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ECS Launches New Journals

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SCIENCE AND TECHNOLOGY

ECS

New Journals, New Technical Interest Areas: Continuing to Meet the Needs of the Community

by Mary Yess

ECS has long been recognized as the society for a broad scientific and engineering field covering electrochemistry and solid state science and technology. Our journals, meetings, and networking activities combine to make us the only organization encompassing this rich technical domain. From energy storage and conversion to electrochemical engineering, to electronic, photonic, and other solid state materials and devices, our mission to disseminate information in these areas has never been more relevant.

New Journals for ECS

As a nonprofit organization, ECS been a leader in many aspects of publishing—we were the first Society in our field to: publish online journals as each article became available, digitize archival content, and publish all our content in a Digital Library. Our flagship *Journal of The Electrochemical Society* (JES) has been in publication since our founding in 1902, and continues to be one of the most-highly cited journals in electrochemistry.

This year, ECS is launching three new peer-reviewed scientific journals, joining JES, to meet the needs of authors and readers around the world. The first issues of the new journals will be published online in June. ECS understands the need for researchers to publish technical content with a timely turnaround and to have access to resources dedicated to their studies.

ECS Journals in 2012

- *Journal of The Electrochemical Society* (JES)
- *ECS Electrochemistry Letters* (EEL)
- *ECS Journal of Solid State Science and Technology* (JSS)
- *ECS Solid State Letters* (SSL)

There are no fees to submit to or publish in any ECS journals, and the Society's Editorial Boards and publications staff have dramatically improved publication lagtime for the journals.

The first new journal—the *ECS Journal of Solid State Science and Technology* (JSS)—is a “spin-off” of JES and will publish full-length, peer-reviewed articles, covering fundamental and applied areas of solid state science and technology, including experimental and theoretical aspects of the chemistry and physics of materials and devices. JES will continue in publication, without interruption, but will re-focus its content to fundamental and applied areas of electrochemistry, including experimental and theoretical aspects of electrodes, interfaces, and devices.

Unlike JES, the title of *Electrochemical and Solid-State Letters* contains both electrochemical and solid state science and technology, and therefore will be required to cease publication under that title after the June 2012 issue. In its place, the Society is launching two rapid-publication journals: *ECS Electrochemistry Letters* (EEL) and *ECS Solid State Letters* (SSL). EEL will cover the same technical areas as JES, but will publish papers that present significant new content requiring rapid publication.

Genesis of the New Journals

Challenges to the journals—the proliferation in the sheer number of journals, severe competition from for-profit publishers, and debate over open access publishing practices (good and bad)—became more urgent in 2010. A small strategy group consisting of the ECS Executive Committee, the journal Editors, and key publishing staff studied those challenges and took a closer look at our publishing practices and plans.

One challenge has always been that JES published papers in both electrochemistry and solid state science and technology, causing its Thomson Reuters (TR) impact factor to be skewed. Typically, within the TR system, electrochemistry journals have had higher impact factors than solid state journals. The electrochemistry and solid state papers *within* JES followed the same pattern. When compared with other *electrochemistry* journals, JES was in the top ten for a long time; but with the ever-more aggressive publishing practices of commercial publishers, JES lost some ground, and publishing both solid state and electrochemistry papers in one journal became a serious issue.

This over-arching discussion of electrochemistry impact factors vs. solid state impact factors resurrected an old discussion: whether or not to “split” the *Journal of The Electrochemical Society* into two separate journals. After an analysis of the electrochemistry papers in JES, it was found that they had as high, or higher impact factors than JES's commercial competitors. That, coupled with another important factor (JES was publishing an ever-increasing numbers of high-quality papers), led to the decision that it was indeed time to “split” JES; a discussion about ESL yielded the same conclusion.

Our Technical Scope

The discussions about the ECS journals were far-reaching, and another area for review was the fact that there has long been a disparity between the content published in the journals and the content presented at ECS meetings. How could we make sure we were taking advantage of the best in both of the Society's main program areas? Our technical "domain" became a serious topic for consideration, and it prompted then-President Bill Brown to appoint a Technical Interest Areas (TIA) Task Force (see sidebar for members), charged with reviewing the Society's entire technical scope.

Since its founding in 1902, the ECS mission has been to advance electrochemical and solid state science and technology by disseminating information. In order to advance these scientific and engineering disciplines and maintain our place as a steward of the science, ECS continually strives to be recognized as the premier publisher and symposium organizer in this field. The TIA Task Force was charged with reviewing and, if necessary, revising the Society's TIAs—all with a view to attracting the best technical content to the Digital Library and technical meetings, and by engaging the best in our field to contribute to the technical activity.

The Task Force conducted an encompassing review of the Society's current technical content included in the following: JES, ESL, *Interface*, ECST, meeting symposia, ECS Divisional activity, and various citation and impact factor data. After an iterative process lasting several months, which included feedback from editorial boards, Divisions, Board members, and symposium organizers, the group defined a new set of TIAs. These TIAs (see page 20) represent the technical scope of ECS, providing a new structure for the content in the ECS Digital Library and for the organization of the meeting symposia and ECS Divisions.

With the new TIAs established, they were adopted by the journals and are being put in place for mid-2012, when the new journals will launch. The new journal sections will enable authors to better identify with the technical content contained therein, ultimately drawing the best scientific papers from these areas.

The TIA Task Force recognized the importance of the Society managing its technical interest areas, and that their management should become an integral, and conscious, part of the Society's activities. A study of the ECS Bylaws led to some changes to ensure that we regularly review our TIAs (from short and long term perspectives) in order to define the scope of our technical domain, and then determine how we can attract and subsequently disseminate the best content in these technical areas.

TIA management is now the purview of the Society's Technical Affairs Committee (TAC). In addition to the symposium side of the house being overseen by TAC, the publications side of the house is now a subcommittee of TAC. Thus TAC is able to oversee the TIAs for all technical areas of the Society, to ensure that there is parity in disseminating content in every TIA the Society defines as being within its technical domain.

New Editorial Boards

While considering the Society's technical scope, and therefore the technical scope of the journals, it became clear that authors, readers, meeting attendees, and other constituents would benefit from two technical "tracks": Solid State Science and Technology (SSST) and Electrochemical Science and Technology (EST). Because these two tracks often have different interests and community expectations, the Society replaced its system of one editorial board per journal with a more unified approach: two Editorials Boards, one for SSST and one for EST. Each Editorial Board is now responsible for two journals.

More important was the recognition that no one Editor would be able to have knowledge of all technical areas, even within one of the

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ECS Technical Interest Areas 2010-2011 Task Force

(Note: All roles listed were as of the time of Task Force appointment in the fall of 2010.)

- **William Brown**, Chair (ECS President and Board Chair, past DS&T Division Chair)
- **Fernando Garzon** (ECS Vice-President, Technical Affairs Committee Chair, Board Member, past HTM Division Chair)
- **Hubert Gasteiger** (Fuel Cell Subcommittee Chair, PEFC Symposium lead organizer)
- **Dennis Hess** (Editor of *Electrochemical and Solid-State Letters* (ESL), past President, past DS&T Division Chair)
- **Paul Kohl** (Honors & Awards Committee Chair, past *Interface* Editor, past Editor of *Journal of The Electrochemical Society* (JES) and of *Electrochemical and Solid-State Letters*)
- **Johna Leddy** (ECS Secretary, Board Member, past PAED Division Officer)
- **Paul Natishan** (past President, Board Member, past Corrosion Division Chair, former *ECS Transactions* Development Team Member)
- **Krishnan Rajeshwar** (*Interface* Editor, past Energy Technology Division Chair, former Chair of New Technology Subcommittee)
- **Dan Scherson** (Editor of *Journal of The Electrochemical Society*, past Battery and PAED Division Chair)
- **Subhash Singhal** (Publication Committee Chair, former Chair Long Range Planning Committee, past HTM Division Chair)
- **Esther Takeuchi** (ECS Vice-President, Ways & Means Committee Chair, Board Member, past Battery Division Chair)
- **John Weidner** (Editor of *ECS Transactions* (ECST), past IE&EE Division Chair)

ECS Technical Interest Areas and Scopes

Electrochemical Science and Technology

Batteries and Energy Storage—Areas of interest include theoretical and experimental aspects of batteries, electrochemical capacitors, and redox flow batteries. Specific topics include design, modeling, and testing; electrode structures and characterization, including charge storage materials, binders, additives, membranes, electrolytes, conductivity enhancers, and current collectors. Also of interest are issues that pertain to safety, such as development and implementation of methods for its assessment.

Corrosion Science and Technology—Areas of interest include all experimental and theoretical aspects of corrosion. Specific topics include physicochemical basis of corrosion, corrosion inhibitors, and kinetic aspects; pit initiation and propagation; methods for the study of corrosion including spectroscopy and electrochemical techniques and scanning probe microscopies; numerical simulations, computational chemistry, and mathematical modeling as applied to corrosion.

Electrochemical/Chemical Deposition and Etching—Areas of interest include deposition of metal oxides and semiconductors; fundamental aspects of nucleation and growth; physicochemical aspects of deposition; electrochemical machining; plating, and etching baths; leveling, accelerating, and suppressing agents.

Fuel Cells, Electrolyzers, and Energy Conversion—Areas of interest include theoretical and experimental aspects of all types of fuel cells (including bio fuel cells and bacterial fuel cells) and electrolyzers. Specific topics include design, modeling, testing and evaluation; novel electrode structures and their characterization, including electrocatalytic materials and electrocatalysis; engineering aspects of fuel, water, and thermal management.

Organic and Bioelectrochemistry—Areas include all aspects related to the electrochemical properties of organic materials both as reactants and electrodes. Specific topics include electrochemistry in nonaqueous solvents including ionic liquids and polymer electrolytes; electronically conducting polymers; fundamental aspects of biomolecular redox behavior.

Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry—Areas of interest include fundamental aspects of interfacial science and electroanalytical chemistry. Specific topics include double layer theory and experiments. Theoretical and experimental aspects of electrocatalysis, *in situ* spectroscopy, photoelectrochemical cells, scanning probe microscopy, and X-ray and electron microscopy methods.

Sensors and Measurement Sciences—Areas of interest include development and implementation of electrochemically based sensors for inorganic, organic, and biological materials; *in vitro* and *in vivo* electrochemical characterization of biomembranes and biomolecules; and new methods of measurement.

Synthesis and Electrochemical Engineering—Areas include the chemical and electrochemical synthesis of compounds, and reactor designs and evaluations for synthesizing chemicals. Specific topics include chemical mechanisms, yields and mass, momentum and heat transport, electrode designs and evaluation, and chemical and electrochemical synthesis of compounds involving graphene, carbon nanotubes, and carbon nanostructures.

Solid State Science and Technology

Carbon Nanostructures and Devices—Areas of interest include design and growth of conducting, semiconducting, and insulating carbon nanostructures including nanotubes, graphene, and fullerenes. Specific topics include theoretical and experimental studies on nanotubes, graphene, and fullerenes for use in energy and sensor applications; electronic, photonic, electrochemical, and mechanical devices; chemical and physical functionalization of carbon nanostructures; supramolecular assemblies, biomedical devices; environmental remediation.

Dielectric Science and Materials—Areas of interest include theoretical and experimental aspects of inorganic and organic dielectric materials, including electrical, physical, optical, and chemical properties. Specific topics include growth processes; reliability; modeling and property measurements; polarizability; bulk and interfacial properties; interphases; reaction kinetics; phase transformations; thermodynamics; electric and ionic transport; polymers; high k , low k , and embedded dielectrics; porous dielectrics; thin and ultra-thin films.

Electronic Materials and Processing—Areas of interest include processing science and technology for electronic, optical and magnetic materials, films, interfaces, and devices. Specific topics include bulk crystal growth; thin film, surface and interface growth, and interface modification to establish physical, chemical, and electrical properties of materials and structures; optical, e-beam, X-ray, ion-beam, and soft lithography; atomic layer and chemical vapor deposition for films and nanoscale materials, chemical mechanical polishing; liquid, vapor, ion-beam, and plasma etching and deposition; sputtering; anodization; evaporation; spin, dip, and spray coating; rapid thermal processing; surface modification, functionalization and cleaning; 3D interconnects; process integration; microfabricated systems.

Electronic and Photonic Devices and Systems—Areas of interest include fundamental properties and measurements of device fabrication and characteristics for electronic and photonic applications. Specific topics include thin film transistors; MOSFETs; bipolar devices; quantum devices; silicon, germanium, and related microelectronic and photonic devices; micro- and nano-electro-mechanical systems (MEMS and NEMS); solid state sensors, wide bandgap semiconductor materials and devices; photovoltaic energy conversion devices; phase change memories; graphene-based devices; plasmonics; power devices; silicon-on-insulator devices; bioelectronics.

Luminescence and Display Materials, Devices, and Processing—Areas of interest include theoretical and experimental science and technology of inorganic and organic luminescent materials, devices, and displays. Specific topics include photoluminescent, cathodoluminescent, and electroluminescent materials; scintillators; phosphors; lasers and light emitting diodes; organic LEDs and solid state lighting; liquid crystal, plasma, and field emission displays.

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tracks; and so the Society re-organized the Editorial Boards to have a senior Editor and Technical Editors, one Technical Editor for each TIA. These Technical Editors (see page 22) are recognized as the top practitioners in each individual TIA, and were appointed to increase the profile of their respective TIAs, and to effectively attract more papers to their TIAs. The entire Editorial Board—from the senior Editors and Technical Editors, to the Associate Editors and Editorial Advisory Committee—provide the highest quality peer review of any electrochemistry and solid state science and technology journals, for which the Society has long been recognized.

New Home for the ECS Digital Library

The American Institute of Physics (AIP) has been the host for the ECS Digital Library for many years. In 2011, AIP suddenly announced it would no longer provide hosting services for outside publishers. ECS quickly prepared a requirements document to outline the features and functionality needed in a new platform. After an extensive review and evaluation process, ECS awarded the hosting of its ECS Digital Library to Stanford University's HighWire Press, with a launch date set for June 2012.

The Society's peer-reviewed journals have consistently ranked among the top international publications in their field (based on TR Science Citation Index criteria) and its proceedings and extended meeting abstracts provide scientists with a first look into the current research. HighWire will not only be hosting ECS's legacy content of close to 100,000 papers and abstracts, but will also offer a new set of opportunities for visibility and discoverability for future research published by the Society.

HighWire is a leader in hosting technology and integration, and a frontrunner in the academic community. With an active presence in the digital dissemination of STM (scientific, technical, and medical) and other scholarly content, HighWire's e-publishing capabilities offer the flexibility that will enable ECS to continue to expand the depth of its content and best serve the needs of researchers in electrochemical and solid state science and technology.


Other Major Initiatives

In addition to creating more robust Editorial Boards, the journals are also soliciting high-profile content, such as special issues dedicated to papers on "hot topics," papers submitted from the presentations

of critical technical conferences, and are increasing the number of review articles. The Editors and Technical Editors have also begun working closely with Divisions and symposium organizers to identify high-quality content from ECS symposia.

Because of efforts by the Editorial Boards and publications staff, there have been a number of improvements in lagtimes. From submission of the revised manuscript to final decision has dramatically improved: a year ago it was 21 days for JES and now it is only 4 days; for ESL, a year ago it was 16 days and most recently the lagtime was only 2 days. Another dramatic improvement has been in time from final decision (acceptance) to actual online publication. A year ago it took 36 days for a JES paper to be copyedited, composed, put into page proofs, returned by the author, corrected, and finally published. Now it is taking only 18 days for a JES paper. As for ESL, a year ago it took 28 days, now it also takes only 18 days. After the new journals are launched and all journals have been transitioned to the new platform at HighWire, our goals are 12 days for JES papers and 9 days for ESL papers.

Other major changes have been implemented or are underway, including the elimination of page charges in 2011. While ECS has always sought to spread the costs of publishing across all parts of the system—the Society's own funding, subscription fees, and page charges—it has become important to authors that there be no "page charges" and the Society has responded accordingly. This has shifted the burden of publishing costs to the Society and the libraries. Contrary to popular belief, it is not cost-free to publish journals online, and in fact, it is more expensive to do so because of high costs to tag and link content (and to maintain links), to host archives in perpetuity, to prepare content for mobile applications, to convert content as online coding and platforms become more sophisticated (to name a just a few aspects)—all in the face of ever-growing numbers of submissions and published articles. Some flavors of open access promise no "page charges" *per se*, but there are costs associated with open access journals too, and they are offset by "publication charges" or "institutional memberships" that far surpass the old page charges that ECS had in place. Open Access is a complex issue and will be the subject of a future article.

ECS is continuously seeking ways to excel at our mission and we hope the community of people working in electrochemistry and solid state science and technology will welcome and take advantage of these latest changes. 

Mary Yess is the Society's Deputy Executive Director and Publisher.

ECS Interim Editorial Boards

Solid State Science & Technology Editorial Board

ECS Journal of Solid State Science and Technology
ECS Solid State Letters

Dennis W. Hess Editor and Chair



Dennis W. Hess is the Thomas C. DeLoach, Jr. Professor of Chemical and Biomolecular Engineering and Director of the NSF Materials Research Science and Engineering Center for New Electronic Materials at the Georgia Institute of Technology. Professor Hess received a BS degree in chemistry from Albright College, and MS and PhD degrees in physical chemistry from Lehigh University. He was a Member of the Research Staff and Supervisor of Process Development at Fairchild Semiconductor from 1973 to 1977, where he worked for Bruce Deal. In 1977 he joined the Chemical Engineering Department at the University of California, Berkeley as an Assistant Professor. He served as Assistant Dean, College of Chemistry (1982-1987) and Vice Chair, ChE Department (1988-1991) at Berkeley. From 1991-1996, Dr. Hess served as Chair of the Chemical Engineering Department at Lehigh University. He joined the School of Chemical & Biomolecular Engineering at Georgia Tech in 1996.

Dr. Hess's research interests include thin film science and technology, interfacial science and engineering, microelectronic device and integrated circuit process technology, glow discharge or plasma science and engineering, and surface modification/cleaning. Professor Hess is an ECS Fellow, and a Fellow of the American Association for the Advancement of Science and the American Institute of Chemical Engineers (AIChE). He served as Editor for *Electrochemical and Solid-State Letters* from 2004 to 2012; currently he is Editor of *ECS Journal of Solid State Science and Technology* and of *ECS Solid State Letters*. He also served as Divisional Editor for *Journal of The Electrochemical Society* from 1978-1990 and Associate Editor for *Chemistry of Materials* from 1988-1996.

Professor Hess was President of ECS for the 1996-1997 term. He received the Distinguished Alumnus Award from Albright College (1998), the Charles M. A. Stine Award from the Materials Engineering and Sciences Division of AIChE (1999), the Thomas D. Callinan Award from the ECS Dielectric Science and Technology Division (1993), and the ECS Solid State Science and Technology Award (2005).

Jennifer Bardwell Technical Editor, Electronic Materials and Processing



Jennifer Bardwell is presently Acting Director, Materials Technologies at the Institute for Microstructural Sciences, National Research Council, and also the project coordinator for GaN Power Electronics at NRC. She received her BSc with high honors at the University of Saskatchewan, and her PhD at the University of Western Ontario in physical chemistry. She did a postdoctoral fellowship at the University of Toronto before joining NRC.

At NRC Dr. Bardwell has worked on an eclectic assortment of projects, from metallic corrosion and oxidation to anodic films on silicon, and most recently, the development of high performance transistors on GaN. She is the winner of the Lash Miller Award of the Canadian Section of ECS, the ECS Young Author's Award in Electrochemical Science and Technology, as well as several NRC awards. She has served on many ECS committees, and has organized or co-organized five symposia. She has been a member of ECS journal editorial boards since 2004, during that time she estimates that she has handled more than 1600 manuscripts for the Society journals.



George K. Celler Associate Editor, Electronic Materials and Processing

George K. Celler received his MSc degree in physics from the University of Warsaw and a PhD in solid-state physics from Purdue University. Before joining Rutgers University Materials Science and Engineering Department in 2010, and the Institute for Advanced Devices, Materials, and Nanotechnology (IAMDN), he was Chief Scientist at Soitec USA, where he was responsible for the company's technical interactions and collaborations with U.S. industry and academia in the field of substrate engineering. Before joining Soitec in 2001, he spent 25 years at Bell Laboratories, where he was a Distinguished Member of Technical Staff and Technical Manager.

In addition to his long-term interest in silicon-on-insulator structures and their applications, Dr. Celler also investigated laser annealing and rapid thermal processing of semiconductors, and diffusion phenomena in Si and silicon dioxide. He led a large DARPA supported X-ray lithography program at Bell Labs and was a Deputy Manager of X-Ray Lithography Consortium. He has published over 200 articles, edited nine books, and was issued 20 U.S. patents. He is a Fellow of ECS and of the American Physical Society, and a member of IEEE, OSA, and MRS. He was a Program Chair and a General Chair of the IEEE-SOI Conference, and he organized and chaired many ECS and MRS symposia. Dr. Celler received the 1994 ECS Electronics Division Award, and two Bell Labs President's Gold Awards. Currently, he is leading a SOI subcommittee of the International Technology Roadmap for Semiconductors (ITRS) and a SOI Standards task force of SEMI, and is a member of the External Advisory Board of the NSF-funded MRSEC at Georgia Tech. on epitaxial graphene. Presently he is exploring heterogeneous integration of compound semiconductors like SiC with silicon by means of ion-assisted crystal cutting and layer transfer.

Stefan De Gendt Technical Editor, Dielectric Science and Materials



Stefan De Gendt received his MS degree in chemistry in 1989, and his PhD degree in chemistry in January 1996, both from the University of Antwerp, Belgium. From 1989 until 1996 he was affiliated with the University of Antwerp, as a teaching assistant or as a beneficiary of a fellowship from the National Fund for Scientific Research (NFWO) to perform PhD research on the use of glow discharge mass spectrometry for analytical applications. In 1994, he was a guest researcher in the Chemistry Department at the University of Florida, Gainesville, USA.

From 1996 until today Dr. De Gendt has been affiliated with the Interuniversity Microelectronics Center (IMEC), Leuven, Belgium. Initially he worked in the Ultra Clean Processing group, where his research topics included cleaning technology and analytical metrology for contamination control in CMOS processing.

In 2000, Dr. De Gendt became program manager of IMEC's Industrial Affiliation Program (IIAP) on high k and gate metal materials. The goal of this program is the replacement of conventional SiO₂ based gate dielectrics (by metaloxide high k materials) and Si based gate electrodes (by metal materials) to allow further scaling of transistor technologies. He and his team were involved in the development of dielectric and metal deposition processes, advanced interface preparation, electrical and physical characterization, and wet and dry etch process development.

From 2005 onward, he became group manager responsible for IMEC's Post-CMOS Nanotechnology. Activities included the exploration of devices using 1D (nanowire like) architectures, with emphasis on tunnel FET devices and junctionless transistor concepts, the synthesis and use of carbon nanotubes for exploratory interconnect applications, and exploration of graphene synthesis and applications. In 2009, he became group manager of IMEC's NCAIS group (Nano Confined Applications, Interfaces and Surfaces). This group is responsible for exploratory research on nanotechnology and semiconductor cleaning and surface passivation.

Since 2003 he is also associated with the Katholieke Universiteit Leuven (KULeuven), in the Department of Chemistry as a professor, responsible for courses on Instrumental Analytical Chemistry and Chemistry and Characterization of Surfaces and Thin Films.

Dr. De Gendt is a member of professional organizations such as ECS (since 1999), the Belgian Chemistry Association (since 1989), and IEEE (since 2005). He has (co-)authored more than 200 technical papers in refereed journals and is (co-)inventor of cleaning and gate stack process steps, resulting in several patent applications. He has been actively involved in the organization of international conferences such as the Material Research Society (gate stack in 2003) and ECS (high k gate stack, carbon nanotubes, graphene and III-V materials, and atomic layer deposition from 2004 until today). He is member of ECS Dielectric Science and Technology and the ECS Electronics and Photonics Divisions and is an IEDM Committee member since 2005.

Francis D'Souza

Technical Editor, Carbon Nanostructures and Devices



Francis D'Souza received his BS and MS from Mysore University, Mysore, India and a PhD from the Indian Institute of Science, Bangalore, India in 1992 under the direction of V. Krishnan. After completing post-doctoral work at the University of Houston under Karl Kadish and Université de Bourgogne, Dijon, France, under Roger Guilard, he joined the faculty of Wichita State University in 1994 where he moved up to the ranks of Professor in 2003. Since 2011, he is on the faculty of Chemistry and Materials Science and Engineering at the University of the North Texas (UNT), Denton, TX and a member of UNT's BioNanoPhotonics cluster.

Professor D'Souza's research is aimed towards developing molecular recognition directed supramolecular compounds for various chemical/biochemical applications, especially supramolecular porphyrin/phthalocyanine and carbon nanomaterial systems for electron transfer, light energy harvesting, energy storage, and sensor applications. Development of biomimetic supramolecular solar cells is a specialty of his research group. He has published nearly 210 research papers in peer reviewed, high impact journals;

ten book chapters, and over 225 conference presentations including several key note and plenary presentations. He has won several awards including National Merit Scholarship, University Grants Commission Research Fellow, University Board of Trustees Young Faculty Scholar Award, Excellence in Research Award, Japan Society of Promotion of Science (JSPS) Professorship, and recently ECS Fellow. He is a co-editor of the *Handbook of Carbon Nanomaterials* series, and has served as an co-editor of several proceedings and *ECS Transactions* published by ECS.

Dr. D'Souza has been an active member of ECS since 1993. He has served as Secretary, Vice-Chair, and Chair of the Fullerenes, Nanotubes, and Carbon Nanostructures (FNCN) Division (1999-2008) and is well recognized within the FNCN Division and across the ECS community. For more than a decade he has served diligently to promote FNCN Division to gain national and international recognition. He was instrumental in establishing Smalley Research Award and Young Investigator Award of FNCN Division and seeking monies to establish endowments. His enthusiasm for organizing symposia (over 20) at the ECS meetings demonstrates his sustained commitment to the success of the Society.

Yue Kuo

Technical Editor, Electronic and Photonic Devices and Systems



Yue Kuo is Dow Professor of a multidisciplinary program in Chemical Engineering, Electrical Engineering, and Materials Science and Engineering at Texas A&M University. He received his BS degree from National Taiwan University, and his MS and DEngSci from Columbia University. Prior to joining Texas A&M University, Prof. Kuo spent two decades in industry working on research, development, and production of semiconductors, thin films, and plasma processing, at IBM T. J. Watson Research Center and in Silicon Valley. Dr. Kuo's honors include ECS Fellow, IEEE Fellow, ECS Electronics and Photonics Division Award, TEES Fellow, IBM technology and invention awards, and many best paper awards.

Professor Kuo's research has been focused on understanding the complicated relationship among semiconductor devices, materials, and processes. He has achieved many world records, such as the plasma-based room-temperature copper etch process, the unified relationship between gate dielectric properties and TFT characteristics, the simplest 2-photomask TFT fabrication process, the doped high k gate dielectrics and nonvolatile memories, plasma radiation damages to transistors, the generalized etching-deposition mechanism in the large-area PECVD process, the nonvolatile a-Si:H TFT, and the transistor-driven microchannel biochip. Many of these results have been integrated into industry products or production processes throughout the world. His two-volume comprehensive TFT book is a classic textbook used in many universities. He initiated the concept of generalizing TFT and ULSIC technologies for the accelerated advancement of these two giant industries.

In addition to a large number of papers and editorship of proceedings and journals, Dr. Kuo served as an Associate Editor of the *Journal of The Electrochemical Society* for more than ten years. He has been active in ECS, having served as a Board member, Division Chair and Vice-Chair, and various committees. He has also served other societies, such as IEEE and MRS. He has been involved in organizing and chairing many international conferences. He served on advisory and review boards for various industry, university, and government programs globally.

Kailash Mishra
Technical Editor, Luminescence and Display Materials, Devices,
and Processing



Kailash Mishra is currently a R&D Manager at Central Research and System Laboratories (CRSL) of Osram Sylvania Inc. in Beverly, MA. He holds a PhD in physics from Sambalpur University, India and did post-doctoral research at SUNY at Albany. He joined CRSL, which was previously the Light Research Center of GTE Sylvania, as a research scientist in 1985, and was a staff scientist until 2010. He was engaged in phosphor research until 2008, and worked in close collaboration with various phosphor research groups of Osram Sylvania. Currently he manages the thin film research group at the Central Research facilities.

Dr. Mishra's area of expertise includes the theory of electronic structures and associated properties of materials, theory of luminescence, and optical and luminescence properties of III-V semiconducting materials. He has published extensively on various aspects of luminescence of solids, and also on the electronic structures and associated properties of semiconductors and ionic crystals. He has been a member of ECS since 1998, and is actively engaged in the Luminescence and Display Materials (LDM) Division of the Society. He has been a co-organizer of several symposia of the ECS LDM Division and has been a co-editor of two proceedings volumes. He is also a member of the American Physical Society and the Materials Research Society.

Electrochemical Science & Technology Editorial Board

Journal of The Electrochemical Society
ECS Electrochemistry Letters

Daniel A. Scherson
Editor and Chair



Daniel A. Scherson is currently the Frank Hovorka Professor of Chemistry at Case Western Reserve University, Cleveland, OH, USA. He received his License in Chemistry from the Faculty of Basic Sciences, University of Chile, and his PhD in chemistry from The University of California at Davis working in the area of non-linear, non-equilibrium thermodynamics. He has received a number of awards, including the IBM Faculty Development Award, David C. Grahame Award of the ECS Physical Electrochemistry Division, The Faraday Medal of the Electrochemistry Groups of the Royal Chemical Society, The Japan Society for the Promotion of Science Fellowship, The Alexander von Humboldt Senior Fellowship Award, and a Vittorio de Nora - Diamond Shamrock Postdoctoral Fellowship. His research interests include the development and implementation of linear and non-linear spectroscopic and structural techniques for *in situ* monitoring of interfacial electrochemical events, including operating devices, such as fuel cells, batteries, and electrosynthetic reactors. He has over 240 journal publications, seven U.S. patents, and hundreds of conference presentations. He is Director of The Ernest B. Yeager Center for Electrochemical Sciences.

New Interim Editor and Chair for Electrochemical Science & Technology Editorial Board



Petr Vanýsek has been appointed the new Interim Editor and Chair of the Electrochemical Science & Technology Editorial Board. Dan Scherson was elected as the incoming Vice-President for the Society (the full election results will be published in the summer issue of *Interface*) and has resigned his position as Interim Editor in order to take up his role as an ECS Officer.

Dr. Vanýsek is a Professor of Chemistry at Northern Illinois University in DeKalb, IL, USA. He received his RNDr. (equivalent to a master's degree) in physical chemistry from the Charles University in Prague, Czech Republic; and a PhD from the Czechoslovak Academy of Sciences while studying liquid-liquid interfaces at the J. Heyrovský Institute. His present research interests include soft matter interfaces, specifically the structure of electrified liquid/liquid interface. The nature of this interface is studied by X-ray scattering, whereas classical electrochemical techniques are used where the interface has applications in electroanalytical methodology. Professor Vanýsek is also involved in impedance measurements, spanning from liquid interfaces, to materials for fuel cells, to applications in chemical instrumentation and in chemical sensors.

Professor Vanýsek has been involved in the affairs of ECS for many years, starting with the Chicago Section and the Council of Sections. He was Chair of the Sensor Division (1996-1998) and the Secretary/Treasurer of the Physical Electrochemistry Division in 2003-2004. In 2004-2008, while he held the position of the Society's Secretary, he was the Officer responsible for ECS publications and was deeply involved in rewriting the Society's Bylaws. He is the President of the Federation of Materials Societies and he is also the ECS representative to the Federation. In addition to his own research writing he has edited a number of ECS proceedings volumes and most recently three volumes of *ECS Transactions*. At Northern Illinois University, he is also the Director of Graduate Studies.

Doron Aurbach
Associate Editor, Batteries and Energy Storage



Doron Aurbach is a full professor in the Department of Chemistry, a senate member and the Director of the Cleantech Center at the Bar-Ilan Institute of Nanotechnology and Advanced Materials (BINA) at Bar Ilan university (BIU). He chaired the Department of Chemistry from 2001 to 2005. Prof. Aurbach and his team study the electrochemistry of active metals and polar aprotic systems, the development of spectroscopic methods (*in situ* and *ex situ*) for sensitive electrochemical systems, the electrochemistry of modified electrodes, and electrochemical intercalation processes. His group works on development of rechargeable high energy density batteries and EDL capacitors. The research group under his leadership also works on electronically conducting polymers and activated carbon electrodes, their engineering, characterization, and applications. Aurbach's group also studies water desalination by electrochemical means.

Professor Aurbach published more than 380 research articles in peer reviewed journals (materials science, surface science, electrochemistry, and physical chemistry), 15 patents, 15 chapters in books, and has been awarded the prestigious Israel Chemical Society (ICS) Prize of Excellence (2012), the Landau Prize for Green Chemistry (2011), the Edwards Company Prize of the Israel Vacuum Society (IVS) for Research Excellence, (2007), and the Technology Award of the ECS Battery Division (2005). Professor Aurbach is a Fellow of ECS (2008), ISE (2010), and MRS. He also serves as the Chair of the Israel Lab Accreditation Authority (ISRAC), since 2010. Since Prof. Aurbach founded the electrochemistry group at BIU 26 years ago, 30 students received PhD degrees and 35 students have received MSc degrees under his supervision.

Gerald S. Frankel
Technical Editor, Corrosion Science and Technology



Gerald S. Frankel is the DNV Chair, Professor of Materials Science and Engineering, and Director of the Fontana Corrosion Center at the Ohio State University (OSU). He earned the ScB degree in materials science engineering from Brown University and the ScD degree in materials science and engineering from MIT. Prior to joining OSU, he was a post doctoral researcher at the Swiss Federal Technical Institute in Zurich and then a Research Staff Member at the IBM Watson Research Center in Yorktown Heights, NY.

Dr. Frankel's primary research interests are in the passivation and localized corrosion of metals and alloys, atmospheric corrosion, corrosion inhibition, and protective coatings. He is a past Chair of the ECS Corrosion Division and past Chair of the Research Committee of NACE. Dr. Frankel is a Fellow of ECS, NACE International, and ASM International. He received the U. R. Evans Award from the Institute of Corrosion in 2011, OSU Distinguished Scholar Award in 2010, the ECS Corrosion Division H. H. Uhlig Award in 2010, the Alexander von Humboldt Foundation Research Award for Senior U.S. Scientists in 2004, the TP Hoar Prize from the UK Institute of Corrosion in 2007, the Uhlig Award from NACE in 2000, and the Harrison Faculty Award from the OSU College of Engineering in 2000. He was on sabbatical at the Max Planck Institute for Iron Research in Dusseldorf in 2005 and a visiting professor at the University of Paris in 2008. In 2009 he was named adjunct professor, Pohang Institute of Science and Technology, Graduate Institute of Ferrous Technology, Pohang, Korea.

Tom Fuller
Technical Editor, Fuel Cells, Electrolyzers,
and Energy Conversion



Tom Fuller is a Professor in the School Chemical & Biomolecular Engineering at the Georgia Institute of Technology, where he directs the GT Center for Innovative Fuel Cell and Battery Technologies.

Dr. Fuller received a bachelor of science from the University of Utah in chemical engineering in 1982. After completing his undergraduate studies, Dr. Fuller served for five years in the U.S. Navy in the submarine force working as a nuclear engineer. He continued to serve in the Naval Reserve and retired at the rank of Commander in 2001. In 1992 he obtained a PhD from the University of California, Berkeley, also in chemical engineering. Subsequently, Dr. Fuller developed advanced lithium batteries when working as a postdoctoral fellow at Lawrence Berkeley National Laboratory. He then moved to United Technologies Corporation in 1993. As a senior engineer he was Principal Investigator for DARPA and DOE programs in direct methanol fuel cells. In subsequent assignments Dr. Fuller was manager and then director of engineering. He was responsible for technology development, design, assembly, and test of cell stacks for UTC Fuel Cells.

Professor Fuller's research group at Georgia Tech is focused on durability challenges for electrochemical systems such as fuel cells and batteries. Fundamental understanding of the physical phenomena serves as a guide to the development of new materials and systems solutions to mitigate degradation in batteries and fuel cells. This research is a blend of experiments and mathematical modeling. In addition to his research, Dr. Fuller is the faculty advisor for the formula hybrid team, a student-led competition to develop advanced hybrid technologies.

Dr. Fuller is active in the ECS: he is a past Chair of the Energy Technology Division, and for a number of years chaired the Fuel Cells Subcommittee. He has also served on the Honors and Awards Committee, the Nominating Committee, and the New Technology Subcommittee. In 2008 he received the Research Award from the ECS Energy Technology Division. In 2009 he was named a Fellow of ECS.

Andrew A. Gewirth
Technical Editor, Physical and Analytical Electrochemistry,
Electrocatalysis, and Photoelectrochemistry



Andrew A. Gewirth received his AB from Princeton University in 1981 and his PhD from Stanford University in 1987. He joined the Illinois faculty in 1988 after postdoctoral work at the University of Texas, Austin. Now Director of the School of Chemical Sciences at the University of Illinois, Professor Gewirth has received a number of awards, including a Presidential Young Investigator Award, an A. P. Sloan Foundation Fellowship, the Department of Energy Outstanding Accomplishment Award in Materials Chemistry, and the University of Illinois University Scholar Award.

Dr. Gewirth's work addresses chemistry at interfaces, especially the solid-liquid interface. Professor Gewirth uses advanced characterization techniques to examine the mechanism of interfacial electrochemical reactions, and the resultant understanding is utilized to design new materials and catalysts. He is especially known for developing the atomic force microscope as a tool to study the electrified solid-liquid interface. Dr. Gewirth has longstanding

interests in fuel cells, particularly in the oxygen reduction reaction. He is also known for his spectroscopic studies of electrode surfaces and was the first to interrogate the potential dependent structure of water using sum frequency generation spectroscopy. Most recently, Prof. Gewirth is studying interfacial processes in batteries, with particular focus on the formation, reactivity, and stability of the solid electrolyte interphase or SEI. Dr. Gewirth has authored over 150 papers, delivered nearly 200 invited talks, and organized several conferences.

Ray Gorte
Associate Editor, Fuel Cells, Electrolyzers, and Energy Conversion



Raymond J. Gorte joined the faculty at the University of Pennsylvania in 1981 after receiving his PhD in chemical engineering from the University of Minnesota. He is currently the Russell Pearce and Elizabeth Crimian Heuer Professor of Chemical & Biomolecular Engineering, with a secondary appointment in Materials Science & Engineering. Since joining

Penn, Dr. Gorte has served as the Chair of the Chemical Engineering Department from 1995 to 2000, and was the Carl V. S. Patterson Professor of Chemical Engineering from 1996 through 2001. He received the 1997 Parravano Award of the Michigan Catalysis Society, the 1998 Philadelphia Catalysis Club Award, the 1999 Paul Emmett Award of the North American Catalysis Society, the 2001 Penn Engineering Distinguished Research Award, and the 2009 AIChE Wilhelm Award in Reaction Engineering. He has served as Chair of the Gordon Conference on Catalysis (1998) and Program Chair of the 12th International Zeolite Conference (1998). Dr. Gorte's present research interests are focused on electrodes for solid-oxide fuel cells and on thermodynamic studies of redox properties with oxidation catalysts. He is also known for his research on zeolite acidity and for metal-support effects, especially with ceria-supported precious metals, used in automotive emissions control.

Takayuki Homma
Associate Editor, Electrochemical/Chemical Deposition and Etching



Takayuki Homma is Professor of Applied Chemistry and Associate Dean of Academic Affairs Division at Waseda University, Tokyo, Japan. He received his BE, ME, and PhD degrees in applied physical chemistry from Waseda University in 1987, 1989, and 1992, respectively. He has been a member of the faculty of that university since 1991. From 1997 to 1998, he was

a Visiting Associate Professor at Stanford University. He is an active member of ECS (has been serving as an Associate Editor of *Journal of The Electrochemical Society* since 2003), the International Society of Electrochemistry (currently serving as Chair of Division 5: Electrochemical Process Engineering and Technology), The Electrochemical Society of Japan (a member of the executive board), the Surface Finishing Society of Japan (a member of the executive board), and the Japan Institute of Electronics Packaging (a member of the executive board). He received the ECS Electrodeposition Division Research Award in 2010.

Professor Homma's current research interests include creating thin films and nanostructured surfaces with novel electronic/magnetic properties by utilizing electrochemical approaches, investigating their deposition processes and reaction mechanisms, performing *ab initio* molecular orbital (MO) and density functional theory (DFT)

studies of those processes, developing new methods for evaluating structural and functional properties of nanostructured surfaces, and applying such surfaces to the development of devices and systems such as sensing devices, electrochemical micro reactors, and ultra high-density data storage systems. In addition, Prof. Homma conducts research to obtain atomistic and electrochemical understanding of the surface chemistry of silicon under device processing conditions. He has published 150 original papers, 38 review papers, and 15 book chapters.

Chuck Hussey
Technical Editor, Electrochemical/Chemical Deposition and Etching



Chuck Hussey is Chair and Professor of Chemistry at the University of Mississippi. He earned his BS and PhD from this institution in 1971 and 1974, respectively; and from 1974-78, he was a military research chemist at the Frank J. Seiler Research Laboratory located at the United States Air Force Academy. Professor Hussey joined the University of Mississippi as an

Assistant Professor in 1978 and was promoted to Professor in 1987. He became department chair in 1997. During his academic career, Dr. Hussey has served as Chair of the Gordon Conference on Molten Salts and Liquid Metals, as a consultant for Lawrence Livermore National Laboratory, as a member of the National Research Council Committee on Electrometallurgical Techniques for DOE Spent Fuel Treatment, and as a member of the University of Chicago Review Committee for the CMT Division of Argonne National Laboratory.

Professor Hussey, who is a Fellow of ECS, has served as a member of the Editorial Boards for the Society's journals since 2000. As an Associate Editor, he has handled manuscripts in many topical areas, but his principal responsibility has been in the area of electrochemical deposition and etching. Dr. Hussey's own scientific interests are directed at the electrochemical and transport properties of ionic liquids and the electrochemical deposition of metals and alloys from these novel solvents. More recently, he has become involved in investigations about the electrochemistry of lanthanides in ionic liquids as related to the processing of spent nuclear fuel. Professor Hussey is no stranger to Society publications and has published more than 40 articles in the *Journal of The Electrochemical Society* and *Interface*. He is active in Society affairs, having chaired the Honors and Awards Committee for four years, and served on the Finance Committee, Ways and Means Committee, and various award subcommittees.

Rangachary Mukundan
Technical Editor, Sensors and Measurement Sciences



Rangachary Mukundan (Mukund) is a technical staff member at the Sensors and Electrochemical Devices Group (MPA-11) of Los Alamos National Laboratory (LANL). He graduated from the University of Roorkee (currently, Indian Institute of Technology), Roorkee, India with a bachelor's degree in metallurgical engineering. He was then a research fellow at the University of

Pennsylvania, and received his PhD in materials science and engineering under the supervision of Wayne Worrell and Peter Davies in February 1997. His thesis was awarded the S. J. Stein Prize for superior achievement in the field of new or unique materials in electronics. Subsequently, he joined Fernando Garzon's team at the Los Alamos National Laboratory as a post-doctoral fellow, and has been a staff scientist at LANL since 1999. His current research

interests include electrochemical gas sensors, fuel cells, energy storage devices, and hydrogen and oxygen permeation membranes.

Dr. Mukundan has been involved with the development of advanced materials and devices for sensor systems for over 15 years. He is currently principal investigator on a DOE – Vehicle Technologies funded project aimed at developing nitrogen oxide and ammonia sensors for light duty automotive applications. He is also involved in the development of hydrogen safety sensors for the DOE – Fuel Cell Technologies program. Over the past decade, he has worked closely with various industrial partners developing sensors to better monitor the combustion process to improve energy efficiency, and decrease emissions. He was part of a team at LANL that was awarded an R&D 100 award in 1999 for the development of sulfur resistant oxygen sensors. He has authored over 25 papers in peer-reviewed journals, over 50 papers in *ECS Transactions* and preceding volumes, and is the co-inventor on six U.S. patents. His work has been cited over 1,000 times.

Dr. Mukundan has been a member of the ECS since 1994. He has organized several symposia and edited multiple *ECS Transactions* volumes. In 2005, he was awarded the J. B. Wagner, Jr. Award of the ECS High Temperature Materials Division for his work on high temperature sensors. He has served on the executive committee of the Sensor Division for over a decade, and was the Chair of the Sensor Division from 2006-2008; and he currently serves on the ECS Technical Affairs Committee.

Dennis Peters

Technical Editor, Organic and Bioelectrochemistry



Dennis G. Peters began his academic career in 1962 at Indiana University, Bloomington; since 1975 he has been the Herman T. Briscoe Professor of Chemistry at that institution. He received a BS degree from the California Institute of Technology in 1958 and a PhD degree from Harvard University in 1962.

Professor Peters has been a member of ECS since 1985. For the ECS Organic and Biological Electrochemistry Division, he has served continuously as a member of its Executive Committee since 1992 and as its Secretary-Treasurer, Vice-Chair, and Chair from 1999-2005. In 2002, he received the Society's Henry B. Linford Award for Distinguished Teaching, and he was elected a Fellow of the Society in 2007.

He has authored 180 research publications, along with five undergraduate textbooks on analytical chemistry. His research has focused on mechanistic and synthetic aspects of the reduction of halogenated organic compounds (alkyl, olefinic, and acetylenic halides), and his research group has used electrogenerated nickel(I) and cobalt(I) complexes as catalysts for the indirect reductive cleavage of halogenated organic species.

Professor Peters has received several national awards for outstanding teaching—the Chemical Manufacturers Association National Catalyst Award (1988), the American Chemical Society Division of Analytical Chemistry Award for Excellence in Teaching (1990), and the James Flack Norris Award for Outstanding Achievement in the Teaching of Chemistry (2001)—as well as 12 teaching awards from Indiana University. From Indiana University, he received the Distinguished Service Award (2005) and the W. George Pinnell Award for Outstanding Service (2006).

John Weidner

Technical Editor, Synthesis and Electrochemical Engineering



John Weidner is Department Chair and Campaign for Excellence Professor of Chemical Engineering at the University of South Carolina (USC). He received his BS degree in chemical engineering from the University of Wisconsin-Madison in 1986 and his PhD in chemical engineering from NC State University under the direction of Peter S. Fedkiw in 1991. That same year he joined USC as an assistant professor as part of the Center for Electrochemical Engineering. In the summer of 1992 he worked with Gerald Halpert as a NASA Summer Faculty Fellow in the Energy Storage Systems Group at the Jet Propulsion Laboratory in Pasadena modeling nickel batteries. He spent a sabbatical at the University of California-Berkeley working with John Newman in the fall of 1999 studying the nickel electrode, and at Los Alamos National Laboratory working with Tom Zawodzinski in the spring of 2000 modeling impedance in porous electrodes. His next sabbatical in 2007-08 was spent at the Fraunhofer Institute for Solar Energy Systems in Freiburg, Germany developing advanced catalysts for proton exchange membrane (PEM) electrolyzers for Christopher Hebling's hydrogen technology group.

Professor Weidner has published 80 refereed journal articles in the field of electrochemical engineering. His research group has created novel synthesis routines for battery materials and electrocatalysts, and they have used a variety of electroanalytical techniques and developed sophisticated mathematical models to advance the fields of electrochemical reactors, advanced batteries, electrochemical capacitors, fuel cells, and electrolyzers. As a graduate student he received an ECS Energy Research Summer Fellowship and the Student Research Award from the Battery Division for his dissertation work on the nickel electrode. In 2010 he received the Research Award from the Energy Technology Division for his work on his patented PEM electrolyzer for the large-scale production of hydrogen from gaseous SO_2 as part of the hybrid sulfur process. He was elected Fellow of ECS in 2010.

Dr. Weidner has been active in ECS for over 25 years, including two, three-year terms as Member-at-Large for the Battery Division's Executive Committee, three years as Advisor to the Energy Technology Division, five years as Chair of the Battery Division's Student Research Award, four years as Chair of the Young Authors Award, and six years on the *Interface* Advisory Board. He is past Chair of the Industrial Electrochemistry and Electrochemical Engineering Division and current Member-at-Large of the Energy Technology Division. He is the inaugural Editor of *ECS Transactions*.

Martin Winter

Technical Editor, Batteries and Energy Storage



Martin Winter is Chair of Applied Materials Science for Energy Conversion and Storage, Institute of Physical Chemistry & MEET Battery Research Center, at the University of Muenster. Professor Winter's main research interests are in electrochemistry, materials science, and inorganic chemistry and technology. He is the past president of the International Battery Materials Association (IBA) and Past Chair of the Division of Electrochemical Energy Storage and Conversion of International Society of Electrochemistry (ISE). Currently, he is the spokesperson of the LIB2015 Innovation Alliance of the BMBF (Germany Ministry of Education and Research) and a panel member of the National Platform E-Mobility (NPE). 