

# Editorial

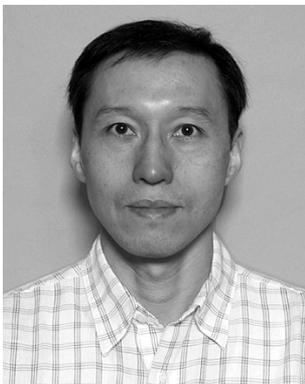
**T**HIS Special Issue marks the end of a two-year experiment in drawing special issue contributions from a general Plasma Science Meeting: ICOPS. Despite the success of this year's and last year's Special Issues of Selected Oral Contributed Papers from ICOPS, it was decided generally to focus the IEEE TRANSACTIONS ON PLASMA SCIENCE on topical rather than general meeting based special issues. All participants in future ICOPS presenting either oral or poster papers are encouraged to submit their papers for publication to regular issues of the IEEE TRANSACTIONS ON PLASMA SCIENCE. As an important exception to this focus, the series of special issues of Plenary and Invited Papers from the ICOPS will continue, as they have since their inception in 2002. For this Special Issue, it was again decided that the candidate papers would be limited to a subset of all the papers actually presented at the ICOPS. Nominations from oral contributed papers for the selection process for this Special Issue were received from ICOPS Session Organizers and Session Chairs. Those authors of nominated papers, were informed of this nomination, and asked to submit a complete manuscript using our Manuscript Central submission, and reviewing system (see <http://tps-ieee.manuscriptcentral.com>). An excellent group of guest editors was gathered to effectively cover the many disciplines represented by the selected papers. These individuals contributed greatly to making this Special Issue a success. Their job was to manage the many details of the review process, gather all the final materials from the accepted papers, and send these materials to the Editor. The guest editors for this special issue deserve much appreciation for their work, done under severe time pressure, very capably and professionally. The following are the international group of five co-guest editors (their photographs and biosketches are listed at the end of this editorial):

- 1) Prof. Paul K. Chu (City University of Hong Kong, Hong Kong),
- 2) Dr. Simon J. Cooke (Naval Research Laboratory, Washington DC USA),
- 3) Dr. Christine A. Coverdale (Sandia National Laboratories, Albuquerque NM USA),
- 4) Dr. Adrian W. Cross (University of Strathclyde, Glasgow, U.K.),
- 5) Prof. Trevor Moeller (University of Tennessee Space Institute, Tullahoma, TN).

The manuscripts represented in this special issue are drawn from all the disciplines of plasma science represented at ICOPS. From among the 171 presented contributed oral papers, 107 papers were selected and first authors were asked to submit. A total of 45 papers were actually submitted. Of these, 37 papers were accepted for publication. This issue captures 35 of the accepted papers, with the remaining papers to appear in subsequent regular issues. I want to express my personal appreciation for the efforts of all those individuals who have contributed to the success of this special issue: the IEEE NPSS Plasma Science and Applications Executive Committee; the ICOPS 2004 Conference Chairman, Dr. R. Commisso; the ICOPS 2004 Session Organizers and Session Chairs; the co-guest Editors; the authors; and all the referees. I hope that our readers have enjoyed our modest experiment and I look forward to future regular issues which will contain an even greater number of contributions representing the diversity of research areas covered at ICOPS.

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**Paul K. Chu** (M'97–SM'99–F'03) received the B.S. degree in mathematics from the Ohio State University in 1977 and the M.S. and Ph.D. degrees in chemistry from Cornell University, Ithaca, NY, in 1979 and 1982, respectively.

He joined Charles Evans and Associates in California in 1982 and started his own business in 1990. He is currently Professor (Chair) of Materials Engineering in the Department of Physics and Materials Science of the City University of Hong Kong. He holds concurrent Professorship in six Chinese universities: Fudan University, Harbin Institute of Technology, Peking University, Shanghai Jiaotong University, Southwest Jiaotong University, and Southwestern Institute of Physics. His research activities include plasma processing technology, microelectronics processing, and biomaterials. He is author/co-author of over 10 chapters, 350 journal papers, and 400 conference papers. He has 8 U.S. patents and 3 Chinese patents.

Dr. Chu is Fellow of the Hong Kong Institution of Engineers (HKIE), Executive Member of the International Plasma-Based Ion Implantation and Deposition Committee, and Member of the International Ion Implantation Technology Executive Committee, Engineering Panel of the Hong Kong Research Grants Council (RGC), and Materials Division Committee of the Hong Kong Institution of Engineers. He is Guest Editor of IEEE TRANSACTIONS ON PLASMA SCIENCE, and *Surface and Coatings Technology*, as well as a member of the Editorial Board of Nuclear Instruments and Methods in Physics Research B.



**Simon J. Cooke** (M'95) was born in Glasgow, U.K., in 1967. He received the B.Sc. degree (with honors) in physics from the University of Strathclyde, Glasgow, U.K., in 1988, and the D.Phil. degree from the University of Oxford, Oxford, U.K., in 1993. His graduate research involved analysis of the optical properties of multilayer metal and organic molecular films.

From 1992 to 1996, he was a postdoctoral research associate in the Relativistic Electrons, Lasers and Discharges group in the Department of Physics, the University of Strathclyde, developing computational tools for electron-beam and electromagnetic simulation. In 1996, he joined the Vacuum Electronics Branch of the Naval Research Laboratory, Washington, DC, where his research has explored computational methods for 3-D simulation of vacuum electron devices, under contract with the University of Maryland (1996-1998) and Science Applications International Corporation, McLean, VA (1998-2003). In September 2003, he became a Research Physicist in the Vacuum Electronics Branch. His current research interests include discrete and reduced-order electromagnetic methods for vacuum electron device simulation, and investigation of novel de-

vice structures.

Dr. Cooke has been a Member of the U.K. Institute of Physics since 1987 and the American Physical Society since 2004. In 2002, he received the IEEE-NPSS Early Achievement Award for contributions to computational modeling of vacuum electron devices.



**Christine A. Coverdale** received the B.S. degree in physics and mathematics from the University of Puget Sound, Tacoma, WA, in 1988, and the M.S. and Ph.D. degrees in plasma physics from the University of California, Davis, in 1989 and 1995, respectively. Her thesis work was performed at the Lawrence Livermore National Laboratory in Laser Program from 1988 to 1995, where she experimentally studied laser driven instabilities in underdense plasmas.

From 1995 to 1997, she worked at Physics International, San Leandro, CA, in the Plasma Radiation Source (PRS) program developing gas puff Z-pinch sources at long implosion times. She also participated in their diagnostics program, helping to develop X-ray diagnostics for the PRS and Reflex Triode development programs. She joined Sandia National Laboratories (SNL), Albuquerque, NM, in October, 1997 as a member of the Technical Staff in the Materials Radiation Science Department. While at SNL, she has continued to pursue her interest in Z-pinch physics on the Saturn and Z facilities. Experiments have focused on long implosion time wire array Z-pinzches on Saturn, high-photon energy Z-pinch sources on Z, and radiation effects. She

has also participated in Bremstrahlung experiments and diagnostic development. She has published several papers and presented papers at many conferences on Z-pinch physics, X-ray diagnostics, and laser-plasma instabilities.

Dr. Coverdale serves on the Executive Committee of the IEEE Plasma Science and Applications Committee.



**Adrian W. Cross** (M'03) was born in 1966. He received the B.Sc. (with honors) and Ph.D. degrees in physics from the University of Strathclyde, Glasgow, U.K., in 1989 and 1993, respectively.

He became a Lecturer at the University of Strathclyde in 2000, having previously held the position of Senior Research Officer (1998-2000) and Research Fellow (1993-1998). In 2004, he was appointed to Senior Lecturer. His interests include high-power free electron radiation sources and pseudospark discharges.

Dr. Cross has been a Member of the Institute of Physics since 1989. In 2001, was nominated to serve on the Plasma Physics Committee, which coordinates all plasma physics activity in the U.K. In 2001, he was awarded a U.K. Engineering and Physical Science Research Council Advanced Fellowship. Dr. Cross serves on the Executive Committee of the IEEE Plasma Science and Applications Committee.



**Trevor Moeller** (M'92) received the B.S. degree in mechanical engineering from Rose-Hulman Institute of Technology, Terre Haute, IN, in 1991, and the M.S. and Ph.D. degrees in mechanical engineering the University of Tennessee Space Institute, Manchester, in 1993 and 1998, respectively.

He is a Research Associate Professor at the University of Tennessee Space Institute (UTSI). Before joining the UTSI faculty, he directed many of the technology development efforts for InnovaTek, Inc, a small business in Washington. His efforts at InnovaTek included the research of plasma surface treatment for biological and chemical warfare agent decontamination, microchannel combustion, and aerosol collector technology. He is currently interested in the modeling and testing of plasmas with an emphasis in electric propulsion. He has more than 18 papers in journals and conference proceedings and has received one patent.

Dr. Moeller is a Member of the American Society of Mechanical Engineers, Tau Beta Pi, and Pi Mu Epsilon. He is currently serving as Secretary of the Tennessee Section of American Institute

of Aeronautics and Astronautics.