

## LEOS Profiles: 2006 Award Recipients

2006 William Streifer Scientific Achievement Award recipient

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*2006 William Streifer Scientific Achievement Award recipients: William H. Steier, Larry R. Dalton, and Harold Fetterman*

Dr. William H. Steier is the W. M. Hogue Professor of Electrical Engineering at the University of Southern California. He received the BSEE from the University of Evansville and the MSEE and the Ph.D. from the University of Illinois, Urbana. After completion of the PhD in 1960, he became an Assistant Professor of Electrical Engineering at the University of Illinois. In 1962 he went to Bell Laboratories in Holmdel, N. J. and remained there as a Member of the Technical Staff until 1968. Those years saw the beginning of fiber optic communications and integrated optics and Professor Steier contributed to that technology. He collaborated on the first demonstration of phase locking of lasers. In 1968, Dr. Steier joined the Electrical Engineering faculty at the University of Southern California where he is currently the W. M. Hogue Professor. At USC he served as Department Chair from 1970 until 1984. He has also held over administrative posts including Director of the Joint Services Electronics Program, co-director of the Center for the Integration of Optical Computing, and principal investigator of the DARPA National Center for Integrated Photonic Technology. His research group has over 300 publications and conference proceedings in several areas including optical communications, optical materials, and nonlinear optics. In recent years, his research has focused on the development of new polymer materials and polymer integrated optical devices for optical communications. In collaboration with the Chemistry faculty, they have brought polymer-based photonics into commercial use. Professor Steier is a Life Fellow of IEEE and a Fellow of the Optical Society of America. In 1985 he received the USC School of Engineering Faculty Service Award and in 1996 he received the USC School of Engineering Senior Faculty Research Award. In 2001 he was awarded the University Associates Award for Creativity in Scholarship and Research. In 2002 he was named a Distinguished Alumni of the EE-CS Department at the University of Illinois.

Dr. Larry R. Dalton is the George B. Kauffman Professor of Chemistry and Electrical Engineering at the University of Washington, where he also directs the National Science Foundation Science and Technology Center on Materials and Devices for Information Technology Research and the DARPA MORPH electro-optic program. He received the B.S. and M.S. degrees from the Honors

College of Michigan State University and the AM and the Ph.D. from Harvard University. After completion of the PhD in 1971, he became an Assistant Professor of Chemistry at Vanderbilt University where he also served as Research Professor of Biochemistry (College of Medicine) and as consultant to the Analytical Division of Varian Associates for the development of new instrumentation. While at Vanderbilt, he introduced Saturation Transfer Spectroscopy and defined protein supramolecular interactions critical to the structure and function of the human red cell. While at Vanderbilt, he received a Camille and Henry Dreyfus Teacher Scholar Award, an Alfred P. Sloan Fellowship, and an NIH Research Career Development Award. In 1975 he joined the chemistry faculty of the State University of New York at Stony Brook and began consulting for IBM and Bruker Instruments. This also marked the beginning of research on DNA (leading to a second NIH Research Career Development Award) and of extensive Federal advisory service for NIH including on the parent committee of the National Sickle Cell Program. In 1981, Dr. Dalton joined the Chemistry faculty at the University of Southern California (with adjunct appointments in the College of Engineering) where he served as the first holder of the Harold and Lillian Moulton Chair and Scientific Co-Director of the Loker Hydrocarbon Research Institute. At USC, he collaborated with Professors William Steier, Harold Fetterman (UCLA) and Robert Hellwarth on the development of second and third order nonlinear optical materials and participated with them in the DARPA National Center for Integrated Photonic Technology. He also served as Director of the Department of Defense MURI Center of Materials and Processing at the Nanometer Scale. He participated with Professor Myron Goodman (USC Molecular Biology) in developing the currently accepted mechanism of DNA mutagenesis. Working with researchers at IBM, he defined the wavefunction and dynamics of the soliton in the conducting polymer polyacetylene. His research at USC was recognized by the 1996 Richard C. Tolman Medal of the American Chemical Society, the 1990 USC Associates Award for Creativity in Scholarship and Research, and the 1986 Burlington Northern Foundation Faculty Achievement Award. While at USC, he served on the NSF High Magnetic Field Panel and on the NSF Materials Research Advisory Committee in addition to extensive advisory service for NIH, DoE, DoD, and EPA. In 1998, he joined the faculty of the University of Washington where he also served as Director of the Department of Defense MURI Center on Smart Materials and the NSF NIRT on optoelectronic materials. His research and educational contributions have been recognized by the 2003 American Chemical Society Award in the Chemistry of Materials, the QEM (Quality Education for Minorities)/MSE (Mathematics, Science, and Engineering) Network 2005 Giants in Science Award, and the 2000 Distinguished Alumni Award of Michigan State University. He is a Fellow of the AAAS and a senior member of IEEE. He is coauthor of over 500 publications and recent research has focused on photonic, electronic, and optoelectronic technologies including hybrid device structures integrating organic nonlinear optical materials with silicon photonics and on new sensor technology (particularly as related to the development of new materials for embedded network sensing). He continues to be actively involved in Federal advisory service and currently serves on the Advisory Committee for the NSF Mathematical and Physical Science Directorate, the Advisory Committee for the Government Performance and Results Act (NSF), the Advisory Group for the Electron Devices (Office of the Undersecretary of Defense), the Energy Science and Technology Review Committee of Pacific Northwest National Laboratory, and the Committee of Visitors for Review of the Chemistry Division of the NSF. He is Chair of the Arizona Biomedical Research Commission Panel on Biomedical Engineering, Sensing, and Imaging and is a consultant to NIH and the Veteran's Administration Medical Research Service. He serves on several international advisory groups including the Engineering and Physical Sciences Research Council (EPSRC), England. He serves (including as past Chair) on advisory boards (committee of visitors) to Norfolk State and Alabama A&M Universities and participated in the creation of the first Ph.D. program in science and engineering at Norfolk State University.

Dr. Harold Fetterman is a Distinguished Professor of Electrical Engineering at the University of California, Los Angeles. He received his BA from Brandeis University with Honours in Physics in 1962 and the Ph.D in Solid State Physics from Cornell University in 1968. After two years as Assistant Professor in Residence in the Physics Department of UCLA he joined Lincoln Laboratory, MIT in 1970. While at Lincoln he specialized in Submillimeter wave technology and developed the first high sensitivity Schottky Diode Receivers and novel Optically Pumped Laser

sources. He applied these high frequency Corner Cube Heterodyne detectors to widely to new applications in Remote sensing, Plasma diagnostics and Submillimeter Astronomy. His group received an IR 100 award for the development of a Terahertz spectrometer based upon this technology. In 1982 he was one of the founders of the Millitech Corporation and subsequently joined UCLA as a Professor of Engineering. He was a founder and first Director of the High Frequency Center at UCLA and served as the Associate Dean of the School of Engineering from 1986 to 1989. Becoming interested in the medical applications of lasers, he was a co-winner of a Lasers 87 Award at the International Conference on Lasers for his contributions to Phototherapy Cancer Research. In 1997 he was elected Chairman of the Faculty Executive Board of the Engineering School and in 1999 he was promoted to Distinguished Professor. He is a Fellow both of the IEEE and the Optical Society of America. As part of his efforts for AFOSR and in the NCIPT DARPA Center in the mid nineties he became active in developing Optically Controlled Phased Array Radar Devices. This initiated his collaboration with Professor Steier and Professor Dalton, which continues to this day, and which has just been honored with the Steifer Award.

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