment, Japan is by far the biggest consumer of semiconductor materials. This market was worth an estimated \$9.5 billion this year, and will grow to \$10.3 billion in 2008. Japanese companies are also some of the largest suppliers of materials to the semiconductor industry.

The device, equipment and materials market data is an indicator of the leadership position taken by Japan’s semiconductor makers. That signals another exciting SEMICON® Japan, scheduled for December 5–7 at the Makuhari Messe in Chiba. This year’s SEMICON Japan will set an all-time record, with more than 1,000 companies occupying over 4,559 booths. The show remains the world’s largest exposition for semiconductor manufacturing equipment.

As well as the popular features of

the show in the past, we continue to highlight emerging technologies in the Innovation Hall, where special exhibits will focus on MEMS, nanotechnology and photovoltaics.

In fact, the photovoltaic displays and events at SEMICON Japan will be a precursor to PVJapan 2008, a new and exciting event organized in conjunction with the Japan Photovoltaic Energy Association (JPEA). PVJapan 2008, a comprehensive photovoltaics event and exhibition, will be held July 30–August 1 at Tokyo Big Sight in conjunction with two other exhibitions that come under the name of Renewable Energy (RE) World Fair.

Approximately 20 percent of SEMI members are already manufacturing PV equipment and materials or are making inroads into the development of photovoltaic technologies, so it makes sense for SEMI to be an organizer of Japan’s premier photovoltaic technology event.

As greater awareness builds for environmental issues, both industry and society as a whole are looking toward photovoltaic technology as a source of clean energy. In recent years, the PV industry has experienced a phenomenal growth rate of more than 30 percent annually and the market is expected to reach \$40 billion by 2010. Because of this growth, attendance at PV-related events continues to grow, and we believe there is an increasing demand for a comprehensive event, which can provide attendees with the latest information as well as networking opportunities.

For further information on SEMICON Japan or PVJapan 2008, please visit [www.semi.org](http://www.semi.org). — *Stan Myers* •





## PHOTOVOLTAICS

# Photovoltaics: An Emerging Market That Requires Industry Standards

**GLOBAL ECONOMIC FORCES, GOVERNMENTAL** market incentive programs, growing public and private research and development activity, and continuous technological developments are all converging on the global photovoltaic (PV) industry to present rising opportunities and important challenges.

Recent estimates put the size of the global solar photovoltaic market at more than \$7 billion, forecasted to grow to over \$16 billion by 2012. The market has grown an average of 40 percent per year over the past decade and government policies and a wide variety of research initiatives point to continued aggressive growth of the PV marketplace.

However, as more players invest significantly in this industry while it evolves into a mass production market, the timely development and deployment of industry standards is critical.

Several of the larger PV cell manufacturers are vertically integrated, so they have developed proprietary in-house standards. As new players enter the market, though, they will look to third-party equipment suppliers in order to build a complete production line. This approach can only succeed if industry standards are agreed upon for the interfaces that are used by these systems. This can be in the form of simple agreements, such as the height and other dimensions of the input and output for a continuous flow system, or more sophisticated interfaces, such as machine-to-machine interfaces and their related software protocols for the advanced process control of the full production line.

Until now, equipment standards have not been an issue in the PV industry. Although some standards have been developed, like SEMI M6 for silicon wafers used in the manufacture of PV cells, the industry has been dominated by de-facto standards from dominant players. In many cases, though, there are no standards at all.

SEMI is contributing to the standards development process by facilitating and fostering dialog among stakeholders in the PV industry. Several companies have expressed their desire to form a PV Technical Standards Committee under the umbrella of the SEMI International Standards Program.

At the first SEMI Photovoltaic Committee meeting held early September 2007, executives from the PV industry gathered

to discuss how SEMI Standards could best contribute to the growth of the PV industry, especially at the manufacturing equipment and materials level.

Photovoltaic standards “are essential for the industry in order to lower trade barriers and to reduce the cost of ownership for cell and module manufacturers,” said Dr. Heinz Ossenbrink, head of the Renewable Energies Unit of the European Commission Joint Research Center. “Both elements are key to reach competitiveness of the photovoltaic industry in a global energy market.”

The SEMI International Standards Committee (ISC) recently approved the formation of the first PV Technical Committee under the auspices of the European Regional Standards Committee (ERSC). This new effort is co-chaired by Dr. Hubert Aulich of PV Crystalox Solar plc and Dr. Laszlo Fabry of Wacker Chemie AG. The move was also endorsed by companies such as Applied Materials, BerlinSolar, Centrotherm, Deutsche Cell, FSI International, GT Solar, ICOS Vision Systems, M+W Zander Facility Engineering, OC Oerlikon Balzers, and Q-Cells, among many others.



Applied Materials entered the PV market in 2006. From left to right, Charles Gay, VP, Solar Business Group; Mike Splinter, president and CEO; Mark Pinto, VP and CTO, New Business and New Products Group.

The European Photovoltaic Industry Association (EPIA) is partnering with SEMI to support its membership and to engage in joint outreach activities. The common objective is to proactively support the industry to achieve higher cost efficiencies and create competitive advantages with other energy generation technologies.

The PV industry is still relatively young, so the challenges ahead are still significant. However, this was also the case for the semiconductor industry a few decades ago. SEMI and the many volunteers in the SEMI International Standards Program made significant contributions to the development and successful implementation of standards in the semiconductor industry, and the association hopes it can contribute in the same way with the PV industry. •

## SEMI AWARDS

# Two Materials Scientists Honored with SEMI Awards

SEMI LAST MONTH HONORED two industry pioneers for their contributions to semiconductor materials technology. The 2007 SEMI Award for North America was presented to Dr. C. Grant Willson, while the SEMI Lifetime Achievement Award was conferred upon Dr. Bernard S. Meyerson.

Willson is a professor at the College of Natural Sciences, University of Texas at Austin, while Meyerson is vice president for strategic alliances and chief technologist, IBM Systems and Technology Group. The awards were presented during the SEMI Award Banquet held October 17 at the Santa Clara Marriott, California.

"SEMI and its members commend Dr. Willson and Dr. Meyerson for their significant contributions to the advancement in semiconductor manufacturing," said Stanley T. Myers, president and CEO of SEMI. "We are pleased to recognize Grant Willson for his work on the chemically-amplified resist, which spurred greater productivity in lithography, and Bernie Meyerson for numerous contributions to industry advancement and innovation that span his professional career."

Willson is the co-inventor, along with Hiroshi Ito, of chemically amplified resist, a key development that has enabled leading-edge lithography for the last 25 years. The work on chemically-activated resists originated at the IBM Almaden Research Center in the late 1970s. At the time of this invention, the industry was faced with a critical problem. The only way to increase the performance of semiconductor devices was to continue to make them smaller. This required using patterning tools that used shorter wavelength UV radiation. The available UV sources required inordinately long exposures—30 times longer than acceptable production times.

Willson was instrumental in developing resists that relied on chemical amplification to increase the sensitivity by a factor of 100 while maintaining

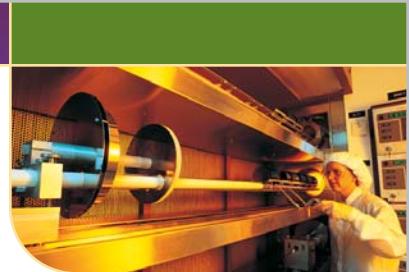


The 2007 SEMI Award for North America was presented to Dr. C. Grant Willson, professor, College of Natural Sciences, University of Texas.

the high resolution needed. In addition to its high sensitivity, Willson's resist also proved to have very high contrast, which enabled the further extension of lithography to its current limits.

SEMI Lifetime Achievement Award recipient, Bernie Meyerson, joined IBM Research as a staff member in 1980, and led the development of silicon, germanium and other high performance technologies over a period of 10 years. His efforts in the area of SiGe process spawned work on strained lattice silicon, which has enabled higher frequency CMOS devices. Meyerson subsequently led a series of development organizations within IBM focused on communications and semiconductor technology, from which he created numerous major business endeavors encompassing applications ranging from pervasive wireless enablement (802.11x) to high-end data transport.

In 1992, Meyerson was appointed an IBM Fellow, the company's highest technical honor. He is also a Fellow of the American Physical Society and the IEEE. Meyerson became chief technologist of IBM's Technology Group in 2001, and in 2003, he assumed operational responsibility for IBM's Semiconductor Technology Research and Development as head of the Semiconductor Research and Development Center. In that role he led the world's largest semiconductor development consortium, members of which include Sony, Toshiba, AMD, Samsung, Chartered Semiconductor, and Infineon. In



The 2007 SEMI Lifetime Achievement Award was conferred upon Dr. Bernard S. Meyerson, vice president for strategic alliances and chief technologist, IBM Systems and Technology Group.

December 2005, he was appointed to the position of vice president of Strategic Alliances and CTO of IBM's System Technology Group.

Throughout the years Meyerson has received numerous awards for his work including the Materials Research Society Medal, the Electrochemical Society Electronics Division Award, the IEEE Ernst Weber Award for the body of work culminating in the commercialization of SiGe-based communications technology, and the IEEE Electron Devices Society J.J. Ebers Award. He was cited as "Inventor of the Year" in 1998 by the NY State Legislature, and was recognized in 1999 as the "United States Distinguished Inventor of the Year" by the U.S. IP Law Association and the Patent and Trademark office. In 2002, he was elected to the National Academy of Engineering.

Meyerson and his team have also been the subject of a long-running study on the topic of innovation in large organizations, culminating in the 2001 Harvard Business School Press publication titled "Radical Innovation; How Mature Companies Can Outsmart Upstarts."

The SEMI Award for North America has been presented annually since 1979 to honor individuals and teams who have made significant technical contributions to the semiconductor industry. The SEMI Lifetime Achievement Award is the highest honor bestowed by SEMI, and was first presented in 1994 to honor individuals who have made numerous contributions to the advancement of the semiconductor manufacturing industry. •



## EXECUTIVE CONFERENCES

# Critical Trends Confronting SEMI Members Addressed at ISS and SMC

ISS AND SMC WILL AGAIN BE HELD THE SAME WEEK AT THE STUNNING Ritz-Carlton Hotel in Half Moon Bay, California just a short drive from Silicon Valley and the San Francisco International Airport. Executives from the global semiconductor industry will gather for timely presentations and great networking.

**ISS 2008** When Trends Collide: Consolidation and Growth  
January 13–16, 2008 | The Ritz-Carlton | Half Moon Bay, California

Growing a company in an industry marked by rampant consolidation continues to confront senior executives of SEMI member companies. The focus of this year's **Industry Strategy Symposium** is "When Trends Collide: Consolidation and Growth." ISS will offer insights on how to manage these paradoxical trends. The conference will be held January 13–16, 2008 at The Ritz-Carlton in Half Moon Bay, California. ([www.semi.org/issus](http://www.semi.org/issus))

### Confirmed ISS Speakers Include:

- Aart de Geus, Synopsys
- Bill McClean, IC Insights
- Dan Hutcheson, VLSI Research
- David Townes, Needham & Company
- Doug Grose, AMD
- George Scalise, SIA
- Greg Linden, UC Berkeley
- James Canton, Futurist and Author
- Jean-Philippe Davin, STMicroelectronics
- Jim Feldhan, Semico Research
- John Frank, M&W Electronics
- Klaus Luther, Infineon
- Klaus Rinnen, Gartner
- Leo Berlinghieri, MKS Instruments
- Nariman Behraves, Global Insights
- Paolo Gargini, Intel
- Shawn DuBravac, Consumer Electronics Association
- Steve Newberry, Lam Research
- Steve Schwartz, Asyst Technologies

**SMC 2008** Molecules of the Future: Growth Markets and Application Insights  
January 16–18, 2008 | The Ritz-Carlton | Half Moon Bay, California

Materials continue to play a growing role in keeping the industry aligned with Moore's Law and the ITRS. SMC is the semiconductor industry's most comprehensive and informative event for materials professionals. It helps identify materials challenges for future technologies and emerging markets, and facilitates meaningful communications up and down the entire semiconductor supply chain. The focus at this year's SMC is "Molecules of the Future: Growth Markets and Application Insights." Held at The Ritz-Carlton in Half Moon Bay, California. ([www.semi.org/smc](http://www.semi.org/smc))

### Confirmed SMC Speakers Include:

- Thomas Thorpe, Texas Instruments
- Gary Patton, IBM
- Gilbert Declerck, IMEC
- Jean Marc Girard, Air Liquide
- Craig Hunter, Applied Materials, Solar Business Group
- George Craford, Lumileds
- Karl-Heinz Bock, Fraunhofer IZM
- Avinash Kant, Broadpoint Capital, Inc
- Mark Thirsk, Linx Consulting
- Karey Holland, Techcet Group, LLC
- Dan Tracy, SEMI
- E. Jan Vardaman, TechSearch International

Registration is now open for both events and features a special **ISS/SMC package discount**. Please join us at this exciting and insightful event! •

## CALENDAR OF EVENTS

### DECEMBER 2007

**December 5–7**  
**SEMICON Japan 2007**  
Makuhari Messe  
Chiba, Japan  
[www.semi.org/semiconjapan](http://www.semi.org/semiconjapan)

### JANUARY 2008

**January 13–16**  
**ISS US 2008**  
The Ritz-Carlton  
Half Moon Bay, California  
[www.semi.org/issus](http://www.semi.org/issus)

**January 16–18**  
**Strategic Materials Conference 2008**  
The Ritz-Carlton  
Half Moon Bay, California  
[www.semi.org/smc](http://www.semi.org/smc)

**January 30–February 1**  
**SEMICON Korea 2008**  
Convention and Exhibition Center (COEX)  
Seoul, Korea  
[www.semi.org/semiconkorea](http://www.semi.org/semiconkorea) •

## SEMI AROUND THE WORLD

### Paolo Gargini to Give Keynote on the "Era of Equivalent Scaling"

The annual SEMI Technology Symposium (STS) 2007, to be held December 5–7 at the International Conference Hall, Makuhari Messe, in Chiba, Japan, will feature a keynote from Paolo Gargini of Intel on the topic of "Welcome to the Era of Equivalent Scaling." Attendance at the keynote is free of charge, and advance registration is not necessary.

STS is held in conjunction with SEMICON Japan every December, providing a forum for both device manufacturers and equipment and materials suppliers from around the world to exchange their views of technology trends. The symposium was launched in 1982, and this year marks its 26th anniversary.

During this year's STS, a special session of the ITRS will be held on the first day of SEMICON Japan 2008. The ITRS provides a detailed analysis of semiconductor technologies proposed in the next 15 years. •