

The Richard C. Lord Lecture is an annual event sponsored by the MIT Department of Chemistry and the G.R. Harrison Spectroscopy Laboratory to honor a scientist who has made important contributions to the field of spectroscopy. We thank the many friends and colleagues of Dr. Lord for their generous contributions to the endowment fund.

Past Awardees:

Takeshi Oka 1992  
Alexander Pines 1993  
Charles Townes 1994  
Richard Zare 1995  
Carl Lineberger 1996  
William Klemperer 1997  
William Phillips 1998  
Theodor Hänsch 1999  
Daniel Kleppner 2000  
Steven Chu 2001  
Norman Ramsey 2002  
Britton Chance 2003  
Watt Webb 2004  
Robert Field 2005  
John Hall 2006  
Graham Fleming 2007  
Mildred Dresselhaus 2008  
Michael Feld 2009  
Wolfgang Ketterle 2010  
  
Stefan Hell 2011  
Erich Ippen 2012

Massachusetts Institute of Technology

The Department of Chemistry and  
MIT Laser Biomedical Research Center  
cordially invite you to attend the

**2013 Richard C. Lord Lecture**

by

**James G. Fujimoto**

on

**Optical Coherence Tomography:  
Transitioning technology from research  
to clinical practice**



Tuesday, April 9, 2013, 12 Noon  
MIT, Grier Room (34-401)

Refreshments served following the lecture

Professor James G. Fujimoto obtained his bachelors, masters, and doctorate from the Massachusetts Institute of Technology in 1979, 1981, and 1984 respectively. He performed his doctoral studies under the supervision of Prof. Erich Ippen in the area of ultrafast optics. Since 1985 Dr. Fujimoto has been on the faculty of the Research Laboratory of Electronics and Department of Electrical Engineering and Computer Science at M.I.T where he is currently Elihu Thomson Professor of Electrical Engineering. His research interests include femtosecond laser technology and biomedical optical imaging. Dr Fujimoto's group and collaborators were responsible for the invention and development of optical coherence tomography (OCT). His group's landmark paper, "Optical Coherence Tomography," which appeared in Science in 1991, has ushered in a new era in clinical biophotonic imaging and has remained one of the highest cited papers in the biophotonics field. Dr. Fujimoto and his collaborators have played crucial roles in almost all the major innovations in the OCT field including greatly improving the imaging resolution and speed of this modality. Dr. Fujimoto's group and their collaborators at MIT Lincoln Laboratory and New England Eye Center were the first to develop OCT in clinical ophthalmology. OCT is now standard imaging technology in ophthalmology for the detection and treatment monitoring of diseases such as glaucoma, diabetic retinopathy and macular degeneration. Currently there are an estimated 20-30 million ophthalmic imaging procedures performed worldwide every year.

Dr. Fujimoto has been influential as an educator and numerous researchers trained in his laboratory became leaders in the field of photonics and biophotonics. He is also active in scientific service and was program co-chair and general co-chair for the Conference on Lasers and Electro Optics CLEO in 2002 and 2004. Dr. Fujimoto has been general co-chair of the SPIE BIOS symposium since 2003. He was also co-chair of the European Conferences on Biomedical Optics in 2005. Dr. Fujimoto served as a Director of the Optical Society of America from 2000 to 2003 and is currently serving as Director of the SPIE the International Society for Optics and Photonics.

Dr. Fujimoto was awarded the Discover Magazine Award for Technological Innovation in medical diagnostics in 1999, was co-recipient of the Rank Prize in Optoelectronics in 2002, received the Zeiss Research Award in 2011 and was co-recipient of the Champalimaud Vision Prize in 2012. He was elected to the National Academy of Engineering in 2001, the American Academy of Arts and Sciences in 2002, and the National Academy of Sciences of 2006. Dr. Fujimoto is also a Fellow of the OSA, APS, and IEEE.

Working with Eric Swanson, Dr. Fujimoto was a co-founder of the startup company Advanced Ophthalmic Devices, which developed OCT for ophthalmic imaging and was acquired by Carl Zeiss and also was co-founder Light Lab Imaging, Inc. in 1998 which developed cardiovascular OCT and was recently acquired by Goodman, Ltd and St. Jude Medical.

*Richard C. Lord* was born in Louisville, Kentucky in 1910. He was graduated from Kenyon College, Ohio in 1931. He received the Ph.D. degree in physical chemistry from Johns Hopkins University in 1936, where he began a long and distinguished career as a scientist and educator. In 1942 Dr. Lord came to MIT. He was appointed Professor of Chemistry in 1954 and was Director of the Spectroscopy Laboratory from 1946 to 1976. He died in 1989.

Lord's research contributions were in the infrared and Raman spectroscopy of polyatomic molecules. His achievements include the observation and interpretation of Coriolis-activated forbidden vibrational transitions, the synthesis and complete vibrational analysis of a large number of deuterated molecules, and the discovery and exploitation of the anomalous far infrared spectra of ring molecules. Toward the end of his career he became interested in biomolecules. His studies of the laser Raman spectra of proteins and nucleic acids opened a new field of research.

Lord was also a dedicated teacher and an inspired supervisor of graduate students. His summer course in spectroscopy, held first at MIT and then at Bowdoin College, attracted more than 2000 scientists.

Lord had a major impact on the development of the Spectroscopy Laboratory. During his thirty year tenure as Director, the Laboratory became an Interdepartmental Laboratory of the School of Science, with broadened faculty participation. Research activities expanded from the study of atomic spectra using visible light and large gratings to include visible-UV electronic molecular spectra, molecular vibrational spectra using classical infrared and far infrared sources, and then to the use of lasers. During this period the Laboratory pioneered in a wide variety of vibrational studies of molecules and Raman studies of biomolecules, some of them mentioned above, as well as in seminal laser studies of the stimulated Raman and Brillouin effects and the use of lasers for precision measurements and ultra-high resolution spectroscopy.

Lord received the Presidential Certificate of Merit in 1948 and the Award in Spectroscopy from the Pittsburgh Spectroscopy Society in 1966. He served as president of the Commission of Molecular Spectroscopy of the International Union of Pure and Applied Chemistry, and was president of the Optical Society of America, and received the Lippincott Medal from them in 1976. He was also a fellow of the American Academy of Arts and Sciences.

The annual Richard C. Lord Lecture has been established as a tribute to the memory of Dr. Lord.