

CLEO-IQEC TO BE HELD IN ANAHEIM

Together the two annual meetings will feature more than 1000 technical papers, spanning the breadth of laser and electro-optic research.

The Conference on Lasers and Electro-Optics and the International Quantum Electronics Conference will be held jointly this year, at the Anaheim Convention Center and the Marriott Hotel in Anaheim, California. Technical sessions for both meetings are scheduled from 21 to 25 May.

The Optical Society of America and the IEEE/Lasers and Electro-Optics Society will cosponsor both the applications-oriented CLEO and its somewhat smaller, more basic-science-oriented counterpart, IQEC. The latter conference is also being sponsored by the topical group on laser science of The American Physical Society. Because the two conferences address different aspects of the same field of research, they are conducted jointly whenever IQEC is held in the United States.

Although many of the technical sessions of CLEO and IQEC are run separately, the combined CLEO-IQEC symposia are often among the highlights of the joint conferences, because they allow researchers involved in basic science to exchange ideas with those whose work is more applications oriented. Topics that will be covered in this year's nine joint symposia include terawatt and petawatt (10^{15} watt) lasers, doped fiber lasers, ultrafast optoelectronics, novel solid-state and liquid lasers, and chaos and noise in lasers.

The CLEO sessions are broken up into 15 technical categories. The one that accounts for the largest number of sessions is semiconductor lasers,

followed by ultrafast optics and electronics; gas and free-electron lasers; solid-state and liquid lasers; applications of nonlinear optics and laser spectroscopy; medical and biological applications; lightwave communication; phase conjugation and photorefractive devices; optical materials and fabrication; optical switching, logic and storage systems; industrial applications; atmospheric, space and ocean optics; electro-optical device and infrared sensor technologies; lasers in electronic and optical device processing; and lasers for fusion and strong-field physics.

The IQEC sessions are divided up into five categories. These are, in decreasing order of the number of

Herbert Walther



sessions, nonlinear optical processes, optical interaction with condensed matter and ultrafast phenomena, laser spectroscopy, physics of laser sources, and lasers in chemistry and biology.

Planners of the CLEO program have noticed a marked increase in the number of Soviet applicants during the past two years. B. Ya. Zel'dovich, who heads the committee to select CLEO papers from the Soviet Union, will, with his colleagues, be giving three papers at the conference. Other Soviet scientists who will be giving papers at CLEO are D. Garbuzov of the Ioffe Physical-Technical Institute in Leningrad, V. V. Osipov of the Institute of Electrophysics in Sverdlovsk, V. V. Shkunov of the Institute for Problems in Mechanics in Moscow, M. S. Soskin from the Institute of Physics of the USSR, D. V. Vlasov of the Institute of General Physics in Moscow, and O. P. Zaskal'ko of the Lebedev Physics Institute in Moscow.

IQEC planners have also seen an increase in the number of Soviet speakers. Well-known Soviet researchers who will be giving papers at IQEC include S. A. Akhmanov of Moscow State University, A. A. Manenkov of the General Physics Institute in Moscow, A. V. Danilychev of the Institute for High Temperatures in Moscow, G. B. Altshuler of the Leningrad Institute of Fine Mechanics and Optics, and S. Bagaev of the Institute of Thermal Physics in Novosibirsk. The planners of both IQEC and CLEO have also noted a surge in applica-

tions from Chinese scientists.

Awards session

At the joint plenary session Monday afternoon, OSA and LEOS will honor several scientists for outstanding research. OSA's Charles Hard Townes Award, which is given each year for work in quantum optics, will be presented to Herbert Walther, director of the Max Planck Institute for Quantum Optics in Garching, West Germany, and a professor at the University of Munich. The award citation highlights Walther's "fundamental contributions to the quantum electronics of atoms and molecules."

Walther is perhaps best known for his study of the detailed interaction of

a single atom with a cavity resonator. If the energy of one of the cavity modes matches one of the atom's emission lines, one sees a tremendous increase in spontaneous emission from the atom. This emission creates a resonant field, which tends to excite other atoms of the same kind in the cavity. Taking advantage of this chain reaction, Walther and his colleagues built a single-atom maser, which has been able to operate on a beam of atoms so diffuse that only one atom is in the cavity at a given time. This setup allowed the research team to study in detail the dynamics of the energy exchange between the atoms and the radiation field. (See *PHYSICS TODAY*, January 1989, page 24.)

Walther received his doctorate in physics from the University of Heidelberg in 1962 and his Habilitation from the Technical University of Hannover in 1968. He was a physics professor at the University of Köln from 1971 to 1975, when he went to the University of Munich. In 1976 Walther took on his additional position at the Max Planck Institute. (For coverage of other recent OSA awards, see page 98.)

Also at the plenary session, LEOS will present its Quantum Electronics Award. In addition to the awards announcements, there will be four speakers discussing the future of some key areas in quantum electronics. Anthony Siegmann of Stanford

Invited Speakers and Their Session Titles

Monday

morning

Polymer Materials and Integrated Optics. *B. L. Booth, J. E. Marchegiano, K. W. Steijn, K. D. Singer, T. Fang, W. R. Holland, L. A. King, P. A. Cahill*
Optical Switching. *M. N. Islam*
Novel Laser Sources. *M. Ohtsu, K. Nakagawa, C. H. Shin, H. Kusuzawa, M. Kourogi, H. Suzuki*
Ultrafast Processes in Bulk Semiconductors. *J. A. Kash*
Joint Symposium on Terawatt to Petawatt Lasers. *P. Bado, S. Coe, J. L. Tapio, J. Squier, G. Mourou, D. Harter*
Quantum Noise Reduction. *E. Giacobino, S. Reynaud, A. Heidmann, C. Fabre, T. Debuisschert, L. Hilico*
Diode Pumped Lasers 2. *A. I. Ferguson, R. L. Burnham*
Inorganic Materials and Binary Optics. *W. B. Veldkamp*
Quantum-Well Semiconductor Lasers. *R. G. Waters, J. J. Coleman*
Optical Data Storage. *V. B. Jipson*
Phase Conjugation by Stimulated Brillouin Scattering. *M. Valley, C. G. Koop, A. Schnurr, J. Betts, C. Clendening, K. Bowler, S. Taylor*
Guided-Wave Nonlinear Optics. *J. E. Rothenberg*
X-Ray Lasers. *R. C. Elton, Y. Kato, Z. Z. Xu, Z. Q. Zhang, P. Z. Fan, S. S. Chen, L. H. Lin, P. X. Lu, J. J. Yu, Y. C. Wang*
Quantum Optics. *P. G. Kwiat, W. A. Vareka, C. K. Hong, R. Y. Chiao*

Tuesday

morning

Ultrafast Optics: Phase and Amplitude Techniques. *J. A. Valdmanis, H. Chen, E. N. Leith, Y. Chen, J. L. Lopez, N. H. Abramson, D. S. Dilworth, M. Kaschke, N. P. Ernsting*
Joint Symposium on Doped Fiber Lasers. *D. C. Hanna*
Phase Conjugation and Photorefractive Instabilities. *S. Weiss, B. Fischer, A. V. Mamaev, V. V. Shkunov*
Physics of Low-Dimensional Semiconductors. *S. W. Koch, Y. Z. Hu, M. Lindberg, N. Peyghambarian, J. S. Weiner, G. Danan, A. Pinczuk, J. Valladares, L. N. Pfeiffer, K. West*
Organic Nonlinearities. *D. P. Shelton*
Squeezed Light 1. *A. Sizmann, R. J. Horowitz, G. Wagner, G. Leuchs*
Ultrafast Optics: Phase and Amplitude Techniques. *M. Kaschke, N. P. Ernsting*
Joint Symposium on Ultrafast Optoelectronics 1. *D. H. Auston, B. B. Hu, J. Darrow, X. C. Zhang*
Long-Pulse DFD and DF/CO₂ Chemical Lasers. *T. D. Dreiling*
Optoelectronic Systems for Information Processing. *K. Kasahara, Y. Tashiro, R. Lang*

Novel Optical Studies in Condensed Matter. *W. E. Moerner, L. Kador, M. Burns, J. M. Fournier, J. A. Golovchenko*
Squeezed Light 2. *H. A. Haus, Y. Lai*

afternoon

Medical Applications of IR Lasers. *N. S. Nishioka*
Magnetic Effects in Quantum Wells. *D. D. Awschalom, M. Fritze, W. Chen, A. V. Nurmikko, D. Ackley, C. Colvard, H. Lee*
Joint Symposium on Ultrafast Optoelectronics 3: High-T_c Superconductors; Semiconductors. *D. B. Tanner, G. L. Carr, F. Gao, S. L. Herr, K. Kamaras, J. S. Kim, C. D. Porter, D. B. Romero, G. R. Stewart, N. Tache, S. Etamad, T. Venkatesan, B. Dutta, A. Inam, X. D. Wu, M. Reedyk, D. A. Bonn, J. D. Garrett, J. E. Greedan, T. Timusk, M. C. Nuss, K. W. Goossen, P. M. Mankiewicz, R. E. Howard*
Sapphire Lasers and Amplifiers. *P. F. Moulton*
Tissue Diagnosis by Fluorescence Spectroscopy. *M. Cothren*
Quantum Wells, Superlattices and Tunneling. *M. Helm, S. J. Allen, D. S. Chemia, T. K. Woodward, D. Sivco, A. Y. Cho*
Semiconductor Nonlinearities. *P. Thomas, A. Weller*
Chaos. *S. A. Akhmanov*

Wednesday

morning

Inertial-Confinement Fusion. *S. E. Koonin, C. Yamanaka, Y. Izawa, T. Yamanka, S. Nakai, N. Basov*
Applications of Laser Material Removal. *A. Gupta*
Nonlinear Frequency Conversion of Solid-State Lasers. *J. D. Bierlein*
Coherent and Subcarrier Systems. *R. Gross*
Nonlinearities in Quantum Wells and Heterostructure. *M. M. Fejer*
Ultrafast Phenomena in Condensed Matter. *T. Kobayashi, M. Yoshizawa, G. B. Alshuler, M. V. Inochkin*
Cavity QED and Controlled Spontaneous Emission. *H. Yokoyama, S. D. Brorson, E. P. Ippen, K. Nishi, T. Anan, Y. Yamamoto, S. Machida, W. Richardson, K. Igeta, G. Bjork*

afternoon

Krf Fusion Lasers. *Y. Owadano, I. Okuda, Y. Matsumoto, K. Koyama, T. Tomie, M. Yano, D. C. Cartwright, J. F. Figueira, D. B. Harris, T. E. McDonald*
Laser Processing of Electronic and Optical Devices. *S. M. Bedair, H. Liu, J. C. Roberts, J. Ramdani*
High-Speed Lightwave Components and Systems. *R. S. Vodhanel, M. Z. Iqbal, A. F. Elrefaie, R. E. Wagner, J. L. Gimlett*
Novel Nonlinear Materials. *S. Etamad, W. S. Fann, P. D. Townsend, G. L. Baker, J. L. Jackel, J. Shelburne III*

University, the winner of last year's Quantum Electronics Award, will give the R. V. Pole Memorial Lecture. Siegmund will speak on laser resonators. David Attwood of the Lawrence Berkeley Laboratory will discuss coherence, optics and applications at x-ray wavelengths. Robert Bartolini of the David Sarnoff Research Center-SRI will examine the evolution of optical memories. And Jagdeep Shah of AT&T Bell Laboratories will discuss ultrafast spectroscopy of semiconductors.

Short courses and services

On Sunday, the day before the technical sessions get under way, a series of short courses will be given at

the Marriott Hotel. The 23 courses are intended to introduce engineers and technical managers to new technologies. Those interested in taking one of the courses are encouraged to preregister with OSA, but there will also be on-site registration for courses that are not already full.

More than 350 producers of laser and electro-optic equipment will display their wares at the CLEO-IQEC technical exhibition, held in exhibit halls A and B of the Anaheim Convention Center. The technical sessions will break from 10 am to noon on Wednesday to give meeting attendees the opportunity to visit the equipment exhibit. The exhibit hall will be open Tuesday and Wednesday from

10 am to 5:30 pm and Thursday from 10 am to 4:30 pm.

There will be an employment center in the Arena Room of the Anaheim Convention Center, where job candidates can make their resumes available to potential employers. Interviews will be arranged between interested employers and job applicants. The center will be open Monday through Thursday from 8:30 am to 5 pm and Friday from 8:30 am to 4 pm.

OSA will operate a press room in the Buena Park Room of the Anaheim Convention Center. The press room will be open Monday through Thursday from 8 am to 5:30 pm and Friday from 8 am to 4 pm.

—MATT SIEGEL ■

Optical Nonlinearity in Quantum-Controlled Semiconductors. C. Flytzanis, F. Hache, D. Ricard, P. Roussignol, D. Hulin, M. Joffe, A. Migus, A. Antonetti, N. Peyghambarian, B. Fluegel, S. W. Koch
Ultrafast Chemistry and Biology. H. Fidder, D. A. Wiersma, J. L. Martin, J. C. Lambry, M. E. Michel-Beyerle, R. Feick, J. Breton
Laser QED. J. Mertz, A. Heidmann, C. Fabre, E. Giacobino, S. Reynaud
Atmospheric Remote Sensing. C. L. Korb, B. M. Gentry
Mechanisms of Excimer Laser Ablation of Polymers. D. L. Singleton, G. Paraskevopoulos
Solitons and Spatial Instabilities. A. M. Weiner, J. S. Aitchison, Y. Silberberg, D. E. Leaird, J. L. Jackel, M. K. Oliver, E. Vogel, P. W. E. Smith
Ultrafast Spectroscopy of Quantum Wells. E. O. Goebel
Gas-Phase Reaction Dynamics. K. Q. Lao, M. D. Person, L. J. Butler, L. D. Ziegler
Laser Probing and Manipulation of Molecules and Van der Waals Complexes. W. T. Hill, B. P. Tumer, H. Lefebvre-Brion, S. Yang, J. Zhu

Thursday

morning

DFB Semiconductor Lasers. K. Uomi
XeCl Lasers. K. Hotta, S. Ito, M. Arai, U. Schmidt, W. Rath
Quantum-Well Lasers. A. Yariv
Spectroscopy and Wave Mixing. M. D. Fayer
Interaction of Extremely Intense Femtosecond Probes with Solids. R. Moore, R. R. Freeman, S. Davey, L. Van Woerkom, T. J. McIlrath, H. Mitchberg, A. A. Manenkov, V. S. Nechitalo
Condensed-Phase Reaction Dynamics. E. J. Heilweil, S. A. Angel, P. A. Hansen, J. C. Stephenson, J. Steadman, J. A. Syage
Novel Laser Concepts. H. Walther, S. E. Harris, J. E. Field, A. Imamoglu, J. J. Macklin
Infrared Imaging. G. G. Fazio, L. J. Kozlowski, M. J. McNutt
Surfaces and Interfaces. G. Lampel, T. Tiedje, K. M. Colbow, D. Rogers
Surface and Microchemistry. S. M. George, H. Masuhara
Laser Cooling I. C. Salomon, J. Dalibard, W. D. Phillips, A. Clairon, L. Hollberg, E. Guellati, V. Bagnato

afternoon

Femtosecond Optics and Lasers. F. Salin, P. Grangier, P. Georges, G. Roger, A. Brun, Z. Bor
Combustion Diagnostics. W. Ketterle, A. Arnold, H. Becker, J. Wolfrum
Beam Modulation and Deflection. U. Efron
Surface Nonlinear Optics. A. L. Harris, L. Rothberg, L. H. Dubois, N. J. Levinos, L. Dhar, R. Superfine, J. Huang, Y. R. Shen
Nonlinear Spectroscopy and Dynamics. A. B. Myers, B. Li, F. Markel, D. Phillips, T. S. Yang, M. A. Dugan, A. C. Albrecht
Injection Locking and Frequency Doubling of Diode Lasers. L. Goldberg
High-Field Laser Physics. D. Strickland, P. B. Corkum, P. Agostini

Detectors and Fiber Sensors. M. D. Jones, R. T. Hawkins II, S. H. Pepper, M. K. Ravel, J. H. Goll
New Photodetector Technologies. S. R. Kurtz
Ultrafast Dynamics. C. V. Shank, J. Y. Bigot, M. Portella, H. L. Fragnito, R. Shoenlein, P. C. Becker, W. T. Pollard, R. A. Mathies
Laser Trapping. A. Gallagher, C. E. Wieman

Friday

morning

Semiconductor Lasers. D. Z. Garbuzov, A. B. Gulackov, A. V. Kochergin, A. P. Shkurko, N. A. Strugov, A. L. Ter-Martirosyan, V. P. Chalyi
Optical Amplifiers. H. Tanaka, T. Gozen, M. Yoshida
Second-Harmonic Generation in Waveguides. A. Harada, Y. Okazaki, K. Kamiyama
Four-Wave Mixing and Photorefractive Effects. F. P. Strohkendl, J. P. Huignard
Advances in Molecular Spectroscopy and Fundamental Physics. P. M. Dehmer, J. L. Dehmer, S. T. Pratt, E. F. McCormack
Vertical-Cavity Semiconductor Lasers. J. L. Jewell, Y. H. Lee, S. L. McCall, R. S. Tucker, C. A. Burrus, N. A. Olsson, A. Scherer, J. P. Harbison, L. T. Florez, C. J. Sandroff
Ocean Optics. R. H. Stavn
Femtosecond Pulse Amplification. J. Hebling, J. Klebniczki, J. Kuhl
Solitons and Ultralong-Distance Transmission. L. F. Mollenauer, S. G. Evangelides, N. J. Doran
Optical Bistability. G. P. Bava, P. Debenardi, L. A. Lugiatto
Laser-Tissue Interaction. A. J. Welch
Rydberg Wavepackets and Photodetachment. J. A. Yeazell, C. R. Stroud Jr, T. F. Gallagher

afternoon

Media Effects on Lidar. D. V. Vlasov
Additive Pulse Mode Locking. J. Goodberlet, J. Wang, P. A. Schulz, J. G. Fujimoto
Material Processing. P. F. Jacobs
Joint Symposium on Chaos and Noise in Lasers. F. T. Arecchi, R. Meucci
Spectroscopy of Excitons. M. Matsuoka
New Technology and Photodynamic Therapy. M. S. Patterson
Coherent Transient Effects. R. W. Boyd, E. J. Miller, M. S. Malcuit, G. W. Faris, L. E. Jusinski, M. J. Dyer, W. K. Bischel, A. P. Hickman
Surface Sensing and Flow Diagnostics. J. W. Wagner
Optical Nonlinearities and Spectroscopy in Semiconductor Materials. M. Wegener, J. E. Zucker, T. Y. Chang, N. J. Sauer, K. L. Jones, D. S. Chemia
Angioplasty and Laser Ablation. W. Grundfest, F. Litvak, N. Eigler, S. Margolis, T. Goldenberg, J. Laudenslager, J. Forrester