

OPTOELECTRONICS


R E P O R T ®

i n c l u d i n g **L a s e r R e p o r t**

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From the Editors

Optoelectronics is the technology of systems and devices that emit, modulate, transmit, or sense light. Optoelectronic devices include lasers and other light sources, optics, fiberoptic components, detectors, displays, and imaging devices.

Optoelectronics Report, now incorporating Laser Report, covers both national and international business news and market trends and tracks technology advances to interpret their business implications.

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Research reigns supreme at CLEO/QELS & PhAST

SAN JOSE, CA--Despite mixed reviews from exhibitors on the show floor at the May 4–9, 2008 Conference on Lasers and Electro-Optics (CLEO), Quantum Electronics and Laser Science (QELS) Conference, and the Photonic Applications, Systems and Technologies (PhAST) Conference (collectively known as CLEO/QELS & PhAST and sponsored by APS, IEEE LEOS, and the OSA), the research community benefited from a record number of 2342 paper submissions that were narrowed down to more than 1900 technical presentations in 247 technical sessions covering all things laser and quantum related.

Contrasting these figures to last year's 1800 presentations, it isn't hard to figure out that a growing technical conference means less time for attendees on the show floor. That said, many of the 350 exhibitors (compared to 250 last year) were amazed

not by the quantity, but by the quality of leads they received. While the economy and fears of recession are making buyers cautious, fewer "looky lous" may be translating to more solid, qualified leads.

But the mixed reviews from exhibitors cannot diminish the fact that CLEO has always been an international conference for researchers, with 5300 registered attendees compared to 5200 last year. Many of the special events and technical sessions were standing-room only, such as the special Maiman Symposium on Sunday night (see page 2 for a separate report).

You can do it!

It was surprising to learn in the Wednesday morning CLEO/QELS Joint Plenary Session that 63% of the technical presentations were from companies and

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FiberFest focuses on urban FiOS installation challenges

BOXBOROUGH, MA--FiberFest New England 2008, the annual conference of the New England Fiberoptic Council held May 12, 2008, at the Boxborough, MA Holiday Inn, featured approximately 40 exhibitors. While the small number of table-top exhibits didn't bring many (if any) buying customers to the event, the main Plenary talk was an interesting comment on the fiber market, focusing on the challenges of fiber network installation in urban areas.

Chris Parker, engineering manager, Greater Boston Outside Plant (OSP) at Verizon (Boston, MA), spoke on "Challenges, Solutions, and Future Directions for Fiber Installations." His commentary explained the reasons why Verizon has focused its initial fiber-to-the-premises (FTTP) fiber-optic system (FiOS) installations on suburban communities, skipping urban areas.

"We faced a big controversy," said

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NEWS BRIEFS

Technology transfer award: Don Dooley, president of Spectrum Detector (Lake Oswego, OR) and John Lehman of the National Institute of Standards and Technology (Boulder, CO) received a 2008 FLC Technology Transfer Award from the Federal Laboratory Consortium (FLC; www.federal.labs.org). They were selected, along with 20 other recipients, out of over 300 national labs for their efforts to commercialize optical TRAP detector technology. One of the most coveted awards in the field of technology transfer, the FLC Awards for Excellence in Technology Transfer recognize laboratory employees who have accomplished outstanding work in the process of transferring federally developed technology to the marketplace. A panel of experts from industry, government, academia, and the federal laboratory system judge the nominations.

Photovoltaic production line: NexTech Solutions and FAS Holdings Group, doing business jointly as "NexTechFAS" (Houston, TX) announced that a leading organic photovoltaic (OPV) materials and process development company has ordered an Advantage Extrusion Coating system for integration into a pilot production line. This technology will be used for the development of solar panels in an industry that is predicted to grow to over \$71 billion by 2012, according to industry analysts at Lux Research. NexTechFAS's Advantage Series coating systems, which are typically used in the manufacturing of flat-panel displays, have now proven to be capable of very precisely coating complex OPV materials, even at submicron thicknesses.

CLEO Symposium honors Theodore Maiman

SAN JOSE, CA--My personal high point of CLEO this year was speaking at a three-hour symposium on Sunday afternoon that honored the legacy of Theodore Maiman, almost exactly 48 years after he demonstrated the world's first laser at Hughes Research Laboratories (Malibu, CA). A standing-room-only audience of more than 500 people filled the room and I was delighted to share the podium with Maiman's wife Kathleen, and with people who worked with Maiman during his long and productive career.

Kathleen Maiman opened the symposium by displaying a replica of the first laser, and then gave the audience a picture tour of her late husband's life and work. One highlight was a copy of his notes from his first laser demonstration, a particularly remarkable achievement because it worked the first time. She showed many photos of Maiman with friends and colleagues, including his assistant in the laser demonstration, Irnee D'Haenens, who sadly died in December, just seven months after Maiman. One memorable photo showed Maiman receiving an award from President Lyndon Johnson; another showed him dressed as a pirate with his wife by his side. As an old Dick Tracy fan, I got a kick out of a cartoon tribute given to Maiman by artist Chester Gould.

David Hanna of the University of Southampton (Southampton, UK) made the important historical observation that

the first ruby laser was 10 orders of magnitude brighter at its wavelength than previous thermal sources, and that since then we've gained another 10 orders of magnitude.

My talk stressed the originality, elegance, and importance of Maiman's ruby laser. His pulsed laser with high peak power was an original design that opened new opportunities not envisioned for the continuous-wave laser oscillators others were trying to build. It was an elegant design, simple and robust enough that TRG and Bell Labs replicated it within weeks--a remarkably short time. Thanks to that design, lasers were soon in the hands of engineers, scientists, and physicians working to develop laser applications.

After the talks were over, I got a big kick from seeing a 1962-vintage Hughes ruby laser, displayed by attendee Robert Hess, a technician in the San Jose area who had restored it to working order.

In his later years, Maiman became heavily involved with medical laser research. Three final speakers--Nicholas Razum, formerly of the Western Institute of Laser Treatment (Santa Barbara, CA), Gregory Keller, founder of the Western Institute, and Delwin McCarthy of Millennium Dental Technologies (Cerritos, CA)--described research on laser healing, bio-stimulation, and skin treatment that they hope will become a living legacy.

--Jeff Hecht, contributing editor,
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PhAST/LFW Award exemplifies innovation

SAN JOSE, CA--Adorned in lab coats, caps and booties, gloves, and face masks, a small crew of *Laser Focus World* staff and our videographer made our way into the Class 100 cleanroom at the Lundy Avenue facility of Coherent during last week's CLEO/QELS conference to get a first-hand look (and hopefully, some informative video) of the OPSSL-577-3, Coherent's optically pumped semiconductor laser at 577 nm for the treatment of macular degeneration and the winner of the 2008 PhAST/*Laser Focus World* Innovation Award.

Each year, the Innovation Award judging committee looks at a number of submissions of new products and technologies, trying to identify those that clearly stand out among the others as the most "innovative." While many products are simply improvements to existing product lines and technologies, and many more are surrounded in the industry by competitive designs that address the same application space, the truly innovative products are those with a strong patent position that uniquely address a specific application or market and make an immediate difference in the lives of researchers and everyday people.

Although Coherent's OPSSL technology is not new (it was first pioneered in 1997), Coherent's decision to lock the wavelength of the OPSSL-577-3 to 577 nm, the peak of absorption for oxygenated hemoglobin, is new. The 3W yellow output selectively targets small blood vessels in the retina that rupture periodically for patients that have age-related macular degeneration. By sealing the leaking vessels without damaging peripheral tissue (a process called photocoagulation), it is hoped that the new laser can improve the lives of some 250,000 people in the U.S. alone that are afflicted with this form of age-related blindness. And because the success of such a laser depends on it being ultra-reliable in a clinical setting, Coherent is using a series of time-tested cleanroom assembly practices and diligent burn-in cycles to insure

that its OPSSL-577-3 will not disappoint.

Honorable Mentions

The judging committee also selected five companies for Innovation Award Honorable Mentions. Among the winners was Amplitude Systemes (Pessac, France) for its Tangerine 20 W diode-pumped ultrafast fiber amplifier. While the Tangerine has many competitors in the ultrafast micro- and nano-machining, nonlinear optics, nanophotonics, and life science industries, it uniquely delivers high pulse power in a package far smaller than you would expect for the power it delivers.

The most unusual product to receive honorable mention this year was ColdQuanta's (Boulder, CO) RuBECi ultracold matter cell for the production of Bose-Einstein condensates (BECs). The stuff of science fiction, the ultracold matter cell is an impressively compact system for use in frequency standards, clocks, and inertial sensing applications, and doesn't require the services of several PhD-level scientists to operate.

Two honorable mention recipients in the optics field were Edmund Optics (Barrington, NJ) for its TECHSPEC low-cost, color-corrected aspheres and HoloChip (Albuquerque, NM) for its APL-1050 adaptive polymer lens. Edmund took what is normally an all-glass and expensive-to-produce asphere and replaced it with a lower-cost molded polymer aspheric surface bonded to a standard achromatic doublet for simultaneous reduction of spherical and chromatic aberration. And in keeping with the spirit of innovation, HoloChip created an adaptive polymer lens that takes the place of boxes of fixed-focal-length lenses, speeding prototyping for researchers.

Now in its third year, The PhAST/*Laser Focus World* Innovation Award is sponsored by Laser Focus World magazine and PhAST. Please go to www.phastconference.org/innovation/ for details and start planning your submissions for 2009!

--Gail Overton

NEWS BRIEFS

Pump laser contract: Modulight (Tampere, Finland and San Jose, CA) continues its close cooperation with the European Space Agency (ESA) by signing a two-year, \$1.1 million dollar contract to develop high-brightness pump laser technology for Earth observation. The project aims at improving brightness and reliability of high-power laser arrays that are generally used for pumping solid-state lasers. "We have already supplied space-qualified communications lasers to ESA for the SMOS mission in 2004 ... This new contract helps us to further exploit our product offering in space applications, and also opens interesting new business opportunities in commercial markets where higher brightness and more reliable pump lasers are continuously needed," said Petteri Uusimaa, Modulight president & CEO.

Laser beam delivery office

moves: Laser Mechanisms (Farmington Hills, MI), a designer and manufacturer of laser beam delivery components and articulated arm systems for industrial lasers, will move its Laser Mech Europe sales offices from Destelbergen, Belgium to Mariakerke, Belgium in early June. The new 2,500 sq. ft. facility will house sales offices, a showroom, a training room, a meeting room, and expanded warehousing for inventory. The move is in direct response to unprecedented European sales growth and will enable Laser Mech Europe to further strengthen its sales and support of industrial and medical laser systems users in the region.

NEWS BRIEFS

New U.K. laser office: Laser manufacturer Z-Laser Optoelektronik GmbH (Freiburg, Germany) has set up a U.K. sales office in Merthyr Tydfil, Wales with an aim to enhance and expand its customer base by providing improved service and focus. Gary Rees, head of the Z-Laser U.K. operation, has more than six years of experience in lasers within the electro-optics industry and looks forward to the new challenge. Born and raised in South Wales, he will be a familiar and friendly face to customers and will offer the Z-Laser range of industrial laser products. "There are exciting and challenging opportunities in the U.K. and Ireland where hands-on support and close relationships with customers are needed; it's my job to make sure the U.K. office provides this," said Rees.

Nano-precision motion partnership: ALIO Industries (Wheat Ridge, CO), a nano-precision motion systems company, and laser and precision optics manufacturer Kohzu Precision (Kanagawa, Japan) have penned a new agreement that will insure the availability of both companies' products throughout the high tech and nanotechnology fields. ALIO Industries will be the distributor for Kohzu products in North America; in turn ALIO will design and build their nano-precision systems for Kohzu to distribute throughout Japan and the Asian markets via private label. Bill Hennessey, founder & CEO of ALIO said, "The combination of ALIO and Kohzu products for the North American markets gives our union a complete motion system offering that is currently not available even from the multi-billion dollar holding companies."

Research reigns supreme at CLEO/QELS & PhAST, continued from page 1

individuals outside the U.S. The international flavor of the conference and the importance of research was summed up well in the Plenary by Ursula Keller, head of research for the Institute for Quantum Electronics at ETH Zurich, who was presented the Joseph Fraunhofer Award/Robert M. Burley Prize for her contributions to the development of ultrafast lasers and semiconductor mode locking. "Now they know why mommy is always away," she said to her children in the audience. When she moved from Switzerland to Stanford University for research, Keller said she was energized by the spirit at Stanford: "Nobody said I can't do it," she told the crowd, and added, "Consider doing science and having a family--you can do it, just try harder!"

Such a "can do" spirit was evidenced in the Monday evening CLEO Plenary presentation by University of Florida physics professor David Reitze, spokesperson of the Laser Interferometer Gravitational-Wave Observatory (LIGO) Scientific Collaboration (www.ligo.org). Reitze acknowledges there is no comparison between electromagnetic waves and gravitational waves with strain values as tiny as 10×10^{-21} for orbiting white dwarfs. While you could argue that the ultimate detection of gravity waves (a tremendous feat in itself) won't solve world hunger, the technology being developed to measure such small parameters with the world's largest interferometer, such as large-scale vibration isolation and ultra-smooth optical surfaces, will likely contribute to many emerging applications in a variety of industries.

The excitement of exploring new frontiers is what photonics is all about, and could be seen on the faces of the New Focus Student Award entrants that sat just in front of me during the Wednesday Plenary while Ian Walmsley, Hooke Professor of Experimental Physics at the University of Oxford, uniquely delivered his presentation "Meet the Fock States: The Photon Revisited." Taking what could have been an otherwise dry topic and interspersing videos of college

students debating the character of the photon over glasses of beer surely struck a chord with the audience--young and old. "As the system gets more complicated, you need stronger and stronger refreshments," was the conclusion of Walmsley as he described the process of colluding herald and signal photons (quantum entanglement). Appropriately, to the question of whether or not photons are real, Walmsley's video actors could only say, "Do you want another beer?"

Green photonics grow

Today, any conference on lasers and photonics just wouldn't be complete without a heavy emphasis on "green photonics"--those devices and technologies that reduce and can someday eliminate our dependence on fossil fuels and produce negligible environmental impact--such as photovoltaic cells and energy-efficient LEDs. And this year's CLEO/QELS & PhAST conference was no exception. Specifically, the PhAST program featured sessions on organic LED (OLED) technology and business growth as well as laser applications in the photovoltaics market, while the press luncheon (an excellent indicator of what's "hot" in photonics) focused on "Optics in Energy Efficiency" with speakers from Greentech Media (Cambridge, MA), the Fraunhofer Institute for Solar Energy Systems (Freiburg, Germany), Samsung SDI (Suwon, Korea), and the U.S. Department of Energy/Sentech (Washington, DC).

After the first presentation from director of marketing Andrew Masters of Coherent (Santa Clara, CA), who presented the background and technology behind his PhAST/Laser Focus World Innovation Award-winning product, the OPSSL-577-3 optically pumped semiconductor laser for the treatment of macular degeneration (see complete story on page 3), the "green photonics" speakers presented their views on how photonics technology can free us from fossil-fuel dependence.

Co-founder and CEO of Greentech Media Scott Clavenna made it clear that something must be done to prevent

atmospheric carbon dioxide levels from reaching the anticipated 850 ppm by 2050, "Unless you like sailing around the Arctic circle." Clavenna and the other speakers pointed to solar photovoltaics, water purification using optics and light, and OLED displays and LED lighting as possible means to achieve a 500 ppm interim goal; however, each speaker cautioned that much more research is needed before these technologies can be cost-competitive in the marketplace.

Technical sessions and new products

In the technical track on nonlinear optics, Christian Spielmann, professor at the University of Jena, Germany, gave a tutorial on "High Harmonic Generation and Extreme Nonlinear Optics." The talk reviewed results of years of research investigating crystal-to-liquid state changes, in which the goal is to determine transition times and identify intermediate states. Ultrashort X-ray pulses are used to follow these dynamics.

"Nonlinear short-wavelength generation can be used to generate low-order harmonics, high-harmonic generation, and relativistic nonlinear effects," said Spielmann, enabling quasi-phase matching and ultimately, the calculation of the distance between atoms.

In a track on Quantum Cryptology, Toshimori Honjo of NTT/CREST in Japan presented the results of his successful demonstration of quantum key distribution over a distance of 100 km. In his "Entanglement-Based BBM92 QKD Experiment Using Superconducting Single Photon Detectors," a time-bin entangled photon pair source based on a periodically poled lithium niobate (PPLN) waveguide generated a 16-kbit sifted key with a quantum-bit error rate of 6.9%.

The detection of a single photon fired from an Earth-based system to an orbiting satellite and back was accomplished by researchers at the University of Padua, Italy. Professor Paolo Villorosi and his team were able to identify that the photon detected was the same individual photon originally emitted. Such a system is a significant step toward the

realization of a quantum communication channel and demonstrates that laser-ranging systems can be adapted to quantum communications.

On the exhibit floor, Coherent launched the Talisker, offering high-power picosecond output in a rugged industrial package--18 W of average power at a pulse repetition rate of 200 kHz (with a pulsewidth less than 15 ps). As the first fiber-based laser from Coherent, the Talisker will enable precision micromachining at high throughput rates with a negligible heat-affected zone in infrared (1064 nm), visible (532 nm), or ultraviolet (355 nm) wavelengths.

Post-deadline papers

From 215 CLEO/QELS Postdeadline Paper submissions, 39 papers were selected. Highlights included: (1) The first report of a negative refractive index in a three-dimensional sample of an optical metamaterial, by Jason Valentine and colleagues of the University of California at Berkeley (Berkeley, CA). It used 21 alternating layers of silver and magnesium fluoride in a fishnet structure; (2) Demonstration of an efficient 200 mW continuous-wave solid-state laser emitting at 244 nm by Yushi Kaneda of the University of Arizona (Tucson, AZ) and colleagues. It was based on intracavity doubling of an optically pumped 488 nm semiconductor laser; (3) First light from the T-REX (Thomson-Radiated Extreme X-Ray) source of picosecond gamma ray pulses at the Lawrence Livermore National Laboratory (Livermore, CA), described by F. Albert et al. of Livermore; and (4) Generation of 527-nm second harmonic pulses at energies to 115 J with 85% efficiency in lithium borate by Gabriel Mennert of the French Atomic Energy Commission (Le Barp, France) and colleagues.

The 2009 CLEO and the International Quantum Electronics Conference (IQEC, which replaces QELS every 5 years), or CLEO/IQEC & PhAST, is scheduled for 5/31 to 6/5 in Baltimore, MD.

--Gail Overton, Valerie Coffey,
Jeff Hecht

NEWS BRIEFS

Equipment donation: Laser diode test instrumentation company ILX Lightwave (Bozeman, MT) donated \$10,000 worth of laser diode instrumentation to the University of Texas at Austin. Seth Bank Assistant Professors with the University of Texas will use the laser diode controllers for research on new mid-infrared laser diodes for spectroscopy and gas sensing. In addition, the equipment will allow hands-on opportunities for the undergraduate and graduate students who take the optoelectronics courses in the Electrical and Computer Engineering Department. Patrick Gale, ILX Lightwave's product marketing engineer for laser diode test systems said, "Our goal with the university donation program is to provide cutting-edge equipment to the nation's colleges and universities who are educating the future generation of photonics industry researchers and engineers."

Lithography license agreement: SUSS MicroTec (Munich, Germany), supplier of solutions for the 3-D, MEMS, advanced packaging, and nanotechnology markets, entered into a license agreement with Philips Research (Eindhoven, The Netherlands), for a new enabling technology called substrate conformal imprint lithography (SCIL). This new imprint technology for sub-50 nm patterning is bridging the gap between small rigid stamp applications for best resolution and large-area soft stamp usage with the usual limited printing resolution below 200 nm. "SCIL represents an enabling new technology that paves the way for further commercialization of nanoimprint lithography," said Rolf Wolf, general manager of SUSS MicroTec lithography division.

NEWS BRIEFS

Semiconductor acquisition:

France-based materials maker Saint-Gobain acquired Lumilog of Vallauris, France, which is now operating as a subsidiary of Saint-Gobain. Financial terms of the transaction were not disclosed. Spun off from the Center of Hetero-Epitaxie Research and Applications (CHREA) of France's National Scientific Research Center's (CNRS) in 2001 by Jean-Pierre Faurie (president), Bernard Beaumont (director/production manager) and Pierre Gibart (VP of supervisory board), Lumilog manufactures HVPE-grown free-standing bulk gallium nitride substrates as well as MOCVD-grown 2-inch gallium nitride template epiwafers on sapphire substrates, for both optoelectronic and microelectronic applications.

Another semiconductor acquisition:

AmberWave Systems (Salem, NH), developer of semiconductor materials technologies, acquired Aonex Technologies (Pasadena, CA) and its suite of materials integration technologies originating from the California Institute of Technology (Caltech). Aonex, a publicly traded company commercializing new technologies in life sciences, electronics and energy, was co-founded in 2004 by Arrowhead and Caltech professor Harry Atwater, whose research in materials integration and applications for advanced, laminate composite semiconductors led to the development of the company. Since then, Aonex has explored materials relevant to solar energy and advanced laser products, making significant progress in demonstrating the viability of laminated semiconductor materials for high-efficiency electro-optical devices.

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Company	Ticker	Apr. 28	May 14	52-week	
				Low	High
Agilent	A	30.66	33.08	28.79	40.42
Avanex	AVNX	0.82	1.01	0.52	2.10
Bookham	BKHM	1.46	1.89	1.13	3.39
Ciena	CIEN	34.08	34.31	21.40	49.55
Clearfield	CLFD	1.30	1.58	0.25	2.00
Coherent	COHR	29.19	30.01	22.10	33.38
Corning	GLW	25.68	26.08	20.04	27.29
Cree	CREE	27.38	24.97	18.65	35.50
Cymer	CYMI	27.06	28.37	22.86	44.73
Dalsa*	DSA.TO	14.81	14.00	7.27	16.75
Data Translation	DATX	0.55	0.60	0.55	1.40
Eastman Kodak	EK	18.55	17.07	16.20	30.20
Electro Scientific	ESIO	16.72	16.61	14.76	25.64
Emcore	EMKR	6.21	7.97	4.32	15.90
Enablance Tech.	ENAFF.PK	1.39	1.50	N/A	N/A
Excel Tech.	XLTC	24.40	23.71	22.11	28.50
EXFO	EXFO	5.42	5.63	3.75	7.83
GSI Group	GSIG	8.20	8.14	7.48	11.71
II-VI	IIVI	37.41	36.19	24.00	41.01
Infineon	IFX	9.27	10.44	6.26	18.74
Infinera	INFN	13.23	13.19	8.28	30.00
IPG Photonics	IPGP	16.93	19.06	13.80	23.94
ITT Industries	ITT	62.04	67.34	50.94	73.44
JDS Uniphase	JDSU	14.59	11.68	9.49	17.00
JMAR Tech.	JMAR.OB	0.16	0.24	0.04	0.28
Lightpath Tech.	LPTH	1.44	1.52	1.31	5.90
LSI Industries	LSI	6.09	6.94	3.75	9.08
MRV Comm.	MRVC	1.48	1.57	1.20	3.46
Nanometrics	NANO	6.80	8.08	5.00	11.71
Newport	NEWP	11.09	12.83	9.34	16.28
Nortel Networks	NT	8.28	8.07	5.73	26.49
Omnivision	OVTI	16.05	16.50	11.50	25.17
PerkinElmer	PKI	27.01	28.07	21.88	30.00
QPC Laser	QPCI.OB	0.75	0.75	0.31	1.51
Rofin-Sinar	RSTI	45.41	36.23	32.23	48.83
Thermo Electron	TMO	57.16	58.16	46.63	62.02
Three-Five Systems	TFSI.PK	0.05	0.03	0.03	0.13
Universal Display	PANL	15.19	14.74	13.19	23.35
Veeco Instruments	VECO	17.89	18.64	12.04	22.28
Zygo	ZIGO	12.10	11.90	10.51	15.49

*Figures quoted in Canadian dollars.

N/A--Not available.

All information is believed to be accurate at the time of publication, but *Optoelectronics Report* is not responsible for errors.

FiberFest focuses on urban FiOS installation challenges, continued from page 1

Parker, referring to a Boston Globe article Nov. 2, 2006: "An urban fiber-optic challenge." A 2005 article on Massachusetts FiOS deployment noted that Verizon was "cherry-picking affluent areas for advanced services." Congressmen questioned why speedy fiber-optic cable and Internet installation, six times faster than cable, was "only offered in affluent, white suburbs," a practice amounting to "broadband redlining."

The four major difficulties in urban environments are access to properties, measurement challenges, density of customers, and the multitude of dropwires. In Boston, challenges include old infrastructure and eighty-year-old maps of manholes and properties. Condominium homeowner associations, which are more common in cities than in suburbs, are reluctant to provide access to utilities, says Parker, and "Even when we have permission, we've got big Rottweilers, fences, sheds--you can't get from yard to yard." In the suburbs, installers can easily splice to utility poles on the sidewalks with a police detail.

Nevertheless, in late 2006, Verizon began an urban test-bed deployment in the densely-populated Boston neighborhood of Dorchester, MA. The expected difficulties occurred, including backyard reconstruction of a doghouse down to the correct-color vinyl siding. "People don't want you in their backyard taking notes," said Parker, "much less digging up their yard and reconstructing walls." A single telephone pole in Dorchester might require 36 ports for 36 customers, whereas suburban poles might require 4 ports.

To address these challenges, Verizon developed the Verizon Advanced Termination System (VATS), a multi-port box specifically designed for densely populated areas, which offers drop-in and plug-in ports in a smaller box that serves more customers. Verizon's installation of self-support VATS (where cable is attached to existing poles not on a

public way) began in urban New York City and Dorchester in mid-2006. The new VATS ports were also found to be applicable in the suburbs. To bring fiber all the way to the premise, the incorporation of bend-insensitive fiber in the near future will enable fiber cable to bend more tightly around inside corners. And several companies have recently demonstrated wireless high-density multichip interconnect (HDMI) units involving a set-top box that will eliminate the need for cable inside the living unit. Such capabilities will be "coming down the road soon," said Parker.

Further reflecting the "Outside Plant/Building Fiber Installation" theme of FiberFest, Craig Bowden, technical sales & service, FiberNext, spoke on "Challenges, Solutions, and Future Directions for OSP Fiberoptic Cabling Installation." He discussed the discontinuity between the photonic products hitting the market and the arduous task of tradesmen and women to install them under harsh conditions. "Often the new developments are proprietary and not interoperable with other products," said Bowden. The contractors and developers then struggle to keep pace with new product development and respond with comprehensive designs, procedures, and standards.

Although demand for advanced fiber services is expected to outpace installation for years to come, "The ongoing healthcare crisis and soaring fuel costs profoundly affect the industry," said Bowden.

--Valerie Coffey

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NEWS BRIEFS

People in the news: Peter de Groot, director of research and development for Zygo (Middlefield, CT), was elected a Fellow of SPIE in honor of his many contributions in high-precision interferometry, a core technology of Zygo's products. SPIE noted, "Dr. de Groot is the inventor and developer of optical metrology tools for inspecting a range of optical and engineering surfaces from MEMS devices to airplane wings - with more than 75 patents issued and pending and four R&D 100 Awards to his name, he is truly a prolific and leading inventor in the optical metrology arena."

Colibrys (Neuchâtel, Switzerland and Houston, TX), a supplier of MEMS-based motion sensors, appointed Don Stoops to the role of VP global operations. Before joining Colibrys, Don spent fifteen years in executive management positions within the semiconductor industry at Advanced Micro Devices and Cypress Semiconductor.

Bridgelux (Sunnyvale, CA), a supplier of LED technology for high-volume, solid-state lighting markets, appointed Keith Scott as VP of business development, and David Barnby as VP of sales and general manager for EMEA (Europe, Middle East, and Africa).

The OSA, SPIE, and MRS selected its 2008-2009 Congressional Science and Engineering Fellows that serve one-year terms working as special legislative assistants on the staffs of members of Congress or congressional committees. Robert Saunders, a post-doctoral fellow in the Duke Advanced Imaging Laboratories, will serve as the Arthur H. Guenther Congressional Fellow, and Amit Mistry, a science policy intern at Research! America, will serve as the OSA/MRS Congressional Fellow.