

David J. Butcher, Editor

Applied Spectroscopy News is a monthly feature in the journal. It includes information from the Society for Applied Spectroscopy, news from other societies and institutions, announcements of meetings, schools, or other activities, and reports of symposia from recent conferences. If you have news items, a meeting announcement, or a report from a symposium that would be of interest to readers of *Applied Spectroscopy*, contact David J. Butcher, Applied Spectroscopy News Editor, 340C Stillwell Science Building, 246 Central Drive, Western Carolina University, Cullowhee, NC 28723, Ph: (828) 227-7646, email: david.butcher@analytchem.org.

SAS Awards Presented at SCIX 2012



Prof. Joel Harris (right) receives the SAS Honorary Membership Award from SAS President Mary Kate Donais.

SAS Honorary Membership Award Presented to Prof. Joel M. Harris

The SAS Honorary Membership Award was presented to Dr. Joel M. Harris of the University of Utah for exceptional contributions to spectroscopy. Dr. Harris is currently Distinguished Professor of Chemistry, and also holds an adjunct appointment in the Department of Bioengineering. Dr. Harris received a B.S. degree from Duke University and his Ph.D. from Purdue University. He joined the faculty at the University of Utah in 1976. Harris' research has focused upon the development of new techniques in applied spectroscopy; he and his students have advanced new concepts in photothermal detection, methods to analyze multi-dimensional spectroscopic data, Raman spectroscopy and microscopy techniques, and quantitative fluorescence detection at the single-molecule level. They have applied these techniques to investigate the kinetics and energetics of excited-state and reactive-intermediates, the chemistry of liquid/solid interfaces and dispersed particles, the kinetics of molecular transport, adsorption,

and binding governing separations, and analysis at interfaces. Dr. Harris is a Fellow of the Society of Applied Spectroscopy and of the American Association for the Advancement of Science. For twelve years, he served as Editor-in-Chief of *Applied Spectroscopy*. He is the recipient of an Alfred P. Sloan Fellowship, the Coblenz Award in Molecular Spectroscopy, the University of Utah Distinguished Research Award, the ACS Division of Analytical Chemistry Award in Chemical Instrumentation, the SAS New York Section Gold Medal Award in Spectroscopy, the Pittsburgh Analytical Chemistry Award, the University of Utah Robert W. Parry Teaching Award, the SAS Distinguished Service Award, the Benedetti-Pichler Award in Microchemistry, the Bomem-Michelson Award of the Coblenz Society, and the American Chemical Society Award in Analytical Chemistry.

SAS Emeritus Membership Award Presented to Howard J. Mark

The SAS Emeritus Membership Award was presented to Dr. Howard J. Mark of Mark Electronics for his contributions to spectroscopy. Dr. Mark was awarded the B.S. Degree in Chemistry from the City College of New York in 1963, and the M.A. Degree in Chemistry from the City University of New York in 1966, where he became interested in the application of electronics and instrumentation to chemical analysis as applied to the measurement of air pollution. He was awarded the Ph.D. degree in Physical Chemistry from New York University in 1972 and remains at NYU as a research fellow, performing research in application of the then-new field of FT-IR spectroscopy, adapting and modifying the FT-IR hardware and software to specialized measurement situations. Howard joined Technicon Instrument Corporation in 1976, for the development and applications of the then new field of near-infrared analysis. While at Technicon, Howard learned about the power and usage of the science of statistics, and later, chemometrics. He created, designed, and developed new algorithms for NIR quantitative and qualitative analysis, and applied statistical and chemometric methods to optimize in-house test procedures. He was the first spectroscopist to apply the concept of Mahalanobis Distance to spectroscopic analysis. Dr. Mark began writing (with Jerry Workman) a series of columns "Statistics in Spectroscopy" (later "Chemometrics in Spectroscopy"), a series that is still on going. He wrote several books to explain the concepts involved in statistical thinking, in meaningful terms for chemists. When Technicon closed, Dr. Mark became an independent consultant and is currently president of Mark Electronics, a consulting company providing services in the fields of near-infrared analysis, chemometric and statistical data analysis, and custom instrument design and development. He is also founder and president of the Near Infrared Research Corporation, designing, developing, and marketing both custom and standard accessories for near-infrared instrumentation, and also novel and unique software applications in addition to the hardware products. Dr. Mark was awarded the 2003 Eastern Analytical Symposium Award for Outstanding Achievement in Near Infrared Spectroscopy, and the Williams-Wright Award from the Coblenz Society at Pittcon 2011. He is past-chair and past-secretary of the Council for Near-Infrared Spectroscopy (CNIRS), past-chair and past-treasurer of the New York SAS Section and is exhibit committee chair for the International Diffuse Reflectance Conference. He is an active member of the American Society for Testing and Materials (ASTM), and is chair of the Terminology subcommittee of the

Molecular Spectroscopy committee of the ASTM. He has authored or co-authored seven patents, over 190 publications, 85 oral presentations, and 13 books and book chapters on NIR analysis and on the application of statistics and chemometrics to spectroscopic analysis.



Dr. Ralph Sturgeon (left) enjoys a beer after receiving the Lester W. Strock Award with Jim Holcombe (center) and Roy Koitryohann (right).

Lester W. Strock Award Presented to Dr. Ralph E. Sturgeon

The Lester W. Strock Award was presented to Dr. Ralph E. Sturgeon of the National Research Council Canada for outstanding research in the scientific areas of interest to Dr. Strock in the geological and life sciences. Dr. Sturgeon received his B.Sc. in 1973 and Ph.D. in 1977 in analytical chemistry from Carleton University, Ottawa, Canada. Following graduation he immediately accepted a position as Research Associate in the Analytical Chemistry Group, Division of Chemistry at the National Research Council, Ottawa. Although primarily tasked with the development of Certified Reference Materials, he was given the latitude to pursue interests in fundamental studies in analytical spectroscopy. In 1998 he became a Principal Research Officer and in 2000 was appointed Group Leader for Chemical Metrology in the Institute for National Measurement Standards, NRC, a position he held until 2010. His interests lie in inorganic analytical chemistry, comprising trace element analysis, vapor generation, instrument development, organometallic speciation, and production of Certified Reference Materials with a focus on atomic and mass spectrometric detection. He currently serves on the advisory boards of a number of international analytical chemistry journals and holds an Adjunct Research professor position with the Department of Chemistry, Carleton University. Since 2000, he has represented Canada on the Comité Consultative pour la Quantité de Matière (CCQM) under the auspices of the International Committee of Weights and Measures, participating in the working groups for both Inorganic Analysis as well as the Joint Committee on Traceability in Laboratory Medicine. Dr. Sturgeon's ongoing research activities are in the areas of vapor generation for sample introduction, mass bias fractionation in inorganic mass spectrometry, and traceability of chemical measurements. His contributions to analytical atomic spectroscopy have been recognized through a number of awards, including Fellowship in the Chemical Institute of Canada (1990), the Barringer (1986) and Herzberg (2002) awards of the Spectroscopy Society of Canada, the McBrude Medal (1990) and Maxxam Award (2007) from the Chemical Institute of Canada, the Ioannes Marcus Marci Award (1998) of the Czech Spectroscopic Society and an NRC Outstanding Achievement Award for 2009.



SAS President Mary Kate Donais (left) presents the William F. Meggers Award to (left to right): Dr. S. Michael Angel, Nathan Gomer, and Dr. J. Chance Carter.

Williams F. Meggers Award Presented to S. Michael Angel and Coworkers

The Williams F. Meggers Award was presented to Dr. S. Michael Angel, Mr. Nathaniel Gomer, Mr. Christopher Gordon, Dr. Paul G. Lucey, Dr. Shiv Sharma, and Dr. J. Chance Carter for an outstanding paper in *Applied Spectroscopy* entitled "Raman Spectroscopy Using a Spatial Heterodyne Spectrometer: Proof of Concept," Volume 65, Issue 8 (August 2011), pp. 849-857.

Dr. S. Michael Angel is currently Professor and Fred M. Weissman Palmetto Chair in Chemical Ecology in the Chemistry and Biochemistry Department at the University of South Carolina. Dr. Angel received his Ph.D. in Analytical Chemistry from North Carolina State University. His post-doctoral work was done with Tomas Hirschfeld at Lawrence Livermore National Laboratory where he also worked as an Environmental Scientist and Group Leader of the Advanced Measurement Sciences Group before becoming an Associate Professor of Chemistry at the University of South Carolina where he holds his current Professorship and Chairmanship. His research interests optical instrumentation for remote and *in situ* measurements in extreme environments. Dr. Angel has been honored with numerous awards including 2011 American Association for the Advancement of Science Fellow, 2011 FACSS/SCIX Innovation Award, 2009 USC Educational Foundation Research Award for Science, Mathematics, and Engineering, and 2006 Physics and Advanced Technologies Directorate Award, Lawrence Livermore National Laboratory. In 2011 Dr. Angel was voted South Carolina Chemist of the Year by the South Carolina Section of the American Chemical Society.

Nathan Gomer of the University of South Carolina was presented the SAS Graduate Student Award for outstanding research in spectroscopy. Mr. Gomer graduated from the University of Florida in May 2008 with a B.S. in Biochemistry. During his time at the University of Florida, he conducted undergraduate research with Dr. Richard Yost, analyzing polypeptides using mass spectrometry. Following his undergraduate studies, he has attended the University of South Carolina, where he currently studies spectroscopy under his research adviser, Dr. S. Michael Angel. His research has focused on the development of a spatial heterodyne spectrometer for Raman spectroscopy. Nathan first presented his results at FACSS 2010 and received first place in the FACSS Student Poster Competition. In 2011, he received a student award from the Coblenz Society, a Joseph W. Bouknight Teaching Award from USC, as well as an Innovation Award at FACSS 2011. In 2012, he was given the USC Department of Chemistry's Guy F. Lipscomb Award for Excellence in Chemistry and Biochemistry and took second place in USC's Graduate Student Day oral presentation competition. His first paper, discussing the use of a spatial heterodyne spectrometer for Raman spectroscopy, received the 2012 William F. Meggers Award. He is also the recipient of the 2012 Tomas Hirschfeld Scholar Award.

Christopher Gordon grew up in the Pocono Mountains of Pennsylvania. He did his undergraduate work at Muhlenberg College in Allentown, Pennsylvania. After graduation, he decided he had enough of the cold weather of the north and moved to South Carolina where he got his M.S. in analytical chemistry/spectroscopy from the University of South Carolina. After graduating, Mr. Gordon was hired as a contract faculty member to teach chemistry at Harford Community College in Bel Air, Maryland. After his first year, he was hired as an Assistant Professor where he still teaches.

Paul G. Lucey is a member of the faculty of the Hawaii Institute of Geophysics and Planetology at the University of Hawaii. He pursues research in planetary science and in remote sensing instrument development, and teaches courses through the Department of Geology and Geophysics.

Shiv Sharma has interdisciplinary research interests that include: (a) the development of instrumentation for remote and stand-off Raman spectroscopy for detecting chemicals and minerals on planetary surfaces, and (b) Micro-Raman and IR spectroscopy of minerals, biominerals, meteorites and synthetic and natural glasses, and the role of volatiles in silicate glasses and melts at ambient and high pressure and temperature. He studied Physics at the Indian Institute of Technology, Delhi, India, and was awarded a Ph.D. degree in 1973 for his dissertation, "Raman Spectroscopic Study of the Structure of Electrolytes in Aqueous Solutions and Hydrated Melts." He worked as a Research Associate (1974-77) with Professor David M. Adams in the Chemistry Department at the University of Leicester (England), and as a Post-Doctoral Fellow (1977-1980) at the Geophysical Laboratory, Carnegie Institution of Washington, Washington, D.C. (USA). He joined the faculty of the Hawaii Institute of Geophysics, University of Hawaii in 1980 as an Assistant Professor and established the Raman spectroscopy laboratory with focus on the applications of Raman spectroscopy in the Earth and planetary sciences. Currently he serves as Research Professor and Associate Director at the Hawaii Institute of Geophysics and Planetology, School of Ocean and Earth Science and Technology, University of Hawaii at Manoa, Honolulu, Hawaii. Dr. Sharma has authored or coauthored over 250 research papers.

J. Chance Carter is currently the High Explosives Analytics and Spectroscopy Group Leader for the Chemical Sciences Division in the Physical and Life Sciences Directorate at Lawrence Livermore National Laboratory. Dr. Carter holds a Ph.D. from the University of South Carolina in Analytical Chemistry. His research interests are mainly focused on the development of spectroscopy-based analytical methods and systems.

SAS Distinguished Service Award presented to Prof. David Butcher

David J. Butcher is currently a Professor of Chemistry and Associate Dean of the College of Arts and Sciences at Western Carolina University



SAS President Mary Kate Donais (left) presents the SAS Distinguished Service Award to David Butcher.

(WCU) in Cullowhee, North Carolina. He is married to Dr. Karen Butcher and has two children, Emily, 21, and Neil, 19, with whom he enjoys leisure time. He received his bachelor's degree in 1982 from the University of Vermont. After three years of employment at Pfizer and Bowdoin College, he received his Ph.D. from the University of Connecticut in 1990. His graduate work, conducted under the direction of Robert G. Michel, involved the development of instrumentation for laser excited atomic fluorescence and ionization spectroscopies. He joined the faculty at WCU in 1990 as an Assistant Professor of Chemistry, was promoted to Associate Professor in 1997, promoted to Professor in 2001, and became Department Head in 2002. Prof. Butcher became Associate Dean in April, 2004. Prof. Butcher has more than 50 publications in a variety of areas of analytical chemistry, including graphite furnace atomic absorption spectrometry, diode laser atomic absorption spectrometry, and ion trap mass spectrometry. Along with Prof. Joseph Sneddon, he is co-author of the volume *A Practical Guide to Graphite Furnace Atomic Absorption Analysis*. His current research interests include environmental analytical chemistry. He has also been involved in a number of novel teaching innovations in general and analytical chemistry. He serves as Associate Editor for Book Reviews of the *Microchemical Journal*, and Associate Editor for Education for *Spectroscopy Letters*. He received the 1998 WCU University Scholar Award as the outstanding researcher. He serves on the Editorial Boards of *Microchemical Journal*, *Spectroscopy Letters*, and *Applied Spectroscopy Reviews*. He served as Chair of the American Microchemical Society Undergraduate Award Committee and is currently Chair of the A.A. Benedetti-Pichler Award Committee. In 2001, he served as Program Chair for 28th FACSS meeting held in Detroit, MI. In 2009, he became Editor-in-Chief of *Analytical Letters*, and in 2010, he became Editor-in-Chief of *Instrumentation Science and Technology*. He served as the General Chair for the 37th FACCS meeting held in Raleigh, NC in 2010, and as Chair of the Western Carolinas ACS Section in 2011.

SAS Fellows

SAS recognized ten members for their outstanding service to the field of spectroscopy.



SAS 2012 President Mary Kate Donais (front) with SAS Fellows (left to right) Paul W. Bohn, Duncan Graham, Volker Deckert, Max Diem, Paul Farnsworth, Mike Carrabba, Pavel Matousek, and Mike George. Not pictured: Robert Corn and John Rabolt.

Prof. Paul W. Bohn

Paul W. Bohn received his B.S. in Chemistry from the University of Notre Dame in 1977 and his Ph.D. in Chemistry from the University of Wisconsin-Madison in 1981. After a two-year stint at Bell Laboratories, Murray Hill, NJ, he joined the faculty at the University of Illinois at Urbana-Champaign (UIUC). While at UIUC, he served as Centennial Professor in Chemical Sciences, Interim Director of the School of Chemical Sciences, Interim Director of the School of Chemical Sciences (1993-1994), and Head of the Chemistry Department (1994-1999). From

2001-2002, he was Interim Vice Chancellor for Research, the senior research officer of the UIUC campus. In August 2006, he left UIUC to join the faculty at the University of Notre Dame as the Arthur J. Schmitt Professor of Chemical and Biomolecular Engineering and Professor of Chemistry and Biochemistry. He served as Editor for the Americas for the Royal Society journal *Analyst* (2007-2009), is currently chair of the Editorial Board for *Analyst*, and sits on numerous editorial and scientific boards. Prof. Bohn also serves as Project Director for the Advanced Diagnostics and Therapeutics Initiative, one of five inaugural Strategic Research Initiatives established in 2008 at Notre Dame. Dr. Bohn has received a number of awards and recognitions including the Coblentz Award (1990) for his outstanding contributions to the field of molecular spectroscopy by investigators under the age of 36, the ACS Award in Spectrochemical Analysis (1997), the Pittsburgh Spectroscopy Society Award (2004) for his pioneering contributions to the optical spectroscopy of condensed matter interfaces, the Bomem-Michelson Award from the Coblentz Society (2005), and the Theophilus Redwood Award of the Royal Society of Chemistry (2010). He was elected Fellow of the American Association for the Advancement of Science in 1998 and a Fellow of the Royal Society of Chemistry (2010). He was elected Fellow of the American Association for the Advancement of Science in 1998 and a Fellow of the Royal Society of Chemistry (UK) in 2008. Dr. Bohn's research interests include integrated microfluidic and nanofluidic chemical measurement strategies for personal monitoring, chemical and biochemical sensing in mass-limited samples, and molecular approaches to nanotechnology. He has authored/coauthored over 215 publications in the field, and has six patents issued and one patent pending in technologies related to these efforts. In addition, he has delivered over 250 invited lectures at universities, national laboratories, and industrial laboratories throughout the world, and has served as a consultant for companies both in the United States and Europe.

Dr. Michael Carrabba

Dr. Michael Carrabba joined the Hach Company in 2004 as the Director of Hach Homeland Security Air Systems, and he is currently the Global Director of Open Innovation where he has the responsibility of finding and developing relationships for new and emerging technologies. He received his B.S. in Chemistry (*magna cum laude*) from Salem State College in 1981 and his Ph.D. in Physical Chemistry from Tufts University in 1985. Dr. Carrabba's graduate work was conducted under the tutelage of Dr. Jonathan Kenny and focused upon the utilization of laser-induced fluorescence to examine ultra-cooled gas phase molecules in a supersonic jet molecular beam. After graduate school, Dr. Carrabba joined EIC Laboratories where he eventually became Vice-President for the Spectroscopy Division. He conducted a variety of research programs, including photoelectrochemical etching of semiconductors, fiber optic chemical sensors, and state-of-the-art Raman spectroscopy. During this time, he introduced the use of holographic filters for Raman spectroscopy and developed numerous types of field Raman instrumentation and techniques, several of which resulted in U.S. patents. After leaving EIC, he joined Chromex, Inc., a manufacturer of Raman spectroscopy systems, as Marketing Manager and was previously the OEM Division Manager at Jobin, Yvon, Inc. Dr. Carrabba has been very active in the Federation of Analytical Chemistry and Spectroscopy Societies over the years. He has served as Governing Board Chair (2002), Program Chair (2000), Program Section Chair for Raman (1992-1999, 2001), Chairperson of the Long Range Planning Committee (1992-2008) and as a member of the Governing Board. Since 2006 he has been serving as the FACSS Exhibits Chair. In 2003, Dr. Carrabba received the ASTM Award of Merit for his 12 years of service as the Chairman of the ASTM Subcommittee on Raman Spectroscopy. In 2004 he received the FACSS Charles Mann Award for Applied Raman Spectroscopy, and in 2007 he received the Williams-Wright Award for Industrial Vibrational Spectroscopy. He has also been honored with the 2009 FACSS Distinguished Service Award and the 2011 SAS Distinguished Service Award. Dr. Carrabba is a member of SAS, ASTM, and the Coblentz Society. On the home front, Professor Mary Widmark Carrabba of Southern Oregon University, a

highly skilled infrared microscopist and former SAS treasurer, complements his Raman background.

Prof. Robert M. Corn

Robert M. Corn is a Professor in the Departments of Chemistry and Biomedical Engineering at the University of California, Irvine. He received a B.A. in Chemistry *summa cum laude* in 1978 from the University of California, San Diego, and subsequently earned a Ph.D. in 1983 from the University of California, Berkeley, under the direction of Professor Herbert L. Strauss in the application of Fourier transform infrared spectroscopy (FT-IR) to the study of motion in molecular solids. From 1983-1984, he was a Visiting Scientist at the IBM Research Laboratory in San Jose, California, where he applied the techniques of surface plasmon enhanced Raman scattering and optical second harmonic generation to electrochemical surfaces. Following IBM, he spent a year as a Visiting Assistant Professor in the area of Physical Chemistry at Swarthmore College in Swarthmore, Pennsylvania. In 1985, he moved to Wisconsin where he was a Professor of Chemistry and a member of the Analytical Sciences Division of the Department of Chemistry and the Water Chemistry Program until 2004. In July of 2004, he joined the faculty at the University of California, Irvine. Prof. Corn is a leader in the development and application of surface-sensitive spectroscopic methods including polarization-modulation FT-IR, optical second harmonic generation, and surface plasmon resonance imaging. He has previously applied these spectroscopic methods to the study of single crystal electrode surfaces, ion transfer processes at liquid/liquid interfaces, and the implementation of DNA computing algorithms at surfaces. Currently, his primary research interests include the study of biopolymer adsorption on surfaces, the chemical modification of surfaces for the creation of ultrathin films and adsorption-based biosensors, and the development of novel surface enzyme chemistries for ultrasensitive biosensing. He also has ongoing research projects in the creation of nanowire diffraction grating structures and nanofluidic channel networks for biosensing applications, and the fabrication of ordered superparamagnetic nanoparticle arrays for high frequency inductor applications. Prof. Corn has over 140 publications and patents, and is a Fellow of the American Association for the Advancement of Science. He received the 2007 Pittsburgh Spectroscopy Award from the Spectroscopy Society of Pittsburgh, and the 2007 Award in Spectrochemical Analysis from the ACS Division of Analytical Chemistry.

Dr. Volker Deckert

Volker Deckert received his Ph.D. from the University of Würzburg, Germany, under the direction of Professor Wolfgang Kiefer. He is currently the Head of the Nano-Spectroscopy Department at the Friedrich Schiller University and the Institute for Photonic Technologies in Jena, Germany, where he established a research direction aimed toward label-free detection of biomolecules with ultimate sensitivity and lateral resolution. Dr. Deckert is the recipient of the 2002 Sofia Kovalevskaya Award from the Alexander von Humboldt Foundation, the 2006 Bunsen-Kirchhoff-Award of the DAsp/GDCh, and the 2012 Research Award of the State of Thuringia.

Prof. Max Diem

Prof. Max Diem received his undergraduate education at the Universität Karlsruhe, Germany, and his Ph.D. at the University of Toledo, Ohio. After a postdoctoral fellowship with L. Nafie at Syracuse University, he rose through the academic ranks at the City University of New York (1979-2005) and has been Professor of Chemistry at Northeastern University since 2006. He held a Guest Professorship at Lehrstuhl Biophysik at the Ruhr Universität, Bochum, Germany, in 2011. The research in Prof. Diem's laboratory centers on the development of spectral methods to diagnose and screen for disease. To this end, two complimentary spectroscopic methods are utilized, confocal Raman micro-spectroscopy and infrared spectral imaging spectroscopy, in conjunction with multivariate statistical methods. Both spectral methods detect subtle, yet reproducible variations in the biochemical composition

of human cells and tissue sections when progressing from normal to diseased states. These spectral changes are subsequently correlated to pathological and cytological results using supervised methods of multivariate analysis. Prof. Diem has published two books, nine refereed book chapters, approximately 170 refereed papers, and seven patents.

Prof. Paul Farnsworth

Paul Farnsworth is a professor in the Department of Chemistry and Biochemistry at Brigham Young University. He earned his B.S. degree in 1977 from BYU, then went on for doctoral work at the University of Wisconsin under the direction of John Walters. He did postdoctoral work with Gary Hieftje at Indiana University, and then returned to BYU as an assistant professor in 1983. He has had two appointments as a visiting scientist at the Joint Research Center of the European Commission in Ispra, Italy, the first in 1989 and the second in 1998, working in the laboratories of Nicolò Omenetto. In 2003 he spent a semester as a visiting professor at the University of Utah working with Joel Harris. Dr. Farnsworth's research interests include laser and atomic spectroscopy and mass spectrometry. He began his research career studying energy transport and excitation mechanisms in inductively coupled plasmas used as emission sources. In recent years he has been using laser-excited fluorescence as a tool to study ion transport through the vacuum interface of an inductively coupled plasma mass spectrometer. His work on ion transport was recognized with the *Spectrochimica Acta* atomic spectroscopy award in 1998 and 2006. His work in atomic spectroscopy was recognized by the SAS Lester W. Strock Award in 2006. In addition to the atomic spectroscopy, Dr. Farnsworth's research group has studied ion formation and transport in atmospheric-pressure ionization sources for mass spectrometry. He has been an SAS member for over 30 years. He served as editor of *Applied Spectroscopy* for 12 years, and was recognized with the SAS Distinguished Service Award in 2009.

Prof. Mike George

Professor Mike George received his B.Sc. and Ph.D. from the University of Nottingham in 1987 and 1990, respectively. He remained at Nottingham for a further 18 months as a Postdoctoral Fellow. He was awarded a Royal Society/STA of Japan Postdoctoral Fellowship to work on organic photochemistry with Professor Hiro-o Hamaguchi at the Kanagawa Academy of Science and Technology. He returned to the University of Nottingham as an Experimental Officer (1993) and was appointed to a Lectureship in Inorganic Chemistry in 1998. He was promoted to a chair in 2002. He was awarded the Royal Society of Chemistry Edward Frankland Fellowship (2002-2003), the Corday-Morgan Medal (2004), and the Photochemistry Award (2005). He was also awarded the 2005 Masao Horiba Special Award by Horiba Ltd., Japan.

Dr. Duncan Graham

Duncan Graham obtained his B.Sc. Honors in Chemistry from the University of Edinburgh in 1992, and his Ph.D. in Bioorganic Chemistry in 1996 under the direction of Prof. Tom Brown investigating the use of modified oligonucleotides to inhibit HIV. He then moved to the University of Strathclyde where he joined the group of Prof. Ewen Smith as a postdoctoral fellow to examine the use of surface enhanced resonance Raman scattering (SERRS) for DNA analysis with Zeneca Diagnostics. Breakthroughs during that period of research led to the award of a five-year David Phillips fellowship from the BBSRC to examine the area of DNA analysis by SERRS. In 2002 he won the RSC's Analytical Grand Prix Fellowship, which provided funding for another period of five years to further develop his chosen area of study using synthetic chemistry to create and develop new methods of bioanalysis with optical spectroscopy. In 2004 he was awarded the SAC Silver Medal for the "innovative synthesis of new analytical reagents for sensitive and selective analysis," and in 2005 he was presented with the Nexxus Young Life Scientist of Year Award. In 2007 he was elected to the fellowship of the Royal Society of Edinburgh and is a cofounder and director of Renishaw Diagnostics Ltd. (formerly D3 Technologies Ltd.), which formed in 2007 and has 30 fulltime employees. He is currently Director of West CHEM (the joint chemical sciences

research school of Strathclyde and Glasgow Universities), C-Director of the Centre for Molecular Nanometrology, and Head of Research for Chemistry at the University of Strathclyde. He has published over 150 papers, has 13 patents, and was appointed as a lecturer in 2002 and promoted to Professor in 2004. He was awarded the Corday Morgan prize of the Royal Society of Chemistry in 2009 for "outstanding and pioneering contributions to nanometrology in support of molecular manipulation and chemical and biological systems," and a Royal Society Wolfson Merit Award in 2010. His interests are in the use of synthetic chemistry to produce nanosensors that respond to a specific biological species or event as measured by surface enhanced Raman scattering, and in collaborating with scientists from different disciplines to exploit these approaches.

Dr. Pavel Matousek

Pavel Matousek obtained his M.Sc. and Ph.D. degrees in Physics from the Czech Technical University, Prague, Czech Republic. For over twenty years, he has worked at the Rutherford Appleton Laboratory (Oxford, UK) in the areas of nonlinear optics and steady state and ultrafast time-resolved vibrational spectroscopy. He pioneered the concepts of Kerr-gated Raman spectroscopy, Spatially Offset Raman Spectroscopy (SORS), and introduced transmission Raman spectroscopy into pharmaceutical analysis. Currently, he is developing these for a range of novel applications including non-invasive disease diagnosis (cancer and bone), aviation security, and pharmaceutical quality control. Dr. Matousek has published over 170 peer-reviewed articles, filed over ten patents, and co-edited a book on Raman spectroscopy with Prof. Michael Morris of the University of Michigan. His honors include the 2009 Charles Mann Award for Applied Raman Spectroscopy (FACSS), and the 2002 and 2006 SAS Meggers Awards. He served as the Program Chair of FACSS 2011 (Reno, NV) and is currently the Chair of the Coblenz Award Selection Committee and is the Chair-Elect of the SAS Publications Committee. Dr. Matousek sits on the editorial boards of *Applied Spectroscopy* and *Analyst*, and serves on the editorial advisory board of the *Journal of Raman Spectroscopy*. He is a Fellow of the Royal Society of Chemistry, a Fellow of the Science and Technologies Facilities Council, a visiting professor of the University College London and a founding director of Cobalt Light Systems Ltd., a spin-off company commercializing SORS and transmission Raman spectroscopy.

Dr. John Rabolt

Dr. John Rabolt received his Ph.D. in Molecular Physics (Chemical Physics) from Southern Illinois University. He is currently Karl W. and Renate Böer Professor of Materials Science and Engineering at the University of Delaware. He has spent the past 25 years investigating the relationship between the chemical architecture and shape of long chain organic molecules/polymers and their mechanical, electrical, optical, and electronic properties. Along the way he has brought an understanding to how polymers can be made into conductive wires and how thin, plastic-wrap type films can be used to confine laser light in a narrow beam for telecommunications. Recently, his research group demonstrated how flat panel computer screen technology can be used to detect and identify DNA sequences visually through changes in color. Another area of Dr. Rabolt's research centers on the possibility of bringing polymers into the world of diagnostic medicine. He predicts the day when a computer chip the size of a piece of dust, or a tiny piece of plastic, can be swallowed and used to take diagnostic readings of what's going on inside the body. Before coming to the University of Delaware in 1996, Dr. Rabolt was a research staff member at the IBM Almaden Research Center, where he served as co-director of the NSF Center on Polymer Interfaces and Macromolecular Assemblies (a Stanford/IBM/University of California at Davis Materials Research Science and Engineering Center). During his career, Dr. Rabolt developed several laser-based analytical instruments and has been awarded three patents for optical-based microelectronic devices. He has authored or co-authored 175 research articles in peer-reviewed journals and is the recipient of several international awards in spectroscopy. Currently, Dr. Rabolt is an associate editor for *Macromolecules*, an American Chemical Society journal.