

Appendix C. Milestones

C.1 New Faculty and Research Staff

Dr. Jianyao Chen was appointed as a postdoctoral associate in RLE's Optics and Devices group, effective April 1, 1997. Dr. Chen will work with Professor Rajeev J. Ram on the quantum optics of microcavity lasers and electron dynamics in quantum structures. A graduate of the University of Science and Technology of China (BEng'82/MEng'85), McGill University (MEng'91), and École Polytechnique of Montreal (PhD'97), he has worked in the fields of microwave technology, fiber optics, and integrated optics. He recently completed doctoral work on the research and development of gain-coupled distributed feedback semiconductor lasers.

Dr. David C. Kring (PhD'94) was appointed as research engineer in RLE's Circuits and Systems group, effective March 1, 1998. Previously, Dr. Kring was a research engineer in MIT's Department of Ocean Engineering, where he also completed his postdoctoral research. His work in RLE will involve the development of an innovative boundary element code for a project that involves hydrodynamic analysis of large non-rigid offshore structures. Contributing to the Circuits and Systems group's research in time-domain analysis of ship and body motions, this code will help to combine recent achievements in higher order element and precorrected-fast Fourier transform algorithms. Dr. Kring is a graduate of the Webb Institute (BS'88) and an associate member of the Society of Naval Architecture and Marine Engineers.

Dr. Chandra S. Raman was appointed as a postdoctoral fellow in RLE's Atomic, Molecular and Optics Physics group, effective August 1, 1997. A graduate of Caltech (BSEE'90) and the University of Michigan at Ann Arbor (MSEE'91, PhD'97), Dr. Raman has carried out studies on the fundamental interaction between atoms and light. In collaboration with Professor Wolfgang Ketterle's research group, he will investigate the properties of a dilute Bose condensate of sodium atoms in the group's continuing experiments on Bose-Einstein condensation.

Dr. Michael J. Schwartz (PhD'97) was appointed as a research scientist in RLE's Radio Astronomy group, effective October 21, 1997. Dr. Schwartz joined RLE in 1991 as a graduate student with Professor David H. Staelin's remote sensing group. Dr. Schwartz served as principal field scientist for the MIT Microwave Temperature Sounder project during

five atmospheric studies conducted from the ER-2 high-altitude aircraft. A graduate of Carleton College (BA'85), he will continue to work with Professor Staelin in efforts to build a new passive microwave spectrometer for the ER-2 aircraft.

C.2 Honors and Awards

Dr. Dennis M. Freeman (SM'76, PhD'86), Assistant Professor of Electrical Engineering, was appointed to the W.M. Keck Foundation Career Development Professorship in July 1997. The Keck professorship was established in 1983 to support promising junior faculty in the field of biomedical engineering. Professor Freeman, a principal investigator in RLE's Auditory Physiology group, is involved in developing instrumentation that visualizes the microscopic motion of biological and synthetic structures. He has developed a video-based technique that measures sound-induced motions of inner-ear structures and is now extending this method to other biomedical and engineering applications. Professor Freeman was also selected as a John F. and Virginia B. Taplin Fellow in Health Sciences and Technology. This is the first year for the Taplin Awards Program, which is administered by the Harvard-MIT Division of Health Science and Technology. The Taplin fellowships seek to recognize and support the work of faculty and students who are building HST programs in the fields of biomedical engineering, physics, and chemistry. Professor Freeman is one of four Taplin fellows selected from Harvard and MIT for the 1997-1998 year.

Institute Professor Hermann A. Haus received the 1997 Ludwig Wittgenstein Prize awarded by the Austrian Research Foundation. Professor Haus, a principal investigator in RLE's Optics and Devices group, was cited for his pioneering work in the field of electrical and optical communications. In an announcement from the award presentation on June 6, 1997, in Vienna, Austria, the foundation praised Professor Haus: "His contributions to quantum optics and lasers are of outstanding importance to the rapid transmission of high data rates in optical communication systems. His investigations of noise in electrical systems have, at the same time, established the fundamental boundaries of communications. In his work, Hermann A. Haus understands how to connect his deep theoretical insight to problems of practical application and thereby sets an excellent example of

the engineering art at its best. This constructive effort and logical clarity of his scientific thought process binds him to the heritage of Ludwig Wittgenstein."

Dr. Erich P. Ippen (SB'62), Elihu Thomson Professor of Electrical Engineering and Professor of Physics, was elected vice president of the Optical Society of America for 1998. He will become the society's president-elect in 1999 and serve as its president in 2000. Professor Ippen, a principal investigator in RLE's Optics and Devices group, is widely known for the development of ultrashort-pulse optical sources and measurement techniques. He and his research group have studied femtosecond spectroscopy of solid-state materials, ultrafast nonlinearities in semiconductor waveguides, and ultrashort-pulse optical fiber devices. Professor Ippen also received two prestigious awards in 1997. He was the recipient of the 1997 Quantum Electronics Award by the IEEE Lasers and Electro-Optics Society, which recognized him for pioneering work in ultrafast optics, optical diagnostics and novel methods of modelocking. In addition, the American Physical Society named him co-recipient of the 1997 Arthur L. Schawlow Prize in Laser Science. Along with colleague Dr. Charles V. Shank, director of Lawrence Berkeley Laboratory, Professor Ippen was cited for pioneering work in developing femtosecond sources and for leadership in applying these sources in broad areas of science.

Dr. Marc A. Kastner, Donner Professor of Physics, was appointed head of MIT's Department of Physics, effective February 1, 1998. He succeeds interim department head Professor Thomas J. Greytak, who was appointed after Professor Ernest J. Moniz was named undersecretary for the U.S. Department of Energy. Professor Kastner joined the MIT faculty in 1973 and served as head of the Division of Atomic, Condensed Matter, and Plasma Physics (1983-1987) and as associate director for the Consortium for Superconducting Electronics (1989-1992). Since 1993, he has been director of MIT's Center for Materials Science and Engineering. As a principal investigator in RLE's Quantum-Effect Devices group, he has contributed to the understanding of the electronic structure of amorphous semiconductors and the physics of high-temperature superconductivity. His recent research on the single-electron transistor has increased understanding of quantum-mechanical processes in semiconductor devices. In 1990, his research group fabricated the first semiconductor single-electron transistor. Professor Kastner is a graduate of the University of Chicago (BS'67, MS'69,

PhD'72), and a fellow of the American Physical Society and the American Association for the Advancement of Science.

Dr. Daniel Kleppner, Lester Wolfe Professor of Physics and RLE's associate director, was awarded the 1997 Oersted Medal of the American Association of Physics Teachers. The Oersted Medal is the association's highest honor, which is awarded annually for notable contributions to the teaching of physics. The association cited Professor Kleppner for his contributions to physics and the teaching of physics, for the ways in which he challenges his students, at both graduate and undergraduate levels, [and] for his highly regarded efforts to entice the larger community to form a connection with physics." The award was presented at the meeting of the American Association of Physics Teachers in Phoenix, Arizona, on January 7, 1997. Professor Kleppner's wide range of work in RLE's Atomic, Molecular, and Optical Physics group focuses on atom interactions with static electricity, magnetic fields, and radiation. His related research interests include quantum optics and ultra-precise laser spectroscopy. A prominent member of the physics community, Professor Kleppner is a fellow of the American Academy of Arts and Sciences, the American Association for the Advancement of Science, and the Optical Society of America; and a member of the National Academy of Sciences.

Dr. M. Charles Liberman was named director of the Eaton-Peabody Laboratory at the Massachusetts Eye and Ear Infirmary in March 1998. He succeeds Dr. Nelson Y.S. Kiang, who served as director of the laboratory from 1962 to 1996. Dr. Liberman is associate professor of physiology in Harvard Medical School's Department of Otolaryngology. He has served as Eaton-Peabody's acting director since 1996. An affiliated faculty member at the Harvard-MIT Division of Health Sciences and Technology, his research interests include auditory physiology, neuroanatomy, and neurophysiology. Dr. Liberman is a Harvard graduate (AB'72, PhD'76) and a member of the Association for Research in Otolaryngology, the American Association for the Advancement of Science, and the Society for Neuroscience.

Dr. Rajeev J. Ram, Assistant Professor of Electrical Engineering and Computer Science, received an award under the National Science Foundation's Faculty Early Career Development program. Professor Ram, a principal investigator in RLE's Optics and Devices group, plans to develop a noninvasive current probe based on magnetic force microscopy that

is capable of monitoring current distribution in electronic devices and circuits. The CAREER program recognizes outstanding new faculty members who intend to pursue academic careers that involve both research and education. Professor Ram's work has focused on the quantum optics of microcavity lasers and on electron dynamics in quantum structures. A graduate of the California Institute of Technology (SB'91) and the University of California at Santa Barbara (SM/PhD'96), Professor Ram joined the MIT faculty in 1997. He has conducted a wide range of theoretical and experimental research, including the development of high-speed semiconductor lasers and studies of the dynamics of microcavity polaritons.

Dr. Henry I. Smith, Joseph F. and Nancy P. Keithley Professor of Electrical Engineering, received the first Robert H. Hill Memorial Award presented by Suss Advanced Lithography, Inc., of Waterbury, Vermont. Professor Smith, a principal investigator in RLE's Quantum-Effect Devices group and head of the NanoStructures Laboratory, was cited for his outstanding contributions to the advancement of x-ray lithography. Professor Smith is widely acknowledged for his work in submicron structure technology and research and his leadership in teaching and promoting submicron structures. A second award was made to Dr. Franco Cerrina, professor of electrical and computer engineering at the University of Wisconsin at Madison and director of its Center for X-ray Lithography. The awards were presented on October 6, 1997, in honor of Robert Hill of IBM, who was a vital contributor to IBM's program in x-ray lithography and whose efforts made it an economical alternative to optical lithography.

Dr. Kenneth N. Stevens (ScD'52), Clarence J. LeBel Professor of Electrical Engineering, was named corecipient of the Frank E. Perkins Award during MIT commencement ceremonies on June 6, 1997. The Perkins Award is presented annually to an MIT professor who has served as an excellent advisor and mentor for graduate students. It is named in honor of Frank E. Perkins, Dean of MIT's Graduate School from 1983 to 1995. Professor Stevens, a principal investigator in RLE's Speech Communication group, shared the award with Professor George C. Verghese of the Department of Electrical Engineering and Computer Science. Since joining the MIT faculty in 1958, Professor Stevens has been a central figure in the development of speech communication research

at RLE, conducting fundamental research in speech synthesis and the analysis of speech production processes.

C.3 Promotions

Dr. Anantha P. Chandrakasan was promoted to associate professor in the Department of Electrical Engineering and Computer Science, effective July 1, 1998. Professor Chandrakasan joined RLE's Circuits and Devices Group in September 1994. Concurrently, he was appointed as assistant professor and to the Analog Devices Career Development Professorship. Professor Chandrakasan came to MIT from the University of California at Berkeley (BS'89, MS'90, PhD'94), where he completed postgraduate research in low-power integrated circuit design. Professor Chandrakasan's research interests include low-power techniques for portable real-time applications, video compression, computer-aided design tools for VLSI design, and system-level integration. These have applications to digital signal processing and wireless communication technologies. Professor Chandrakasan is a member of Eta Kappa Nu and Tau Beta Pi.

Dr. Jesús A. del Alamo was promoted to full professor effective July 1, 1997. Professor del Alamo conducts research in RLE's Materials and Fabrication group that involves high-performance heterostructure field-effect transistors for telecommunications and studies of new quantum-effect devices based on one-dimensional heterostructures. A graduate of the Polytechnic University of Madrid ('80) and Stanford University (MS'83, PhD'85), Professor del Alamo joined the MIT faculty in 1988, after working at the Nippon Telegraph and Telephone Corporation in Japan. He is a former holder of the ITT Career Development Professorship and a past recipient of the National Science Foundation's Presidential Young Investigator Award, the MIT Baker Award for Excellence in Undergraduate Teaching, and the MIT Edgerton Junior Faculty Achievement Award.

Ms. Lorraine A. Delhorne, a research specialist in RLE's Sensory Communication group, was promoted to research scientist, effective October 1, 1997. Since coming to RLE in 1982, Ms. Delhorne has carried out psychophysical experiments in the areas of auditory and tactile perception. Ms. Delhorne will continue not only to design but also to analyze the data collected from these experiments, which involve human subjects. As part of the group's research program on natural methods of tactual communication,

she also investigates the tactual reception of finger-spelling, a communication method used by deaf-blind individuals. A graduate of Ashland College (BA'74) and Washington University's Central Institute for the Deaf (MS'82), Ms. Delhorne is a member of the American Speech-Hearing-Language Association, the Acoustical Society of America, the Alexander Graham Bell Association, and the National Cued Speech Association.

Dr. Dennis M. Freeman (SM'76, PhD'86), W.M. Keck Foundation Career Development Professor, was promoted to associate professor in the Department of Electrical Engineering and Computer Science, effective July 1, 1998. Professor Freeman, a principal investigator in RLE's Auditory Physiology group, is involved in developing instrumentation that visualizes the microscopic motion of biological and synthetic structures. He has developed a video-based technique that measures the sound-induced motions of inner-ear structures and is extending this method to other biomedical and engineering applications (see *RLE currents*, fall 1997). Professor Freeman, who has been affiliated with RLE since 1974, joined the faculty in the Department of Electrical Engineering and Computer Science in 1995. In addition, he is a research affiliate with the Eaton-Peabody Laboratory at the Massachusetts Eye and Ear Institute.

Dr. Wolfgang Ketterle, Professor of Physics, was promoted to full professor effective July 1, 1997. Professor Ketterle joined RLE's Atomic, Molecular, and Optical Physics group in 1990 as a postdoctoral associate. His initial research focused on the cooling or slowing of atoms by isotropic light and the development of the dark spontaneous force optical trap (dark SPOT) used to trap cooled atoms. More recently, he has successfully realized a new form of matter, the Bose-Einstein condensate, and continues to investigate its novel characteristics. Professor Ketterle is a graduate of the University of Heidelberg ('78) and the Technical University of Munich ('82). He

received his doctorate in physics from Ludwig-Maximilians University and the Max-Planck Institute for Quantum Optics in 1986.

Dr. Jacob K. White (SB'80) was promoted to full professor effective July 1, 1997. Professor White joined the MIT faculty and RLE's Circuits and Systems group in 1987. He is a former holder of the Analog Devices Career Development Chair and past recipient of the National Science Foundation's Presidential Young Investigator Award. His research focuses on the theoretical and practical aspects of numerical techniques applied to problems in circuit and device simulation, packaging, and micromechanical system design. In addition, his group investigates parallel computation and the interaction between numerical algorithms and computer architecture. Professor White is a graduate of MIT and the University of California at Berkeley (MS'83, PhD'85).

C.4 Retirement

Dr. William T. Peake (SB'51, SM'53, ScD'60), Professor of Electrical Engineering and Computer Science, announced his retirement after serving on the MIT faculty for 39 years. As a principal investigator in RLE's Auditory Physiology group, Professor Peake has investigated signal transmission in normal and pathological auditory systems. His work has emphasized the acoustic, mechanical, and electrophysiological processes of the ear and interspecies comparisons. Professor Peake has also served on faculty at the Harvard-MIT Division of Health Sciences and Technology and as a research associate at the Eaton-Peabody Laboratory at the Massachusetts Eye and Ear Infirmary. He plans to continue his research at RLE and EPL, where he and his colleagues are developing a description of the structure and acoustic function of the middle ear for all species of the cat family. This work seeks to develop a theory that would integrate our understanding of signal processing in the ear across several vertebrate species.