

**PERSPECTIVES** BY STANLEY MYERS, *President and CEO, SEMI®*

## SEMI AROUND THE WORLD

### Dyck Honored with Bob Graham Award for Marketing Excellence

The eighth annual SEMI Bob Graham Award for outstanding contributions in semiconductor equipment and materials marketing was awarded to Richard E. Dyck, president of TCS-Japan.

Dyck was nominated for facilitating greater cultural awareness and business relationships between the Japanese semiconductor industry and the U.S. semiconductor industry. He contributed greatly to the development of the industry in Japan and played a pivotal role in expanding the opportunities for U.S. equipment suppliers there.

"Rick Dyck's contributions to the semiconductor equipment industry began with his successful role at Teradyne in Japan and went on to include a pioneering role in global marketing practices that strengthened trade and technology relationships between U.S. and Japanese enterprises," said Stan Myers, president and CEO of SEMI.

In 1982, Dyck joined Teradyne as general manager of the automated test equipment (ATE) business in Japan. He recognized that Japan was a unique market requiring very close supplier-customer relationships, and led the development of Japan-based design, engineering, manufacturing, and support for Teradyne products. He founded TCS-Japan in 1999, after acquiring the Japanese operations of Teradyne's backplane connection system business.

Dyck has supported SEMI activities for many years. He was instrumental in the development of the SEMI International Trade Partners Conference, a global executive forum for interaction among the world's semiconductor producers and their manufacturing technology providers. He also was a leading proponent of the SEMI Japan Trade Study Group, which promoted greater familiarity, trust and cooperation at a time when U.S.-Japan trade friction threatened mutually beneficial business interactions.

The Bob Graham Award was established to honor individuals for the creation and/or

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## Building on A Good Year

### DECEMBER IS A TIME TO LOOK

back on the progress over the past 12 months and to look ahead to the New Year. By all accounts, 2006 will end up as a good year for the semiconductor equipment industry, with revenues on track to increase about 18 percent to \$39 billion. The materials market will grow by about 15 percent, which corresponds to strong unit growth in semiconductors.

The first half of the year was particularly robust, especially for silicon wafers and IC units. Some analysts believe the lack of a single "killer application" might result in lower than expected holiday sales of consumer electronics. However, 2007 looks promising with the planned launch of Microsoft's new Vista operating system expected to spur PC sales.

The growth forecast for device sales in 2007 is in the low single digits while chip equipment revenues will be flat to negative as semiconductor makers digest capital purchases made this year.

As our industry continually adjusts to change, so too does SEMI. Over the past year, we made progress on a number of programs designed to address key issues and challenges facing our members. Let me highlight a few ...

**Intellectual Property:** SEMI conducted an IP survey of member companies in North America, Asia and Europe. Escalating R and D costs are placing greater emphasis on the need for return on investment. The inability to control IP undermines the incentive for companies to stay at the leading edge. As a follow-up to the survey, we commissioned an IP "best practices" paper, which provides a U.S. legal perspective on

important IP issues. Moving forward, we plan to develop a more detailed IP white paper that will stimulate discussion in all regions. SEMI will also continue to engage in dialog with customers, governments and other groups.



**R and D:** Sharing cost, risk, intellectual property and talent is becoming a matter of survival for equipment and materials suppliers because industry revenues are not increasing as quickly as R and D costs. We continued to promote our message that SEMI members must work harder to find a basis for horizontal as well as vertical collaboration in the supply chain. We also need to conduct a thorough economic analysis of next-generation technology platforms before they are adopted by industry.

**Manufacturing Technology Forum (MTF):** The MTF was established with the support of the International SEMATECH Manufacturing Initiative, JEITA, device manufacturers, and SEMI member companies. It provides additional oversight and coordination with semiconductor makers into the industry standards-setting process. Special emphasis will be placed on prioritizing standards based on their economic impact.

As we head into 2007, there's no better way to prepare for the business and technical challenges ahead than to plan a visit to the Industry Strategy Symposium (ISS) U.S., scheduled for January 7-10 at The Ritz-Carlton, Half Moon Bay, California. This year's program features a wide range of top-tier executive speakers including 2004

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## 2006 AKIRA INOUE AWARD

# Samsung CEO Hwang Receives 2006 SEMI Akira Inoue Award for EHS



### SEMI AROUND THE WORLD

implementation of marketing programs that enhance customer satisfaction and further the growth of the semiconductor equipment and materials industry. The award is named in honor of the late Bob Graham, the semiconductor industry leader who was part of the founding team of Intel and who helped establish industry-leading companies Applied Materials and Novellus Systems. •

### Nobel Laureate to Speak at SEMI ISS, January 7-10

The SEMI Industry Strategy Symposium (ISS), scheduled for The Ritz-Carlton at Half Moon Bay, California, January 7-10, features keynote speaker Edward C. Prescott, 2004 Nobel Laureate in Economic Sciences. Building on the theme "Winds of Change: Insights Shaping the Industry," the conference features presentations by financial analysts, industry executives, and guest speakers examining challenges, trends and opportunities in the global microelectronics industry.

Other speakers include Bill McClean, president of IC Insights; Hans Stork, Sr., vice president and CTO of Texas Instruments; Jackson Hu, CEO of UMC; G. Dan Hutcheson, CEO of VLSI Research; Joe Bronson, president of Form Factor; Martin van den Brink, executive vice president of ASML; and Klaus-Dieter Rinnen, managing vice president of Gartner-Dataquest.

The final ISS session, to be held on January 10, features a panel discussion on financial and investment perspectives titled "Street-views," and will be moderated by Tom St. Dennis, senior vice president, Applied Materials. •

### CALENDAR OF EVENTS

#### JANUARY 2007

##### January 7-10

**Industry Strategy Symposium (ISS) 2007**  
The Ritz-Carlton  
Half Moon Bay, California  
[www.semi.org/issus](http://www.semi.org/issus)

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**CHANG-GYU HWANG, PRESIDENT** and CEO of the Semiconductor Business of Samsung Electronics and business director of the Memory Division, is the recipient of the 2006 Akira Inoue Award for outstanding achievement in environment, health and safety in the semiconductor industry. The award, sponsored by SEMI, was presented in Tokyo on December 4 during a Gala celebrating the 30th anniversary of the SEMICON Japan exposition.

Hwang is recognized for his contributions to EHS leadership at Samsung Electronics which resulted in the introduction of innovative environmentally-friendly products and processes and operational excellence in health and safety for employees.

"Dr. Hwang has been an excellent example of conscientious stewardship of the environment, both on behalf of Samsung and of the industry as a whole," said Stan Myers, president and CEO of SEMI.

Hwang used his management skills and instinct for innovation to guide Samsung to a leadership position in the semiconductor industry. He also applied those skills to nurture and develop Samsung's "green" management philosophy to give the company a leadership position in EHS. The result has been a global effort by Samsung to significantly reduce safety incidents, minimize the use of materials in the fab, and lower emissions of gases and chemicals harmful to the environment.

Under Hwang's leadership, Samsung reduced the amount of energy and water consumed in its wafer fabs. Since 2001, direct CO<sub>2</sub> emissions have been reduced by 210,000 tons through waste heat recovery, the introduction of more energy-efficient equipment, and wafer processing optimization.

Another program saw the creation of the "Eco-Partner" system, by which Samsung ensures every material, part and component purchased meets the highest EHS standard.

Other achievements at Samsung cited by the Akira Inoue Award committee in the selection of Hwang include:

- Introduction of environmentally friendly products that save resources and do not incorporate six hazardous substances banned from most electronics by the European Union.
- Reductions of normalized use of photoresist by 70 percent, gases by 29 percent, and other chemicals by 35 percent from 2001 to 2005 through process improvements and chemical recycling.
- Reduction of normalized water usage by 44 percent, equivalent to over 12 million tons, from 2001 to 2005 through recovery of ultrapure water and recycling of treated waste water.
- Establishment of multi-level accident prevention and damage minimization management systems, such as a GIS-based integrated disaster management system, and close cooperation with vendors in recognition of safety as the number one priority for everyone on site.

Hwang began his career with Samsung Electronics in 1989 as general manager in charge of DVC development. He received his BS and MS degrees from Seoul National University, and his PhD in electrical and computer engineering from the University of Massachusetts-Amherst in 1985.

Amongst his many technical accomplishments, Hwang led the team that

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developed the world's first 256M DRAM, for which he received the Samsung Special Prize Award. Hwang's honors include election as a fellow of the Institute of Electrical and Electronic Engineers; recognition as one of "25 Stars" by Business Week in 2003, selection as "CEO of Asia" by Asia Money in 2005, and recognition in 2005 as "Technology Leader" by the Electronics Industry Association.

The Akira Inoue Award is sponsored by the Environmental, Health and Safety (EHS) Division of SEMI. The award is named after the late Akira Inoue, past president of Tokyo Electron Limited and a strong advocate of the environment, health and safety. Inoue also served on the SEMI board of directors.

The award recognizes individuals in industry and academia who have

Nobel Laureate in Economic Sciences, Edward C. Prescott.

Immediately following ISS will be the Strategic Materials Conference (SMC) at the same location. SMC also offers a strong mix of views from the business, technology and market perspective. Included is a session on mate-

rials for solar panels, a hot new segment driving silicon wafer growth.

While it's always difficult to accurately forecast the year ahead, the outlook should become clearer after the industry's best and brightest gather for ISS and SMC. I hope to see you there. — *Stan Myers* •

made significant contributions to this area by exercising leadership or demonstrating innovation in the development of processes, products or materials that reduce EHS impacts. A subcommittee of the SEMI EHS Executive Committee reviews all nominees and selects the winner.

Past recipients of the Akira Inoue Award include Pasquale Pistorio, former CEO of STMicroelectronics; Craig Barrett,

chairman of Intel Corporation; Farhang Shadman, director of the Engineering and Research Center for Environmentally Benign Semiconductor Manufacturing at the University of Arizona; Saburo Kusama, president of Epson Corporation; Isao Uchigasaki, chairman of the board of Hitachi Chemical Company; and Gerald Ermentrout, vice president and general manager of the Electronics Division of Air Products. •

**INDUSTRY RESEARCH AND STATISTICS**

**NEW: SEMI Global Photovoltaic Equipment Report**

**SEMI'S NEW GLOBAL PHOTOVOLTAIC REPORT IS**

A database and market research report designed to identify opportunities for equipment, material and service suppliers to the photovoltaic industry as well as for cell and module manufacturers. The financial and business decision community will also benefit from the market and trend analyses, including the equipment forecast outlook.

This report identifies equipment companies and the type of equipment each supplies to the global photovoltaic industry, and includes market size estimates and forecasts on the various equipment segments. The report is delivered in Adobe® Acrobat® format and includes a Microsoft® Excel® database file.

The report will be available the first week of December 2006 and will initially cover Europe. Subscribers will receive free of charge subsequent updates from Japan, North America and China.

**CONTENT**

Equipment companies have been surveyed for the type of equipment manufactured, plant location and expansion plans. Cell and module manufacturers were surveyed to identify key needs

and trends for the each equipment segment: crystal growth, wafer sawing, slicing, etch, diffusion, anneal, epitaxial/deposition, screen print, electroplating, laser, wafer bonding, tabbing/bussing, inspection, test, lamination, turn-key production lines, automation, and other detail.

The report summarizes the biggest opportunities and challenges encountered by equipment manufacturers, the possible alliances for cooperation, and roadmap activities. The data is consolidated per region.

Solar cell and module manufacturers were also surveyed to obtain an overview of their manufacturing capacity per location and future expansion plans including capital spending. This information was used to develop the equipment forecast outlook.

**PRICING**

The report is available at SEMI member pricing of \$1,490 (single user) and \$2,390 (multiple users.) Non-SEMI member pricing is \$1,990 (single user) and \$2,990 (multiple users.)

For more information contact SEMI Global Sales and Services at [customerservice@semi.org](mailto:customerservice@semi.org) or your nearest SEMI regional office. Visit SEMI at [www.semi.org/store](http://www.semi.org/store) •

## NANOTECH

# Path from Lab to Fab Requires Long Term Commitment

**NANOTECHNOLOGY IS AT A** crossroads where the science is being converted into business, but patience is required before a return on investment is realized. This was a key message delivered by speakers at SEMI Nanoforum 2006, held November 1-2 at the Marriott Hotel in San Jose, California.

G. Steven Burrill, CEO of Burrill & Company, outlined nanotech opportunities in the bio-pharmaceutical industry. The confluence of technology will change the nature of health care in the future, moving from treating illnesses to preventing them.

Memory and obesity will be the two biggest drug markets in the future, according to Burrill. However, a payback to investors will not happen overnight. "We are in an industry where we do not see a customer for a decade or two," he said. "It takes 10 to 15 years of R and D."

The life sciences industry offers diversification opportunities for suppliers of semiconductor metrology equipment, according to Jeannine Sargent, an executive vice president with Veeco Instruments. "I think the life science segment will be as large, if not larger than the opportunities we have found in the automated AFM [atomic force microscopy] business for semiconductors," she said.

Metrology instruments for the biomedical market are lower cost, but unit volumes are much higher than in the chip industry. Instead of 12 to 15 major semiconductor customers, there are thousands of potential customers in life sciences, according to Sargent. Veeco, which has been in the bio-AFM market for a decade, has 1,000 instruments installed.

Dean Collins, deputy director of the Microsystems Technology Office (MTO) of DARPA, discussed military applications and opportunities. Currently the MTO has 65 nanotech related programs and a couple

of hundred other "seedling" projects.

Thomas Feist, manager of thin film labs at GE Global Research, stressed the long term commitment required for nanotech development. It can take five or more years for a product to go from the lab to high volume commercial production, he noted. "The world of nano really allows you to do different things and that's why it's exciting, that's why it's broad-based," said Feist. "Optical, electronic, magnetic properties all change when you get down to nano-size structures."

Feist added that the manufacture of nanotubes and nanorods was relatively easy. "The difficult part is controlling them... and integrating them into functional devices," he said.

Ged McLean, president and CEO of Angstrom Power, discussed opportunities and challenges in fuel cells which convert hydrogen into electricity. In particular, fuel cells are suitable if the energy needs to be stored for a long period of time, according to McLean. "Hydrogen fuel cells also really come into play in mobile services," he said, adding that it would be impractical to carry a solar panel around.

SEMI Nanoforum 2006 included a program called "Nano U", immediately preceding the conference, which was designed to promote cooperation between academia and industry. The full-day session featured professors from leading university nanotechnology centers discussing the latest research.

"Nano U provides a unique forum for industry executives to gain insight on cutting edge research relevant to their businesses," said Stan Myers, president and CEO at SEMI. "By creating this forum, we are encouraging greater collaboration, ultimately equating to a reduction in R&D costs and faster times to market for the resulting technologies." •

### CALENDAR OF EVENTS

#### JANUARY 2007

##### January 10-12

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

##### January 31-February 2

**SEMICON Korea 2007 COEX**

Seoul, Korea  
[www.semi.org/semiconkorea](http://www.semi.org/semiconkorea)

#### FEBRUARY 2007

##### February 4-6

**ISS Europe Kongresshaus**  
Zurich, Switzerland  
[www.semi.org/isseurope](http://www.semi.org/isseurope)

#### MARCH 2007

##### March 7

**SEMI New England Breakfast Forum**  
N. Billerica, Massachusetts  
[www.semi.org](http://www.semi.org)

##### March 13-15

**FPD China Shanghai International Exhibition Center (INTEX)**  
Shanghai, China  
[www.semi.org/fpdchina](http://www.semi.org/fpdchina)

##### March 21-23

**SEMICON China Shanghai New International Exhibition Centre (SNIEC)**  
Shanghai, China  
[www.semi.org/semiconchina](http://www.semi.org/semiconchina)

#### April 2007

##### April 11-14

**Global FPD Partner Conference**  
Nagasaki, Japan  
[www.semi.org/gfpc](http://www.semi.org/gfpc)

##### April 16-17

**SEMI Executive Conference in Israel**  
Tel-Aviv, Israel  
[www.semi.org/israelconference](http://www.semi.org/israelconference)