



DIRECTOR'S MESSAGE

The Research Laboratory of Electronics (RLE), founded in 1946, is the Institute's first interdisciplinary research laboratory. RLE grew out of the wartime MIT Radiation Laboratory and was formed to bring together physicists and electrical engineers to work on problems in electromagnetic radiation, circuits, and specialized vacuum tubes. Over the years, RLE's research interests have branched in many directions, so that today it is the most diverse of MIT's interdisciplinary research laboratories, with approximately 50 affiliated faculty pursuing groundbreaking research across six research themes. Their achievements, during the 2004-2005 academic year, are described in this Progress Report.

During the past year, the Laboratory played a central role in the creation of the Center for Integrated Photonic Systems (CIPS). CIPS is an MIT virtual center, launched with seed funding and administrative support

from RLE. Professor Rajeev Ram of RLE is the CIPS Director, and Dr. Fred Leonberger is the CIPS Senior Advisor. The CIPS charter calls for exploration of advanced technologies and strategies that enable integrated photonic devices, modules, and systems to provide breakthrough capabilities for a variety of future system applications ranging from communications to sensing. Its specific objectives are: to provide leadership and direction for research and development in photonics; to foster an Institute-wide community of researchers in the field of integrated photonics and systems; and to integrate member companies into the MIT photonics community. The CIPS annual meeting, which was held in May 2005, attracted representatives from more than 30 photonics companies and featured plenary talks by Dr. Robert Leheny (Deputy Director of the Defense Advanced Research Projects Agency), Dr. Stan Lumish (Chief Technical Officer of JDS Uniphase), and Professor Eli Yablonovitch (UCLA). More information about CIPS membership and activities can be found at www.rle.mit.edu/cips.

The 2004-2005 academic year was also notable for RLE's hosting of Dr. Herwig Kogelnik as the first annual Hermann Anton Haus Lecturer. Dr. Kogelnik, a longtime colleague and friend of Professor Haus, presented a panoramic review and preview of technology developments in a talk entitled "Optical Communications: Reflections and Perspectives." The Haus Lecturer program, made possible by the Hermann Anton Haus Fund, is designed to bring the leading world researchers in fields intersecting RLE interests to MIT to share their thoughts and vision with the RLE community. I invite you to learn more about this program at www.rle.mit.edu/hausfund.

Finally, it is my great pleasure to note that RLE's research vigor continues to be strengthened by the Laboratory's swelling ranks of outstanding young faculty, with Assistant Professors Steven Johnson (Mathematics), Jing Kong (EECS), Marin Soljagic (Physics), and Vladimir Stojanovic (EECS) joining the MIT faculty, and Associate Professor Isaac Chuang (EECS and Physics) joining RLE. Their presence within RLE will add significant strength to the Laboratory's efforts in circuits and systems, nanoscale science and engineering, quantum computation, and photonics.

Jeffrey H. Shapiro
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