

## Speakers' Biographies



**Sam Angelos**, Vice President and General Manager is responsible for managing and leading the Technology Development Operation (TDO) in IPG Inkjet and Web Solutions Business. This organization develops new and advanced printhead technologies for HP's inkjet business. It also develops new advanced technologies in non-priority related technologies for IPG. Sam joined HP in 1980 as an R&D engineer in the integrated circuits organization in the Corvallis Division. Sam held various management positions in R&D and manufacturing including the operations manager for both the Ft. Collins and Corvallis Integrated Circuits Business Division. In 1997, he joined the Inkjet Business Unit (IJBU) as the Printhead Manufacturing Operations manager. Over the past nine years, as manager of the Technology Development Operations (TDO), Sam and his team have shifted the focus from manufacturing to research and development of new printing and non-printing technologies with a strong emphasis on creating and controlling critical IP for HP. The organization has expanded and developed new core capabilities in micro machining, semiconductors and materials development to support the invention on new printing technologies/ products and MEM's sensors. Sam holds a PhD from the University of Southern California in Chemistry/Chemical Physics. He serves on several Boards of Directors, including International Sematech, ONAMI, SRC (Semiconductor Research Corporation) and is a member of the Pacific Northwest National Labs technical advisory committee. Sam is located in Corvallis, Oregon.



**Timothy Carter** has worked for the last year at Life Technologies in Eugene, OR as a Process Development chemist in nanoparticle manufacturing and as a technical aid to Manufacturing Sciences for fluorescent dye redevelopment. He received his B.S. in polymer chemistry from the University of Wisconsin-Stevens Point (1998) and his Ph.D. in toxic metal remediation from the University of Oregon (2010). His work at Life Technologies focuses mainly on improvement of current products by reassessing modes of failure leading to scrap and unnecessary waste streams. This includes scrap reduction by conducting process robustness studies through Design of Experiments (DOE), Failure Mode and Effects Analysis (FMEA) and raw materials and vendor validation through the development of analytics. Before Life Technologies, Dr. Carter worked as an R&D chemist for Biosearch Technologies in Novato, CA for over 5 years. Duties included New Product Introductions (NPIs), process development, scale-up and managing a Mass Spectrometry analytical lab/Quality control group.



**Emory Chan** is a Scientific Engineering Associate in the Molecular Foundry at Lawrence Berkeley National Laboratory. He specializes in the high-throughput synthesis and characterization of colloidal inorganic nanostructures. Dr. Chan received a B.S. in Chemistry from Stanford University. He performed his doctoral research in the chemistry department at U.C. Berkeley under Professors Paul Alivisatos and Richard Mathies, investigating the microfluidic synthesis of semiconductor nanocrystals.



**Seth Coe-Sullivan** is co-founder and Chief Technology Officer of QD Vision. He received his Ph.D. in Electrical Engineering from the Massachusetts Institute of Technology in May 2005, and his thesis work on incorporating quantum dots into hybrid organic/inorganic LED structures is the technology that led to the formation of QD Vision. His work spans quantum dot materials, new fabrication techniques, including thin film deposition equipment design, and device architectures for efficient QD-LED light emission. Seth has more than 20 papers and patents pending in the fields of organic light emitting devices, quantum dot LEDs and nanotechnology fabrication. He was awarded Technology Review Magazine's TR35 Award in 2006, naming him one of the top 35 innovators under the age of 35. In 2007, BusinessWeek named him one of the top young entrepreneurs under the age of 30, and in 2009 he was a finalist for the Mass Technology Leadership Council's CTO of the year. Seth graduated in 1999 from Brown University with an Sc.B. in electrical engineering. He then spent a year as a Staff Engineer at the Boston based research company Foster-Miller, Inc., in the Emerging Technology division of the Materials Technology Group, before departing for MIT. Seth is honored to sit on Brown University's Engineering Advisory Council.



**Sheila Davis** is the *Executive Director* of Silicon Valley Toxics Coalition (SVTC). Over the past 10 years, Sheila Davis has played a valuable role at SVTC and in shaping environmental policy in the high-tech industry. She is one of the co-founders of the Computer TakeBack Campaign and sits on its steering committee. In 1996 she researched and developed the first electronic recycling legislation to reach the California Governor's desk and in 1999 spearheaded the first pilot programs in the country to collect and recycle electronic waste from the residential curbside. Before becoming SVTC's executive director, she served as program director of SVTC's Sustainable Technologies Program (formerly the Clean Computer Campaign). Sheila's research, advocacy and policy development led to a successful ban on hazardous electronic waste from the California municipal landfills and the subsequent passage of the first electronic recycling legislation in the nation. Sheila holds a Bachelor's Degree from the University of California and served as a journalist, state legislative aide and community development specialist before joining the staff of SVTC.



**Judy Glazer** is Director of Hewlett-Packard's Social and Environmental Sustainability and Compliance organization, driving programs to implement sustainability policies into HP's products and supply chain. Glazer is responsible for an internationally-recognized program to implement the company's code of conduct for labor, health and safety, and environmental standards in its supply chain. Her team leads HP's global programs to reduce the usage of substances of concern in HP's products and packaging, to measure and reduce the carbon footprint of HP's supply chain, and set and implement standards for HP's global reuse and recycling programs. Judy joined HP in 1989. She holds a BS degree in Materials Science and Electrical Engineering and MS and PhD degrees in Materials Science and Engineering, all from the University of California, Berkeley.



**Rick Glover** is a fourth year chemistry graduate student working towards understanding how nanomaterials react in biological and environmental conditions; specifically, how conditions affect the size, shape, and chemistry of nanoparticles. He is interested in green chemistry and science education and outreach. Before coming to the University of Oregon he received a BS in Environmental Science from Humboldt State University. Following this he received a MS in Environmental Sciences and Health from the University of Nevada, Reno.



**David W. Grainger** is the *George S. and Dolores Doré Eccles Presidential Endowed Chair in Pharmaceutics and Pharmaceutical Chemistry*, Chair of the Department of Pharmaceutics and Pharmaceutical Chemistry, and Professor of Bioengineering at the University of Utah. Grainger received his Ph.D. in Pharmaceutical Chemistry from the University of Utah in 1987 studying blood-compatible polymers, particularly block copolymers functionalized with heparin blocks and their coatings. He then received an Alexander von Humboldt Fellowship to perform postdoctoral research under Prof. Helmut Ringsdorf, University of Mainz, Germany. This training initiated over 25 years of experience with various aspects of developing "materials in medicine". Grainger's research expertise is focused on improving implanted medical device performance, drug delivery of new therapeutic proteins, nucleic acids and live vaccines, nanomaterials interactions with human tissues, low-infection biomaterials, and innovating diagnostic devices based on DNA and protein biomarker capture. Additionally, he is an expert in applications of surface analytical methods to biomedical interfaces, including difficult surface patterns and nanomaterials, and perfluorinated biomaterials. He has published over 130 full research papers at the interface of materials innovation in medicine and biotechnology, and novel surface chemistry. He has won research several awards, including the prestigious *2007 Clemson Award for Basic Research*, Society for Biomaterials, and the 2005 American Pharmaceutical Research and Manufacturer's Association's award for "*Excellence in Pharmaceutics*". He won a short-term visiting professorship in Tokyo from the *Japanese Society for the Promotion of Science*, and a *CNRS Visiting*

*Professorship* in Paris, France. He has also received several teaching awards for outstanding mentoring and teaching service, including the University of Utah *2010 Distinguished Postdoctoral and Graduate Student Mentoring Award*, the US West/Qwest Faculty Education Excellence Award (Colorado State University, 2000), Colorado State University College of Natural Sciences "*Undergraduate Teacher of the Year*", 2000, Colorado State University Alumni Association "*Teacher of the Year*", 2002, and several "*Favorite Faculty*" Awards from CSU Undergraduate Student Associations. Grainger delivered the EU *Madame Curie* guest lectures at the Technical University-Aachen, Germany in 2009 and the 15<sup>th</sup> Annual *Fritz Straumann lecture*, AO Foundation, Davos, Switzerland, December, 2008. He is an elected Fellow of both the *American Association for the Advancement of Science (AAAS)* and the *American Institute of Medical and Biological Engineering (AIMBE)*, and Inducted Honorary Fellow, *International Union of the Societies of Biomaterials Science and Engineering*, 2008. He has organized 23 international scientific symposia including the prestigious Gordon Research Conference in Biomaterials, presented over 320 hundred invited talks all over the world. He serves on editorial boards for 4 major research journals in the biomedical materials field, reviewing over 50 manuscripts annually. He is Chair and standing member of *Emerging Bioanalytical Technologies* scientific review group (SRG) at NIH, past standing member on the NIH's *Surgery and Bioengineering* SRG, and over 20 other NIH and NSF review panels, some as chair. Additionally, he serves on the Scientific Advisory Boards of the Univ. Wisconsin-Madison NSF MRSEC on *High Performance Nanostructured Materials*, the NIH P41 National Research Center at the University of Washington (NESAC/Bio) for surface analysis for biomedical problems, NSF Harvard/New Mexico NSF PREM MRSEC, and several international research foundations (AO Foundation, Davos, Switzerland, Swiss Center for Materials Competence, Zurich, the Willem S. Kolff Institute, Royal University of Groningen, The Netherlands, the Julius Wolfe Musculoskeletal Research Institute at the Charité Research Center, Berlin, Germany, the Waseda University ASMeW Research Center, Tokyo Japan). Grainger sits on the Scientific Advisory boards for 4 biomedical companies, and actively consults internationally with industries in applications of materials in biotechnologies and medicine.



**Keith Houck** is with the EPA's National Center for Computational Toxicology. As part of the Tox21 collaboration between EPA, NIH and FDA, he leads efforts to develop and apply *in vitro* methods for predicting potential for chemical toxicity. Prior to joining the EPA in 2006, Dr. Houck worked in the biotechnology and pharmaceutical fields where he applied molecular and cellular biology skills towards identification of drug candidates for Sphinx Pharmaceuticals and Eli Lilly & Co. Earlier, he completed a postdoctoral fellowship at Genentech, Inc., in the molecular biology department following receiving his PhD in Pathology and Toxicology from Duke University in 1989. Prior to that, he received an MS in Chemistry from the University of North Carolina at Chapel Hill and BS in Biology from

Guilford College.



**Saber Hussain** is a senior scientist at the Applied Biotechnology, Human Effectiveness Directorate, Air Force Research Laboratory, WPAFB, AFB, OH. He is full affiliated faculty at the Wright State University, and adjunct faculty at the University of Dayton. Saber Hussain did his Ph.D. in toxicology at the Indian Institute of Chemical Technology affiliated by Osmania University, Hyderabad, India in 1991 and joined the Institute of Pharmacology, University of Urbino, Italy, as a visiting scientist. After a short stay in Italy, he joined Dr. Beatrice Anner's laboratory in Geneva University Medical Center, Switzerland, to study the interaction of metal ions in isolated enzyme systems. He is author or co-author of 100 peer-reviewed articles, 4 book chapters, several technical reports, and 150 technical abstracts. He has obtained several awards based on his outstanding contribution in

research related nanoparticles and their biological effects. He serves as editorial member of *Toxicological Sciences* and *International Journal of Toxicology*. Dr. Hussain serves on several committees and organized international symposia and scientific meetings related to toxicology. He is a Fellow of the Academy of Toxicological Sciences. His current research focuses on the biological interaction and toxicity evaluation of engineered nanoparticles and developing multifunctionalized nanomaterials to exploit their properties for biological application.





**James E. Hutchison** joined the faculty at the University of Oregon (UO) in the fall of 1994 where he is currently the Lokey-Harrington Chair in Chemistry and Associate Vice President for Research and Strategic Initiatives. His research interests are in green chemistry, materials chemistry and nanoscience. He led the development of the UO's nation-leading curriculum in "green" (environmentally-benign) organic chemistry, launched the university's pioneering Center in Green Nanoscience and is a member of the Governing Board of the ACS Green Chemistry Institute. He is a member of the leadership team for the Oregon Nanoscience and Microtechnologies Institute (ONAMI) and founded, and now directs, the ONAMI's Safer Nanomaterials and Nanomanufacturing Initiative (SNNI). The SNNI is a virtual center that unites 30 principle investigators at

University of Oregon, Oregon State University, Portland State University and Pacific Northwest National Laboratory around the goals of designing greener nanomaterials, greener nanomanufacturing and the integration of green materials into clean tech applications. He has won a number of awards, including an NSF-CAREER award and the 2003 Oregon Academy of Science Outstanding Teacher of Science and Math in Higher Education. Hutchison is an Alfred P. Sloan research fellow and a Camille Dreyfus teacher-scholar. He is the author of more than 95 refereed publications, three book chapters and a text book ("Green Organic Chemistry: Strategies, Tools and Laboratory Experiments").



**Terrance J. Kavanagh** received a B.S. in Natural Resources from the University of Michigan, an M.S. in physiology/toxicology, and a Ph.D. in Toxicology and Genetics from Michigan State University. He conducted research in free radical biology and aging as a Post-Doctoral Fellow at the University of Washington. Dr. Kavanagh joined the faculty at the University of Washington as a Research Assistant Professor in the Departments of Medicine and Environmental Health in 1989. He is currently Professor in the Department of Environmental and Occupational Health Sciences and Adjunct Professor of Pulmonary and Critical Care Medicine at the University of Washington. Dr. Kavanagh is a Diplomate of the American Board of Toxicology and a Member of the Society of Toxicology, the Society for Free Radical Biology and Medicine, the International Society for Analytical

Cytology, and the Society for Environmental Toxicology and Chemistry. Dr. Kavanagh's areas of research include glutathione metabolism, molecular toxicology, analytical cytology, free radical biology, oxidative stress biomarkers, toxicogenomics and nanotoxicology. Dr. Kavanagh is currently Deputy Director of the UW Center for Ecogenetics and Environmental Health, and Director of the UW Nanotoxicology Center. Dr. Kavanagh has authored over 100 peer-reviewed scientific articles, 10 book chapters and numerous scientific abstracts.



**Greg Lowry** is a Professor in the Department of Civil and Environmental Engineering at Carnegie Mellon University. He teaches Environmental Engineering, Water Quality Engineering, Environmental Fate and Transport of Organic Compounds in Aquatic Systems, Environmental Nanotechnology, and Environmental Sampling and Sample Characterization. His research interests include mineral-organic macromolecule-water interfacial processes, and transport and reaction in porous media, with a focus on the fundamental physical/geochemical processes affecting the fate of engineered nanomaterials and organic contaminants in the environment. He is also investigating the processes affecting the permanence of CO<sub>2</sub> injected underground for carbon sequestration. He is an experimentalist working on a variety of fundamental and

application-oriented research projects developing novel environmental technologies for restoring contaminated sediments and groundwater. His current projects include in situ sediment management using innovative sediment caps, DNAPL source zone remediation through delivery of reactive nanoparticles to the NAPL-water interface, and CO<sub>2</sub> capture, sequestration, and monitoring.



**Dr. John M. Miller** is the Cofounder and Chief Operating Officer of Dune Sciences, Inc. in Eugene, OR. Dune Sciences specializes in the development and commercialization of materials and tools that enable greener nanoproducts including its LinkedON Antimicrobial coatings and SMART Grids imaging platform. Dr. Miller has more than 15 years experience in the development and commercialization of nanotechnology enabled products in fields ranging from energy storage to the life sciences. He has extensive technical expertise in the processing/production and characterization of new nanomaterials and devices. Prior to founding Dune Sciences, Dr. Miller served as Director of Fuel Cell Technology at World Energy Labs in San Francisco, CA where he led a team developing state-of-the-art embedded diagnostics for fuel cell technology. Prior to that he served as

Technical Director for T/J Technologies, Inc. (now A123 Systems) in Ann Arbor, MI where he was responsible for the development of new battery materials that are presently being used in commercial high rate Li ion batteries.



**Ian Moody** received his B.S. In Chemistry from the University of California, Davis in 2002 after transferring from Cabrillo Community College. From 2003 to 2005, he was employed as a technician at DuPont Displays in Santa Barbara, CA, where he synthesized conductive polymers for use in organic light-emitting diode displays. In 2005, he enrolled in the Chemistry graduate program at the University of Oregon, where he has worked in the lab of Dr. Mark Lonergan on the synthesis and study of PbS nanoparticles and their use in thin-film photonic devices. Ian plans to defend his Ph.D thesis during the summer of 2011, and is currently seeking a research position in industry.



**Jeff Morris** is the National Program Director for Nanotechnology at EPA. He is responsible for managing EPA's Nanomaterials Research Program. Jeff led the development of EPA's 2007 *Nanotechnology White Paper* and the 2009 *EPA Nanomaterials Research Strategy*. Jeff also co-leads the US delegation to the Organization of Economic Cooperation and Development's Working Party on Manufactured Nanomaterials, and co-chairs the Working Party's test guidelines steering group.



**Tyler Radinecki** is currently a faculty research associate in the School of Chemical, Biological and Environmental Engineering at Oregon State University. He received his PhD in Chemical and Environmental Engineering from Yale University (2005) and has recently been named the W. Leonhard endowed assistant professor of Civil, Construction and Environmental Engineering at San Diego State University beginning in August, 2011. His research has focused on creating and using molecular biology tools to understand how nitrifying bacteria are inhibited by and respond to common wastewater contaminants under a variety of aqueous chemistries and physiological states. This work has led to the identification of "sentinel genes" that may be used as a biomarker in biosensors to identify

both the presence and bioavailability of these contaminants. His current work looks at the potential ecotoxicity of several emerging contaminants, including nanoparticles – in particular, silver nanoparticles, using *Nitrosomonas europaea* as a model nitrifying bacteria and test organism. This work combines extensive physiological and chemical characterization of the nanoparticles under a variety of aqueous chemistries with the examination of the corresponding physiological and transcriptional responses of *N. europaea* to the nanoparticles under these conditions.



**Mr. Robert D. "Skip" Rung** is a senior high technology R&D executive with over 25 years of R&D management experience in CMOS process technology, application-specific integrated circuit (ASIC) design and electronic design automation (EDA), IC packaging, MEMS, microfluidics, and inkjet printing. Until his retirement in 2001, he served as Director of Advanced Research for the Imaging and Printing Technology Platforms business at Hewlett-Packard's Corvallis, OR facility. Mr. Rung was asked in December 2003 to lead Oregon Nanoscience and Microtechnologies Institute (ONAMI),

Oregon's first "Signature Research Center" and an unprecedented collaboration among Oregon's research

universities and the Pacific Northwest National Laboratory. ONAMI's dual mission is to grow "small tech" research in Oregon and commercialize technology in order to extend the success of Oregon's world-leading "Silicon Forest" technology cluster, which includes the most advanced R&D and manufacturing operations for leading companies such as Intel Corporation, Hewlett-Packard Company, FEI Company, Invitrogen, Electro Scientific Industries, Planar Systems, Xerox Office Products, Tektronix, ON Semiconductor and many dynamic smaller firms. ONAMI has so far received \$42M in state investment and its member researchers have approximately quadrupled Oregon's annual federal and private research awards in the fields of nanolaminates and transparent/printed electronics, green nanotechnology, nanoscale metrology, and microtechnology-based energy and chemical systems (MECS). The ONAMI commercialization gap fund has helped launch or enable over 20 new startup companies since late 2006. These companies have collectively raised \$70M in private funding.



**Hamid Saebfar's** experience in environmental work began in 1976 at the California State University at Northridge where he graduated with BS in Environmental Health and in 1978, MS in Environmental Engineering from the University of Southern California. From 1978 to present he has been employed by U.S. Environmental Protection Agency and Calif. EPA/DTSC at various capacities, staff engineer to Division Chief for 8 years where he managed the investigation and remediation of all proposed school sites in California. His current assignments in the Office of the Chief Scientist for DTSC include Green Chemistry Initiative and nanomaterials regulation.



**Shouheng Sun** received his Ph.D. degree in Chemistry from Brown University in 1996. He was a postdoctoral fellow from 1996-1998 and a research staff member from 1998-2004 at the IBM T. J. Watson Research Center. He joined the Chemistry Department of Brown University in 2005. He is the Professor of Chemistry and Engineering at Brown and has been the Associate Director of Brown's Institute for Molecular and Nanoscale Innovation since 2008.



**Robert Tanguay** is Distinguished Professor in the Department of Environmental and Molecular Toxicology, Director of the Sinnhuber Aquatic Research Laboratory, Director of the EHSC Aquatic Biomedical Models Core, Director of the NIEHS Toxicology Training Grant, and the Director of a NCCR Veterinary Training Grant in Aquatic Models for Biomedical Research. He received his PhD in Biochemistry from the University of California-Riverside (1995) and postdoctoral training in developmental toxicology from the University of Wisconsin-Madison (1996-1999). Over the past several years he has exploited the molecular and genetic advantages of zebrafish to define the molecular mechanism by which chemicals, drugs and nanoparticles interact with and adversely affect vertebrate development and function. His group has demonstrated that zebrafish provide an ideal discovery platform for rapid throughput in vivo assessments and for identifying the gene products that underlie the phenotypic responses to environmental insults.



**Lisa Truong** is a 3<sup>rd</sup> year predoctoral student in Robert Tanguay's lab in the environmental and molecular toxicology department at Oregon State University. She received her Master's in Environmental Science at Oregon State University in 2008. While in graduate school, Lisa has served as a mentor for high school apprentices and taught general biology to undergraduate students. In addition to interacting with high school and undergraduate students, she has worked with other colleagues within the university and outside to build collaborations within the science field. Lisa's research interest is focused on assessing the nanomaterial-biological interactions to develop Quantitative Structure-Activity Relationships (QSARs) using the embryonic zebrafish model. Her ultimate goal is to help develop inherently safer nanomaterials.





**Navin Kumar Verma** received his PhD in Clinical Medicine from Trinity College Dublin, Ireland under the supervision of Prof. Yuri Volkov. Working as a member of a large interdisciplinary team of scientists based at the Institute of Molecular Medicine (IMM), and Centre for Research on Adaptive Nanostructures & Nanodevices (CRANN), Trinity College Dublin, Ireland, Dr. Verma for a number of years has been involved in inflammation & cancer biology, nanomedicine and nanotoxicology studies. Dr. Verma has published 16 research articles and presented at the national and international conferences.



**David B. Warheit** graduated from the University of Michigan in Ann Arbor with a BA in Psychology. He received his Ph.D in Physiology from Wayne State University School of Medicine in Detroit. Subsequently, he was awarded an NIH Postdoctoral Fellowship, and 2 years later, a Parker Francis Pulmonary Fellowship, both of which he took to NIEHS to study mechanisms of asbestos-related lung disease. In 1984, he moved to DuPont Haskell Laboratory to develop a pulmonary toxicology research laboratory. His major scientific research interests include pulmonary toxicological mechanisms and corresponding hazards/risks related to inhaled particulates, fibers and nanomaterials. He is the author/co-author of > 120 publications and has been the recipient of the ILSI Kenneth Morgareidge Award (1993 - Hannover, Germany) for contributions in Toxicology by a Young Investigator and the Robert A. Scala Award and Lectureship in Toxicology (2000). He has also attained Diplomate status of the Academy of Toxicological Sciences (2000) and the American Board of Toxicology (1988). He has served on NIH study section review committees (NIH SBIR, NIH Bioengineering) and has participated on working groups at IARC, ECETOC, OECD, ILSI RSI and ILSI-HESI and the National Academy of Sciences, as well as several journal editorial boards (including currently, Associate Editor – Inhalation Toxicology, as well as Toxicological Sciences), Particle and Fibre Toxicology, Toxicology Letters, Journal of Applied Toxicology, Critical Reviews in Toxicology and Nano Letters. Recently he was the chairman of the ECETOC (European Centre for Ecotoxicology and Toxicology of Chemicals) Task force on “Health and Environmental Safety of Nanomaterials”, and currently serves on the National Academy of Sciences Committee to Develop a Research Strategy for Environmental, Health, and Safety Aspects of Engineered Nanomaterials as well as the President of the Nanotoxicology Specialty Section- (Society of Toxicology).



**Marvin Warner's** research focuses on the use of engineered nanomaterials for biological, chemical, and radiological preconcentration and detection. He received a B.S. in Chemistry from the University of Kentucky in 1998 and a M.S. (2000) and Ph.D. (2003) in Chemistry and Materials Science from the University of Oregon. Dr. Warner joined Pacific Northwest National Laboratory (PNNL) as a post-doctoral research fellow in 2003 working on the development of highly sensitive rapid biodetection systems that seek to utilize rationally designed nanomaterials to achieve better performance metrics under the guidance of Dr. Cynthia Bruckner-Lea. Dr. Warner subsequently joined PNNL as a Scientist in 2004 and continues to work in the field of nanomaterials for biological, radiological, and chemical detection. Specifically, he is studying the use of magnetic nanoparticles (synthesized in-house) to influence the sensitivity and reduce total analysis time for bio and chemical assays. In addition, he is synthesizing a wide variety of nanomaterials for use in optical biological, chemical, and radiological detection systems. Recently his work has branched out to include the use of nanomaterials for environmental remediation and nanomaterials toxicology studies. Dr. Warner has mentored a large number of students while at PNNL and continues to have active collaborations with members of academia and other national laboratories. He has published numerous journal articles and book chapters detailing his work on the synthesis and functionalization of nanoparticles, on microfluidics-based biodetection systems, and on nanomaterials for sample collection, preconcentration, and separations.



**R. Stanley Williams** is a Senior Fellow at Hewlett-Packard Laboratories and founding Director of the HP Quantum Science Research (QSR) group, with more than 50 scientists and engineers working in areas of fundamental physical sciences. Established in 1994, QSR is focused on preparing HP for the challenges and opportunities ahead in electronic, photonic and mechanical device technology as features continue to shrink to the nanometer-size scale, where quantum mechanics becomes important. Williams is one of just five active Senior Fellows of a total technical staff of more than 40,000 at HP.