

## ECS Toyota Young Investigator Fellowship Launched

ECS, in partnership with the Toyota Research Institute of North America (TRINA), a division of Toyota Motor Engineering & Manufacturing North America, Inc. (TEMA), recently launched the ECS Toyota Young Investigator Fellowship. More than 100 young professors and scholars pursuing innovative electrochemical research in green energy technology responded to ECS's request for proposals.

Despite a difficult deliberation process, the ECS Toyota Young Investigator Fellowship Selection Committee ultimately chose three recipients for the inaugural fellowships: Patrick Cappillino, University of Massachusetts Dartmouth; Yogesh (Yogi) Surendranath, Massachusetts Institute of Technology; and David Go, University of Notre Dame.

The science of electrochemistry can help provide solutions for daunting challenges, like the need to transition to a less carbon intensive economy. "ECS was thrilled to partner with Toyota on this program and congratulates our three inaugural fellows," said ECS Executive Director Roque Calvo.

The ECS Toyota Young Investigator Fellowship aims to encourage young professors and scholars to pursue research in green energy technologies that will promote the development of next-generation vehicles capable of utilizing alternative fuels.

Global development of industry and technology in the 20<sup>th</sup> century, increased production of vehicles, and the growing population have resulted in massive consumption of fossil fuels. Today, the automotive industry faces three challenges regarding environmental and energy issues:

- (1) Finding a viable alternative energy source as a replacement for oil
- (2) Reducing CO<sub>2</sub> emissions
- (3) Preventing air pollution

Although the demand for oil alternatives—such as natural gas, electricity and hydrogen—may grow, each alternative energy source has its disadvantages. Currently, oil remains the main source of automotive fuel; however, further research and development of alternative energies may bring change.

Electrochemical research has already informed the development and improvement of innovative batteries, electrocatalysts, photovoltaics and fuel cells. Through this fellowship, ECS and TRINA hope to see further innovative and unconventional technologies borne from electrochemical research.

"We view research as an investment in our future both for our business, but also for the greater society," says Fellowship chair and manager of Toyota's North American Research Strategy Office Paul Fanson. "In order to start to overcome the very difficult technical challenges that we face, it is necessary to invest in and encourage scientists from diverse backgrounds with creative ideas that are willing to think outside of the box. I feel that we were able to accomplish that goal with this inaugural fellowship program, and I am very excited to be a part of it."

The selected fellows will receive restricted grants of no less than \$50,000 to conduct the research outlined in their proposals within one year. They will also receive a one-year complimentary ECS membership as well as the opportunity to present and/or publish their research with ECS.

## 2015 ECS Toyota Young Investigator Fellows

- **Patrick Cappillino**, University of Massachusetts Dartmouth, Battery Division of ECS *Mushroom-Derived Natural Products as Flow Battery Electrolytes*: To investigate the use of a naturally occurring and biologically produced compound in non-aqueous redox-flow batteries (NRFB), to tune three important attributes while retaining extraordinary metal-binding properties: redox potential; solubility in NRFB solvents; peripheral electrostatic and steric properties.
- **Yogesh (Yogi) Surendranath**, Massachusetts Institute of Technology, Energy Technology Division of ECS *Methanol Electrosynthesis at Carbon-Supported Molecular Active Sites*: To synthesize a selective electrocatalyst for methane to methanol conversion by ligating single site transition metal compounds known to activate methane with graphitic carbon surfaces that allow for facile charge transfer.
- **David Go**, University of Notre Dame, Physical and Analytical Electrochemistry Division of ECS *Plasma Electrochemistry: A New Approach to Green Electrochemistry*: To demonstrate the feasibility of using plasma electrochemistry to process carbon dioxide (CO<sub>2</sub>) for the production of alternative fuels, thereby ushering in a novel electrochemically-driven approach to both capture and reutilize CO<sub>2</sub>, reducing the overall carbon footprint of automobiles

The ECS Toyota Young Investigator Fellowship is an annual program, and the 2016 request for proposals will be released in the fall of 2015.

## Special thanks to the 2015 Selection Committee:



- Scott Calabrese Barton, Michigan State University, ECS Energy Technology Division
- Yi Cui, Stanford University, ECS Battery Division
- Paul Fanson, Chair, Toyota
- Brett Lucht, University of Rhode Island, ECS Battery Division
- Rana Mohtadi, Toyota
- Peter Pintauro, Vanderbilt University, ECS Energy Technology Division
- Kensuke Takechi, Toyota

## Successful Semiconductor Meeting in China

ECS and SEMI are pleased to announce that the annual China Semiconductor Technology International Conference (CSTIC 2015) successfully concluded on March 16<sup>th</sup> in Shanghai, China with about 311 speakers and 606 attendees from around the world.

This marks the 16<sup>th</sup> year that CSTIC held this annual international conference. (ECS is a founding sponsor of the event.) With a focus on semiconductor technology and manufacturing, CSTIC promoted technical exchanges on the latest developments in semiconductor technology and manufacturing and facilitated investment and collaboration in the semiconductor industry in Asia, particularly China.

CSTIC 2015 covered all aspects of semiconductor technology and manufacturing, including circuit design, devices, lithography, integration, materials, processes, and manufacturing, as well as emerging semiconductor technologies and silicon material applications. Hot topics, such as 3D integration, LEDs, and MEMs, were also included in the conference.

Xi Wang of Shanghai Institute of Microsystem and Information Technology of Chinese Academy of Science, Seok-Hee Lee of SK Hynix, and Rudi Cartuyvels of IMEC delivered the keynote speeches at the conference. Over 141 leading experts in semiconductor technology presented keynote and invited talks in the symposia.

CSTIC 2015 was organized by SEMI and co-organized by ECS and China's High-Tech Expert Committee (CHTEC), and co-sponsored by IEEE-EDS, MRS and the China Electronics Materials Industry Association. Several companies provided financial support for this industrial semiconductor technology conference. Additional sponsors included: JCET Changjiang Electronics Technology Co. Ltd., Henkel, SMIC (Semiconductor Manufacturing International Corporation), Tokyo Electron Limited, Applied Materials Inc., ANJI, ASE Group, Inc., ADVANTEST, NMC North Microelectronics Co. Ltd., ASM, Edwards, ULVAC, and Finnegan.

About 217 CSTIC 2015 papers were published in IEEE Xplore.

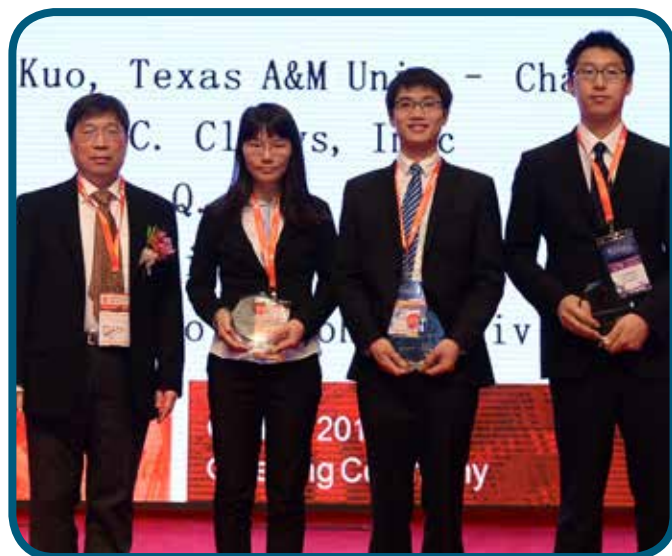
CSTIC Chair and ECS Fellow Cor Claeys opened the meeting on March 15<sup>th</sup> at the Shanghai International Conference Center. Yue Kuo gave welcome remarks and an introduction to ECS at the plenary session.

The ECS Best Student Paper Award winners were Xiaofei Wu of University of Hong Kong (1<sup>st</sup>), Jin Jisong of Tokyo Institute of Technology (2<sup>nd</sup>), and Yanfen Xiao of University of Freiburg (3<sup>rd</sup>).

CSTIC 2016 is scheduled to be held March 2016 in Shanghai, China.



YUE KUO giving welcoming remarks and an introduction to ECS at the plenary session.



YUE KUO (left) with the three student award winners at CSTIC 2015.

*This article was prepared by Yue Kuo, ECS Fellow, newly elected ECS Vice-President, and recent recipient of the ECS Gordon E. Moore Medal for Outstanding Achievement in Solid State Science and Technology.*

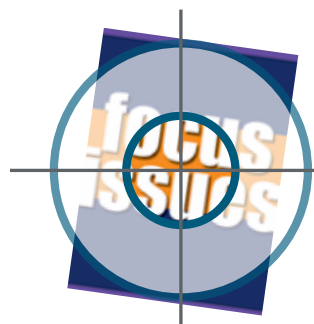
## 2015 Sponsored Meetings

*In addition to the regular ECS biannual meetings and ECS Satellite Conferences, ECS, its Divisions, and Sections sponsor meetings and symposia of interest to the technical audience ECS serves. The following is a list of the sponsored meetings for 2015. Please visit the ECS website for a list of all sponsored meetings.*

- **10<sup>th</sup> Simposio en Ciencia de Materiales Avanzados y Nanotecnología (Advanced Materials Science and Nanotechnology Symposium, SCiMAN)**, December 7-9, 2015 — San Jose, Costa Rica
- **66<sup>th</sup> Annual Meeting of the International Society of Electrochemistry**, October 4-9, 2015 — Taipei, Taiwan
- **16<sup>th</sup> International Conference on Advanced Batteries, Accumulators and Fuel Cells**, August 30-September 4, 2015 — Brno, Czech Republic

*To learn more about what an ECS sponsorship could do for your meeting, including information on publishing proceeding volumes for sponsored meetings, or to request an ECS sponsorship of your technical event, please contact [ecs@electrochem.org](mailto:ecs@electrochem.org).*

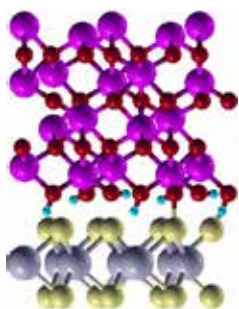
## Focus on Focus Issues



The *Journal of The Electrochemical Society* (JES) and *ECS Journal of Solid State Science and Technology* (JSS) publish special focus issues, which highlight scientific and technological areas of current interest and future promise. These special issues expand the horizons of our readers and motivate further research and development in the field. The issues are handled by a prestigious group of ECS Technical Editors and guest editors, and all submissions undergo a rigorous peer review process. Many articles in the issues are Open Access and can be read for free.

### Recent Issues...

#### Atomic Layer Etching



Atomic Layer Etch (ALEt) and Atomic Layer Clean (ALC) are emerging as enabling technologies for sub-10 nm technology nodes. At these scales, performance will depend critically on process variations, and novel technologies will thus be required to meet process and device specifications without increasing complexity. At even more aggressive nodes, where novel 2D materials are being considered, the need for zero damage and quasi-infinite selectivity during etch and clean processes becomes increasingly

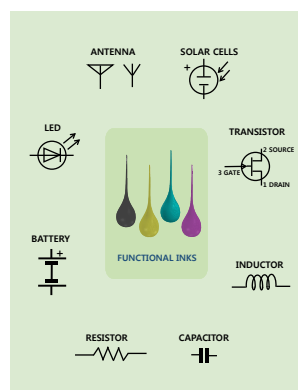
important. This most timely focus issue offers a picture of the current science and engineering status of ALEt and ALC, the directions and needs associated with this critical technology, and motivation for those individuals who will further develop and implement this much-needed technology in future device generations.

*Issue:* ECS J. Solid State Sci. Technol., <http://jss.ecsdl.org/content/4/6.toc>

*Guest editors:* Craig Huffman, Dennis W. Hess, Jean-François de Marneffe, Makoto Sekine, and Stefan De Gendt

*Image:* Structure of dielectric on 2-D material.

#### Printable Functional Materials for Electronics and Energy Applications



Printing technologies in an atmospheric environment offer the potential for low-cost and materials-efficient alternatives for manufacturing electronics and energy devices such as luminescent displays, thin-film transistors, sensors, thin-film photovoltaics, fuel cells, capacitors, and batteries. Significant progress has been made in the area of printable functional organic and inorganic materials including conductors, semiconductors, and dielectric and luminescent materials. These new printable functional materials have

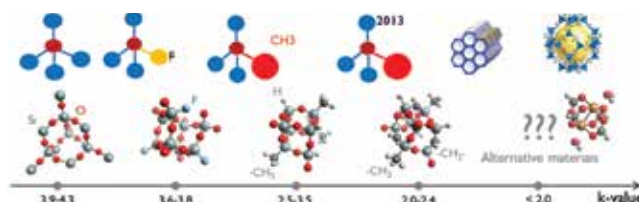
enabled and will continue to enable exciting advances in printed electronics and energy devices. The overall collection of this focus issue covers an impressive scope from fundamental science and engineering of printing process, ink chemistry and ink conversion processes, printed devices, and characterizations, to the future outlook for printable functional materials and devices.

*Issue:* ECS J. Solid State Sci. Technol., <http://jss.ecsdl.org/content/4/4.toc>

*Guest editors:* Chih-hung Chang, Wei Wang, Xiulei (David) Ji, and Paul J. Benning

*Image:* Potential technical applications of printable functional inks.

#### Advanced Interconnects: Materials, Processing, and Reliability



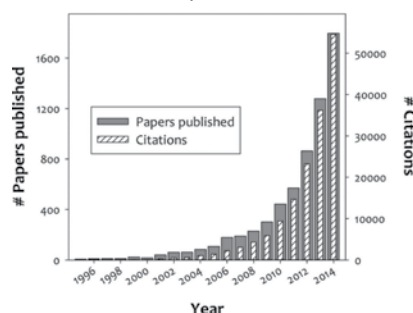
Interconnects today determine, to a large extent, the delay and thus the performance of CMOS-based circuits and today's microelectronic chips. The articles in the issues cover topics such as: low-k dielectrics and new integration approaches allowing for a reduction in plasma damage; analysis of barrier challenges; problems of conductors and the challenges to find better candidates than Cu; mechanical stability of porous low-k dielectrics; problems of conductors and the challenges to find better candidates than Cu; surface chemistry of Cu ALD and CVD processes that can be used to replace the conventional electroplating approaches; reliability challenges in EM at 10 nm node; TDDB life-time models; and chip packaging interaction. The invited papers in the issue provide the "trunk" of this tree, while the regular contributions play the role of branches and foliage. All together they represent a good image of the present status of interconnect technology.

*Issue:* ECS J. Solid State Sci. Technol., <http://jss.ecsdl.org/content/4/1.toc>

*Guest editors:* Mikhail R. Baklanov, Christoph Adelman, Larry Zhao, and Stefan De Gendt

*Image:* Technology node and types of materials.

#### Electrochemical Capacitors: Fundamentals to Applications



Electrochemical capacitors (ECs) represent a burgeoning and diverse class of energy-storage technologies that promise to bridge the performance gap between high-power capacitors and high energy-density batteries. This issue captures the state-of-the-art in EC

research, which now spans a broad variety of subtopics ranging from the development of new charge-storing materials to the application of advanced characterization tools that provide new insights on key

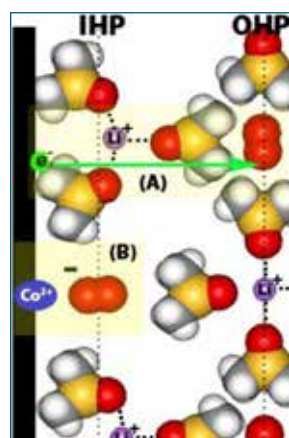


mechanisms to the use of modeling/computation. The issue includes three perspective-style articles that discuss critical questions for present EC research, the pros and cons of increasingly popular “redox electrolyte” ECs, and the often-overlooked but critical performance property of self-discharge. The bulk of the issue is devoted to primary research articles solicited from an international cast of prominent researchers in the field of ECs.

*Issue: J. Electrochem. Soc.*, <http://jes.ecsdl.org/content/162/5.toc>

*Guest editors:* Jeffrey W. Long, Thierry Brousse, and Daniel Bélanger

*Image:* Trends in peer-reviewed publications and resulting citations in major science and engineering journals, from the introduction to the issue, p. Y3



## Selected Presentations from the International Meeting on Lithium Batteries (IMLB 2014)

The development and commercialization of Li-ion batteries in recent decades is without doubt the most important and impressive success of modern electrochemistry. Li-ion batteries today power most of our mobile electronic devices. It is hard to imagine today how our daily lives would be without rechargeable Li-ion batteries. The success of this technology in terms of its high energy density, reliable operation, safety, cycle-life, etc., drives our on-

going efforts to develop Li-ion batteries for the more challenging electromobility and grid-storage applications. One of the most important international conferences in the Li battery community is the biannual International Meeting on Lithium Batteries (IMLB); a series founded by Bruno Scrosati 33 years ago. This issue is completely Open Access, and the papers in this issue touch upon many important new aspects in the field and illustrate well the wide spectrum of topics that were discussed at the IMLB 2014 meeting.

*Issue: J. Electrochem. Soc.*, <http://jes.ecsdl.org/content/162/2.toc>

*Guest editor:* Doron Aurbach

*Image:* K. M. Abraham, “Electrolyte-Directed Reactions of the Oxygen Electrode in Lithium-Air Batteries,” p. A3021

## In Recognition of Adam Heller and His Enduring Contributions to Electrochemistry



Recent progress in diverse scientific fields ranging from bioelectrochemistry to battery technology to photoconversion has been deeply influenced by the contributions of Adam Heller of the University of Texas at Austin. The focus issue recognizes Prof. Heller’s career and works on the occasion of his 80<sup>th</sup> birthday. Several papers consider interactions of enzymes with redox polymers and with nanoscale structures for electron transfer reactions, applicable to sensors, energy conversion, and chemical conversion. Two papers cover the

materials aspect of solar energy conversion, including an in-depth review of photostability of photoelectrochemical cells. Other papers take Heller’s ideas in new directions, including an electro-osmotic pump based on redox polymers, insect communication powered by implanted biofuel cells, and three papers on microbial fuel cells, applying Heller’s ideas on mediated electron transfer to “living bioelectrocatalysts.”

*Issue: J. Electrochem. Soc.*, <http://jes.ecsdl.org/content/161/13.toc>

*Guest editors:* Scott Calabrese Barton and Shelley Minteer

*Image:* Adam Heller

## Upcoming Issues...

- JES Focus Issue on Redox Flow Batteries – Reversible Fuel Cells
- JES Focus Issue on Electrochemical Interfaces in Energy Storage Systems
- JSS Focus Issue on Novel Applications of Luminescent Optical Materials
- JES Focus Issue on Electrophoretic Deposition
- JSS Focus Issue on Chemical Mechanical Planarization: Advanced Material and Consumable Challenges
- JSS Focus Issue on Micro–Nano Systems in Health Care and Environmental Monitoring

For calls for submissions to other upcoming special focus issues, check them following page: [http://ecsdl.org/site/misc/focus\\_issues.xhtml](http://ecsdl.org/site/misc/focus_issues.xhtml)

## Results of the 2015 Election of Officers and Slate of Officers for 2016



**DANIEL A. SCHERSON**  
President

The ECS Tellers of Election have announced the results of the 2015 election of Society officers, with the following persons elected: President — Daniel A. Scherson, Case Western Reserve University; and Vice-President — Yue Kuo, Texas A&M University. The terms of Krishnan Rajeshwar (Vice-President), Johna Leddy (Vice-President), Hariklia Deligianni (Secretary) and E.J. Taylor (Treasurer) were unaffected by this election.

At the Board of Directors meeting in Chicago, Illinois, on May 28, 2015, members of the Board voted to approve the slate of candidates recommended by the ECS Nominating Committee. The slate of candidates for the next election of ECS officers, to be held from January – February 2016, include: for President — Krishnan Rajeshwar, for Vice-President (one to be elected) Christina Bock and Thomas Moffat, and for Secretary (one to be elected) James Fenton and Douglas Hansen. Full biographies and candidate statements will appear in the winter 2015 issue of *Interface*.



**YUE KUO**  
Vice-President

## Six Questions for Bor Yann Liaw



**BOR YANN LIAW** is a respected battery-related researcher, working in advanced power sources and energy storage systems at the Hawaii Natural Energy Institute. He has recently been appointed to the ECS Electrochemical Science & Technology (EST) Editorial Board as an Associate Editor concentrating in the Batteries & Energy Storage Technical Interest Area.

**What do you hope to accomplish in your new role as the EST Editorial Board Associate Editor?**

I think that the impact of the journal is very high, but we need to have more people get involved. I am hoping to promote high-quality papers to be submitted to the journal and be part of the effort to promote the awareness of the journal.

**What type of expertise do you bring?**

I've been working in this area for about three decades, so I think that I have enough knowledge between the newer developments of materials, especially in the nano area, versus the most traditional and classic framework of electrochemistry. We'll see whether we can bridge the technology gap between the two sets of skills into a more coherent framework, so we understand how the materials in a nanoscale can relate to the classical models or understanding of electrochemistry.

**Who have been your mentors throughout your career?**

The two mentors I had in my PhD study were Robert Huggins at Stanford University and Werner Weppner at the Max-Planck-Institute for my postdoc study. I think they are both very inspiring people.

**What are the practical applications regarding your research in sugar-air batteries?**

Recently we were working with farmers in Hawaii. We have a lot of papaya that are not marketable, which means they look ugly and are not really sellable. We can take those papaya and grind them up and take the juice and put it into a battery and it has worked like a charm.

**What initially got you interested in science?**

My parents are both teachers, so I was inspired in teaching the possibilities of science. Another thing had to do with my personality. I'm interested in exploring everything that occurs in our daily lives.

**What is the biggest challenge going forward for clean energy?**

We probably have to come back to more fundamental understandings and make things much easier and simpler so the cost can come down and the impact to the environment can be drastically reduced.

## Institutional Member **spotlight** Pine Research Instrumentation



While the zodiac may disagree, at Pine Research Instrumentation, it's the year of the duck—Dr. Reducks the duck, that is. The newly-named mascot

has been making several appearances lately, and even has his own Facebook page chronicling his adventures at technical exhibitions and tradeshow around the world.

Dr. Reducks isn't the only new thing going on at Pine. Via a new website, 360Glassware.com, Pine is moving into the custom glassware arena. Soon, Pine customers will be able to design their own glassware and visualize it in 3D. In the meantime, customers may upload custom sketches to the preliminary site, as well as design their own round bottom glassware and adapters. Pine is also expanding their product line to include tools for neuroelectrochemical analysis, starting with headstage amplifiers for in-vivo electrochemistry.

ECS is pleased to continue its partnership with Pine during this exciting time. An institutional member since 2006, Pine recently increased its commitment to ECS by becoming a Benefactor member. "We're excited to see Pine growing even more in its involvement with ECS," notes Dan Fatton, ECS Director of Development and Membership, "it has been a great partner over the years and a strong presence at our meeting exhibits." This year, Pine will continue

that trend as an exhibitor and sponsor at the 227th ECS meeting in Chicago, the Conference on Electrochemical Energy Conversion & Storage with SOFC-XIV in Glasgow and the 228th ECS meeting in Phoenix.

"Pine Research Instrumentation enjoys the breadth of research at ECS meetings, which brings our customers together from many different industries, geographic locations, and technical backgrounds," notes Marion Jones, Pine Sales Manager, "Additionally, we find the ECS conferences to be well organized and working with the staff enjoyable."

Pine also enjoys working with ECS student chapters when the opportunity arises. Most recently, they hosted a pizza party for students at UC Irvine. In the past year, they also hosted the 2014 Christmas party for the ECS Research Triangle student chapter (which includes Duke University, University of North Carolina and North Carolina State University). Frank Dalton gave a short talk and held a trivia game for the students. If you are interested in partnering with Pine for your next ECS student chapter event, you may contact Marion Jones at [pinewire@pineinst.com](mailto:pinewire@pineinst.com).

To learn more about Pine's activities in 2015, check out their freshly launched profiles on Facebook and LinkedIn.

## ECS Staff News



**MARY HOJLO** joined ECS in January 2012 as a Membership Assistant and Receptionist for the Society. She was promoted to a full-time Constituent and Membership Associate in July of 2014. Mary is responsible for all aspects of constituent membership, meeting registrations, and Digital Library access. She also assists with institutional membership, account maintenance, and retention.

Mary enjoys interacting with the various groups of ECS constituents, and is happy to provide assistance to the members. In that regard she has made upgrade suggestions for innovating the membership processes and is helping to test the new systems being implemented.

Mary was previously a Senior Data Analyst for Bristol Meyers-Squibb in their Pricing and Sourcing department and a Senior Financial Analyst for the operations division of Leaseway Transportation before taking a leave to raise her three daughters.

Mary majored in English at Holy Family University and has an AA in business administration from Bucks County Community College. "Many of our members may be familiar with Mary Hojlo. If you call the ECS office, or send an email to customer service at ECS, Mary is likely the staff person assisting you. Mary is extremely helpful and approaches her work with a contagious positive attitude that makes it a pleasure to work with her," says Dan Fatton, Director of Development and Member Services.



**LINDA CANNON** joined the Finance department in December 2013 as a temporary employee and became the full time Staff Accountant in April 2014. She is responsible for cash and investment portfolio reconciliations and financial statement analysis, as well as assisting in the ECS budget process. Linda also works with ECS's independent auditors, WithumSmith+Brown, during their financial statement audit at year end.

A CPA licensed in the State of NJ since 1991, Linda has over thirty years of overall accounting experience, including working in public accounting with a Big 4 firm, where she performed audits, compilations and reviews for both for profit and non-profit clients. She has also worked as an accounting supervisor, manager and assistant controller in companies in the fields of retail, telecommunications, and manufacturing and distribution. She is also actively involved in charitable work.

Linda graduated *cum laude* with a Bachelor of Science degree in Accounting from Rutgers University. She has lived in New Jersey all of her life. She grew up in South Jersey and currently resides in Lawrenceville.

Paul Grote, Director of Finance says, "Linda brings valuable accounting experience and insight to ECS, and will play an important role in helping the Finance department achieve its goal of providing reliable and timely information to ECS's Board of Directors, management, and staff."



**ROB GERTH** joined ECS in April 2014 as Director of Marketing and Digital Engagement. Rob says that when he was little his mom would say, "You watch enough TV, I hope you do something with that someday." He started by writing plays starring space aliens invading in aluminum pie tin flying saucers. His high school in suburban Philadelphia had a TV studio where he shot basketball games and made shows for the elementary school kids. He graduated

on to Temple University's Radio-TV-Film program.

Rob has made hundreds of corporate marketing videos, doing all the jobs along the way, from grip to director. "Being able to do, or at least appreciate all the jobs," says Rob, "is key to understanding anything you're in charge of." To that end he joined his local volunteer fire company for a year before making a documentary about them. He also spent hundreds of hours with funeral directors in the process of doing a documentary on the funeral business. Both aired across the country on PBS stations.

Those experiences led Rob to become the director of the nightly news on New Jersey Public Television. All this multimedia experience led him to become managing editor at MensHealth.com. That's where he learned to build websites, grow contact lists, and market content (and get a 6-pack).

His last stop before ECS was the Christopher & Dana Reeve Foundation, where he was director of digital media. That's where he learned the value of a support system.

Rob believes all that TV watching as a kid brought him here. "The lessons from my experiences are coming together in just the right place," says Rob. "I love the history of ECS, the relevance of the science, and the community I have discovered here."



**BECCA JENSEN COMPTON** joined ECS in August 2014 as the Development Manager in the Development & Membership Services Department. In addition to organizing the exhibit and sponsorship programs for ECS meetings, Becca is responsible for coordinating Society fundraising initiatives, institutional membership, and *Interface* advertising, as well as applying for and managing federal and institutional grants.

Becca has particularly enjoyed working with Dan Fatton in connection with the Gates Foundation gift which enabled ECS to host the first Science for Solving Society's Problems Challenge and hopes to assist with similar programs in the future.

"Becca is a highly skilled writer and editor who brings a high level of professionalism to the ECS development office," notes Fatton, "As the main contact for advertising, sponsorship, exhibits, and federal grants, Becca regularly interacts with many long-time supporters of ECS, and consistently juggles multiple projects with ease."

Prior to joining ECS, Becca gained valuable fund development experience working for various nonprofits and start-up organizations. She graduated from York College of Pennsylvania with a BA in Professional Writing in 2012.

## SOCIETY NEWS



**BETH FISHER** joined the ECS staff as the Associate Director of Development & Membership Services in December 2014. As the Associate Director, Beth oversees day-to-day operations of membership services and provides strategic direction for the growth of ECS membership. Reporting to the Director of Development & Membership Services, Beth serves as the staff liaison to Student Chapters, Sections, the Education Committee, and the Individual Membership Committee.

She manages the facilitation of programs such as short courses, division-sponsored travel grants and summer fellowships.

Beth's supervisor, Dan Fatton, says, "Beth brings a wealth of experience from working within academia and has already proven to be a great asset to ECS. We're looking forward to great things, particularly as Beth further develops professional development programming in consultation with our volunteer leadership and the ECS Student Chapters."

Prior to joining ECS, Beth served as the Director of Student Affairs and Community Engagement in the School of Pharmacy at Fairleigh Dickinson University in Florham Park, New Jersey. She brings to ECS over 14 years of knowledge working in higher education with a focus on recruitment, enrollment management, student organizational development, and leadership programming.

Beth's involvement extends outside of the work environment. She currently serves as the Financial Advisor for the Drexel University Colony of Beta Theta Pi Fraternity. She previously served in a volunteer capacity for her national sorority, Sigma Sigma Sigma, where she supported the development and growth of leadership experiences for undergraduate women across the United States.

Beth holds a Bachelor of Science degree in Sports/Entertainment/Event Management from Johnson & Wales University in Providence, Rhode Island and a Master of Science degree in Counseling in Higher Education from West Chester University in West Chester, Pennsylvania. ■



# 2015-2016 ECS Committees

## Executive Committee of the Board of Directors

Daniel Scherson, Chair	.....	President, Spring 2016
Krishnan Rajeshwar	.....	Senior Vice President, Spring 2016
Johna Leddy	.....	Second Vice President, Spring 2017
Yue Kuo	.....	Third Vice President, Spring 2018
Hariklia Deligianni	.....	Secretary, Spring 2016
E. Jennings Taylor	.....	Treasurer, Spring 2018
Roque Calvo	.....	Term as Executive Director

## Audit Committee

Paul Kohl, Chair	.....	Immediate Past President, Spring 2016
Daniel Scherson	.....	President, Spring 2016
Krishnan Rajeshwar	.....	Senior Vice President, Spring 2016
E. Jennings Taylor	.....	Treasurer, Spring 2018
Stuart Swinson	.....	Nonprofit Financial Professional, Spring 2016

## Education Committee

Mark Orazem, Chair	.....	Spring 2017
Kalpathy Sundaram	.....	Spring 2016
Jeffrey Kelber	.....	Spring 2016
Douglas Hansen	.....	Spring 2017
A. Robert Hillman	.....	Spring 2017
James Noel	.....	Spring 2018
Vimal Chaitanya	.....	Spring 2018
Anne Co	.....	Spring 2019
Enn Lust	.....	Spring 2019
Yue Kuo	.....	Third Vice President, Spring 2016
Elizabeth Podlaha-Murphy	.....	Chair, Individual Membership Committee, Spring 2017

## Ethical Standards Committee

Paul Kohl, Chair	.....	Immediate Past President, Spring 2016
William Brown	.....	Past Officer, Spring 2016
Jan Talbot	.....	Past Officer, Spring 2017
Fernando Garzon	.....	Past Officer, Spring 2018
Hariklia Deligianni	.....	Secretary, Spring 2016

## Finance Committee

E. Jennings Taylor, Chair	.....	Treasurer, Spring 2018
Jean St-Pierre	.....	Spring 2016
William Eggers	.....	Spring 2016
Mark Verbrugge	.....	Spring 2017
Robert Mantz	.....	Spring 2017
Krishnan Rajeshwar	.....	Senior Vice President, Spring 2016
Hariklia Deligianni	.....	Secretary, Spring 2016

## Honors and Awards Committee

Peter Fedkiw, Chair	.....	Spring 2019
Jean St-Pierre	.....	Spring 2016
Durga Misra	.....	Spring 2016
Fan Ren	.....	Spring 2016
Enrico Traversa	.....	Spring 2017
Pawel Kulesza	.....	Spring 2017
Vijay Ramani	.....	Spring 2017
Marco Doeff	.....	Spring 2018
Takayuki Homma	.....	Spring 2018
Francis D'Souza	.....	Spring 2018
Joseph Stetter	.....	Spring 2019
Rohan Akolkar	.....	Spring 2019
R. Bruce Weisman	.....	Spring 2019
Daniel Scherson	.....	President, Spring 2016

## Individual Membership Committee

Elizabeth Podlaha-Murphy, Chair	.....	Spring 2017
Kevin Rhodes	.....	Spring 2016
Wataru Sugimoto	.....	Spring 2016
Thomas Schmidt	.....	Spring 2017
William Mustain	.....	Spring 2017
Giovanni Zangari	.....	Spring 2018
Jordi Cabana	.....	Spring 2018
Hariklia Deligianni	.....	Secretary, Spring 2016

## Nominating Committee

Paul Kohl, Chair	.....	Immediate Past President, Spring 2016
Gerardine Botte	.....	Spring 2016
Dennis Hess	.....	Spring 2016
John Stickney	.....	Spring 2016
Yue Kuo	.....	Third Vice President, Spring 2016

## Sponsorship Committee

Christina Bock, Chair	.....	Spring 2016
Bruno Scrosati	.....	Spring 2016
Yukinari Kotani	.....	Spring 2016
Soo-Gil Park	.....	Spring 2016
Hubert Gasteiger	.....	Spring 2017
Fred Roozeboom	.....	Spring 2017
Prasanth Nammalwar	.....	Spring 2017
Kohei Uosaki	.....	Spring 2018
Iwona Rutkowska	.....	Spring 2018
Shirley Meng	.....	Spring 2018
Daniel Scherson	.....	President, Spring 2016
E. Jennings Taylor	.....	Treasurer, Spring 2018
Roque Calvo	.....	Term as Executive Director

## Technical Affairs Committee

Krishnan Rajeshwar, Chair	.....	Senior Vice President, Spring 2016
Daniel Scherson	.....	President, Spring 2016
Paul Kohl	.....	Immediate Past President, Spring 2016
Tetsuya Osaka	.....	Second Immediate Past President, Spring 2016
Johna Leddy	.....	Second Vice President, Spring 2016
Yue Kuo	.....	Third Vice President, Spring 2016
Eric Wachsman	.....	Chair, IST Subcommittee, Spring 2016

## Interdisciplinary Science and Technology Subcommittee of the Technical Affairs Committee

Eric Wachsman, Chair	.....	Spring 2016
Arumugam Manthiram	.....	Spring 2016
Patrik Schmuki	.....	Spring 2016
Hariklia Deligianni	.....	Spring 2016
Phaedon Avouris	.....	Spring 2016
James Burgess	.....	Spring 2017
Madis Raukas	.....	Spring 2017
Colm O'Dwyer	.....	Spring 2017
Sri Narayan	.....	Spring 2017
M. Jamal Deen	.....	Spring 2018
Gerardine Botte	.....	Spring 2018
Rangachary Mukundan	.....	Spring 2018
Andrew Hillier	.....	Spring 2018

## Symposium Planning Advisory Board of the Technical Affairs Committee

Yue Kuo, Chair	.....	Third Vice-President, Spring 2016
Giovanni Zangari	.....	Chair, Electrodeposition Division, Fall 2015
Xiao-Dong Zhou	.....	Chair, High Temperature Materials Division, Fall 2015
Anant Setlur	.....	Chair, Luminescence and Display Materials Division, Fall 2015
Dolf Landheer	.....	Chair, Dielectric Science and Technology Division, Spring 2016
R. Bruce Weisman	.....	Chair, Nanocarbons Division, Spring 2016
Venkat Subramanian	.....	Chair, Industrial Electrochemistry and Electrochemical Engineering Division, Spring 2016
Eric Wachsman	.....	Chair, Interdisciplinary Science and Technology Subcommittee, Spring 2016
Robert Kostecki	.....	Chair, Battery Division, Fall 2016
Rudolph Buchheit	.....	Chair, Corrosion Division, Fall 2016
Bryan Chin	.....	Chair, Sensor Division, Fall 2016
Mark Overberg	.....	Chair, Electronics and Photonics Division, Spring 2017
Scott Calabrese Barton	.....	Chair, Energy Technology Division, Spring 2017
Mekki Bayachou	.....	Chair, Organic and Biological Electrochemistry Division, Spring 2017
Pawel Kulesza	.....	Chair, Physical and Analytical Electrochemistry Division, Spring 2017

## Publications Subcommittee of the Technical Affairs Committee

Johna Leddy, Chair	.....	Second Vice President, Spring 2016
Mary Yess	.....	Publisher, Term as Pub
Robert Savinell	.....	EST Board Chair, 5/31/2017
Dennis Hess	.....	SSST Board Chair, 12/31/2016
Petr Vanysek	.....	Interface Editor, 5/31/2017
Vijay Ramani	.....	Interface Editor, 5/31/2017
Jeffrey Fergus	.....	ECS Transactions Editor, 12/31/2017
John Flake	.....	Spring 2016
Csaba Janaky	.....	Spring 2016
David Cliffl	.....	Spring 2017
Yue Kuo	.....	Spring 2017
Hariklia Deligianni	.....	Secretary, Spring 2016

## Meetings Subcommittee of the Technical Affairs Committee

Yue Kuo, Chair	.....	Third Vice President, Spring 2016
Krishnan Rajeshwar	.....	Spring 2017
Bor Yann Liaw	.....	Spring 2016
Adam Weber	.....	Spring 2016
Pawel Kulesza	.....	Spring 2017
Roque Calvo	.....	Term as Executive Director

## Tellers of Election

Craig Arnold, Chair	.....	Spring 2016
James Amick	.....	Spring 2016
Norman Goldsmith	.....	Spring 2016
Robert Comizzoli, Alternate	.....	Spring 2016
Ronald Enstrom, Alternate	.....	Spring 2016
William Ayers, Alternate	.....	Spring 2016

## Ways and Means Committee

Hariklia Deligianni, Chair	.....	Secretary, Spring 2016
James Fenton	.....	Spring 2016
Elizabeth Podlaha-Murphy	.....	Spring 2016
Venkat Subramanian	.....	Spring 2017
R. Bruce Weisman	.....	Spring 2017
Johna Leddy	.....	Second Vice President, Spring 2016
Krishnan Rajeshwar	.....	Senior Vice President, Spring 2016

## Other Representatives

Society Historian	.....	
Zoltan Nagy	.....	Spring 2017
American Association for the Advancement of Science	.....	
Roque J. Calvo	.....	Term as Executive Director
Chemical Heritage Foundation	.....	
Yury Gogotsi	.....	Heritage Councilor, Spring 2018
Federation of Materials Societies	.....	
Petr Vanysek	.....	Trustee, Spring 2016
External Relations Representative	.....	
Mark Orazem	.....	Spring 2016
National Inventors Hall of Fame	.....	
Peter Fedkiw	.....	Chair, Honors & Awards Committee, Spring 2019



## New Division Officers

New officers for the 2015-2017 term have been elected for the following Divisions.



### Electronics and Photonics Division

#### Chair

Mark Overberg, Sandia National Laboratories

#### Vice-Chair

Colm O'Dwyer, University of College Cork

#### 2<sup>nd</sup> Vice-Chair

Junichi Murota, Tohoku University

#### Secretary

Soohwan Jang, Dankook University

#### Treasurer

Yu-Lin Wang, National Tsing Hua University

#### Members-at-Large

Andrew Hoff, University of South Florida  
Edward Stokes, University of North Carolina, Charlotte  
Albert Baca, Sandia National Laboratories  
Helmut Baumgart, Old Dominion University  
D. Noel Buckley, University of Limerick  
George Celler, Rutgers University  
Pablo Chang, Avago Technologies  
Cor Claeys, IMEC  
Stefan De Gendt, IMEC  
J. Jamal Deen, McMaster University  
Manfred Engelhardt, Infineon Technologies AG  
Takeshi Hattori, Hattori Consulting International  
Hiroshi Iwai, Tokyo Institute of Technology  
Zia Karim, AXITRON  
Yue Kuo, Texas A&M University  
Qiliang Li, George Mason University  
Durgamadhab Misra, New Jersey Institute of Technology  
Fan Ren, University of Florida  
Fred Roozeboom, Eindhoven University of Technology  
Jerzy Ruzyllo, Pennsylvania State University  
Krishna Shenai, LoPel Corp  
Motofumi Suzuki, Kyoto University  
Ravi Todi, Qualcomm Inc.  
Tadatomo Suga, University of Tokyo



### Energy Technology Division

#### Chair

Scott Calabrese Barton, Michigan State University

#### Vice-Chair

Andrew Herring, Colorado School of Mines

#### Secretary

Vaidyanathan Subramanian, University of Nevada

#### Treasurer

William Mustain, University of Connecticut

#### Members-at-Large

Katherine Ayers, Proton On-Site  
Huyen Dinh, NREL  
James Fenton, University of Central Florida  
Thomas Fuller, Georgia Tech

Kunal Karan, University of Calgary  
Sanjeev Mukerjee, Northeastern University  
Sri Narayan, University of Southern California  
Peter Pintauro, Vanderbilt University  
Krishnan Rajeshwar, University of Texas at Arlington  
Juergen Stumper, Automotive Fuel Cell Cooperation  
John Weidner, University of South Carolina  
Karim Zaghib, Hydro-Quebec



### Organic and Biological Electrochemistry Division

#### Chair

Mekki Bayachou, Cleveland State University

#### Vice-Chair

Graham Cheek, U. S. Naval Academy

*Secretary/Treasurer (candidate not selected will become a member-at-large)*

Diane Smith, San Diego State University

#### Members-at-Large

David Cliffl, Vanderbilt University  
Danjun Fang, Case Western Reserve University  
Toshio Fuchigami, Tokyo Institute of Technology  
Chang Ji, Texas State University  
Donal Leech, Maynooth University  
Flavio Maran, University of Padova  
Michael Mirkin, Queens College  
Kevin Moeller, Washington University  
Ikuzo Nishiguchi, Nagaoka University of Technology  
James Rusling, University of Connecticut  
Richard West, Case Western Reserve University



### Physical and Analytical Electrochemistry Division

#### Chair

Pawel Kulesza, University of Warsaw

#### Vice-Chair

Alice Suroviec, Berry College

#### Secretary

Petr Vanyýek, Northern Illinois University

#### Treasurer

Robert Calhoun, U.S. Naval Academy

#### Members-at-Large

Stephen Paddison, University of Tennessee, Knoxville  
Luke Haverhals, Bradley University  
Hugh DeLong, Air Force Office of Scientific Research  
Steven Maldonado, University of Michigan  
Plamen Antanassov, University of New Mexico  
Sanjeev Mukerjee, Northeastern University  
David Cliffl, Vanderbilt University  
Paul Trulove, U.S. Naval Academy  
Alanah Fitch, Loyola University

The Electrochemical Society



# electrochemical energy summit 2015

Summit Dates: October 12-14, 2015

## Solar Critical Issues and Renewable Energy

228<sup>th</sup> ECS Meeting • PHOENIX, AZ • October 11-15, 2015

### SAVE THE DATE!

With population growth and industrialization, global energy needs continue to grow as well. Economic, political, and environmental issues are largely dictated by energy needs. The fifth international ECS Electrochemical Energy Summit (E2S) is designed to foster an exchange between leading policy makers and energy experts about society needs and technological energy solutions.

The E2S program will be focused around Solar Critical Issues, and Renewable Energy. It will begin on Monday, October 12 and run through Wednesday, October 14, 2015. The program on Monday will be focused on the DOE Hubs, featuring a Plenary and invited talks from the Joint Center for Energy Storage Research (JCESR), the Joint Center for Artificial Photosynthesis (JCAP), and the Energy Efficiency & Renewable Energy Fuel Cell Technologies Office (EERE FCTO). The program on Tuesday and Wednesday will include keynote talks from five Energy Frontier Research Centers (EFRC) Directors, relevant invited speakers, and round table discussions.

### ORGANIZERS

- Daniel Scherson, Case Western Reserve University
- Adam Weber, Lawrence Berkeley National Laboratory
- Krishnan Rajeshwar, University of Texas, Arlington

### PARTICIPANTS

- ECS Plenary Speaker: U.S. Under Secretary for Science and Energy, Dr. Franklin (Lynn) M. Orr Jr.
- Fluid Interface Reactions, Structures, and Transport Center (FIRST)  
David Wesolowski, *Oak Ridge National Laboratory*
- NorthEast Center for Chemical Energy Storage (NECCES)  
M. Stanley Whittingham, *Binghamton University*
- Center for Mesoscale Transport Properties (m2m)  
Esther Takeuchi, *Stony Brook University*
- Nanostructures for Electrical Energy Storage (NEES)  
Gary Rubloff, *University of Maryland*
- Center for Electrochemical Energy Science (CEES)  
Paul Fenter, *Argonne National Laboratory*
- Joint Center for Energy Storage Research (JCESR)  
George Crabtree, Director
- Joint Center for Artificial Photosynthesis (JCAP)  
Harry Atwater, Director
- Potential participation of large-scale government-funded efforts outside the U.S.

[www.electrochem.org/e2s](http://www.electrochem.org/e2s)

## ECS Division Contacts



### Battery

Robert Kostecki, Chair  
*Lawrence Berkeley National Laboratory*  
 r\_kostecki@lbl.gov • 510.486.6002 (U.S.)  
 Christopher Johnson, Vice-Chair  
 Marca Doeff, Secretary  
 Shirley Meng, Treasurer



### Corrosion

Rudolph Buchheit, Chair  
*Ohio State University*  
 buchheit.8@osu.edu • 614.292.6085 (U.S.)  
 Sannakaisa Virtanen, Vice-Chair  
 Masayuki Itagaki, Secretary/Treasurer



### Dielectric Science and Technology

Dolf Landheer, Chair  
*Retired*  
 dlandheer@gmail.com • 613.594.8927 (Canada)  
 Yaw Obeng, Vice-Chair  
 Vimal Desai Chaitanya, Secretary  
 Puroshothaman Srinivasan, Treasurer



### Electrodeposition

Giovanni Zangari, Chair  
*University of Virginia*  
 gz3e@virginia.edu • 434.243.5474 (U.S.)  
 Elizabeth Podlaha-Murphy, Vice-Chair  
 Stanko Brankovic, Secretary  
 Philippe Vereecken, Treasurer



### Electronics and Photonics

Mark Overberg, Chair  
*Sandia National Laboratories*  
 meoverb@sandia.gov • 505.284.8180 (U.S.)  
 Colm O'Dwyer, Vice-Chair  
 Junichi Murota, 2<sup>nd</sup> Vice-Chair  
 Soohwan Jang, Secretary  
 Yu-Lin Wang, Treasurer



### Energy Technology

Scott Calabrese Barton, Chair  
*Michigan State University*  
 scb@msu.edu • 517.355.0222 (U.S.)  
 Andy Herring, Vice-Chair  
 Vaidyanathan Subramanian, Secretary  
 William Mustain, Treasurer



### High Temperature Materials

Xiao-Dong Zhou, Chair  
*University of South Carolina*  
 zhox@cec.sc.edu • 803.777.7540 (U.S.)  
 Turgut Gur, Sr. Vice-Chair  
 Gregory Jackson, Jr. Vice-Chair  
 Paul Gannon, Secretary/Treasurer



### Industrial Electrochemistry and Electrochemical Engineering

Venkat Subramanian, Chair  
*Washington University in St. Louis*  
 vsubram@uw.edu • 206.543.2271 (U.S.)  
 Douglas Riemer, Vice-Chair  
 John Staser, Secretary/Treasurer



### Luminescence and Display Materials

Anant Setlur, Chair  
*GE Global Research Center*  
 setlur@ge.com • 518.387.6305 (U.S.)  
 Madis Raukas, Vice-Chair  
 Mikhail Brik, Secretary/Treasurer



### Nanocarbons

R. Bruce Weisman, Chair  
*Rice University*  
 weisman@rice.edu • 713.348.3709 (U.S.)  
 Slava Rotkin, Vice-Chair  
 Hiroshi Imahori, Secretary  
 Dirk Guldi, Treasurer



### Organic and Biological Electrochemistry

Mekki Bayachou, Chair  
*Cleveland State University*  
 m.bayachou@csuohio.edu • 216.875.9716 (U.S.)  
 Graham Cheek, Vice-Chair  
 Diane Smith, Secretary/Treasurer



### Physical and Analytical Electrochemistry

Pawel Kulesza, Chair  
*University of Warsaw*  
 pkulesza@chem.uw.edu.pl • +482.282.20211 (Poland)  
 Alice Surovec, Vice-Chair  
 Petr Vanýsek, Secretary  
 Robert Calhoun, Treasurer



### Sensor

Bryan Chin  
*Auburn University*  
 chinbry@auburn.edu • 334.844.3322 (U.S.)  
 Nianqiang Wu, Vice-Chair  
 Ajit Khosla, Secretary  
 Jessica Koehne, Treasurer





## websites of note

by Zoltan Nagy

### Synthesis of Ammonia Directly from Air and Water at Ambient Temperature and Pressure

The  $\text{N}\equiv\text{N}$  bond ( $225 \text{ kcal mol}^{-1}$ ) in dinitrogen is one of the strongest bonds in chemistry, therefore artificial synthesis of ammonia under mild conditions is a significant challenge. Based on current knowledge, only bacteria and some plants can synthesise ammonia from air and water at ambient temperature and pressure. Here, for the first time, we report artificial ammonia synthesis bypassing  $\text{N}_2$  separation and  $\text{H}_2$  production stages. A maximum ammonia production rate of  $1.14 \times 10^{-3} \text{ mol m}^{-2} \text{ s}^{-1}$  has been achieved when a voltage of 1.6 V was applied. Potentially this can provide an alternative route for the mass production of the basic chemical ammonia under mild conditions. Considering climate change and the depletion of fossil fuels used for synthesis of ammonia by conventional methods, this is a renewable and sustainable chemical synthesis process for future.

- Rong Lan, John T. S. Irvine, and Shanwen Tao (Department of Chemical and Process Engineering, University of Strathclyde, Glasgow G1 1XJ, UK)  
<http://www.nature.com/srep/2013/130129/srep01145/full/srep01145.html>

### Electrocatalysis Research for Fuel Cells and Hydrogen Production

The CSIR undertakes research in the electrocatalysis of fuel cells and for hydrogen production. The Hydrogen South Africa (HySA) strategy supports research on electrocatalysts due to their importance to the national beneficiation strategy. The work reported here presents choice methods for the production of Platinum Group Metals (PGM) electrocatalysts, which are characterized for their performance. Investigations on the commercial feasibility of such electrocatalysts in fuel cells including hydrogen production continue to be subject of global interest, to ensure energy security. The paper aims to present possible synthesis routes for PGM electrocatalysts for commercial gains.

- M. K. Mkhulu (HySA Infrastructure Center of Competence, Materials Science and Manufacturing, Council for Scientific and Industrial Research (CSIR), PO Box 395; Pretoria 0001; South Africa.)  
<http://www.sciencedirect.com/science/article/pii/S1876610212014671>

### Electrochemical Synthesis of Ammonia in Solid Electrolyte Cells

Developed in the early 1900s, the “Haber–Bosch” synthesis is the dominant  $\text{NH}_3$  synthesis process. Parallel to catalyst optimization, current research efforts are also focused on the investigation of new methods for ammonia synthesis, including the electrochemical synthesis with the use of solid electrolyte cells. Since the first report on Solid State Ammonia Synthesis (SSAS), more than 30 solid electrolyte materials were tested and at least 15 catalysts were used as working electrodes. Thus far, the highest rate of ammonia formation reported is  $1.13 \times 10^{-8} \text{ mol s}^{-1} \text{ cm}^{-2}$ , obtained at  $80^\circ\text{C}$  with a Nafion solid electrolyte and a mixed oxide,  $\text{SmFe}_{0.7}\text{Cu}_{0.1}\text{Ni}_{0.2}\text{O}_3$ , cathode. At high temperatures ( $>500^\circ\text{C}$ ), the maximum rate was  $9.5 \times 10^{-9} \text{ mol s}^{-1} \text{ cm}^{-2}$  using  $\text{Ce}_{0.8}\text{Y}_{0.2}\text{O}_{2-\delta}$  [ $\text{Ca}_3(\text{PO}_4)_2$ – $\text{K}_3\text{PO}_4$ ] as electrolyte and Ag–Pd as cathode. In this paper, the advantages and the disadvantages of SSAS vs. the conventional process and the requirements that must be met in order to promote the electrochemical process into an industrial level are discussed.

- L. Garagounis, et al. (Department of Chemical Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece)  
<http://journal.frontiersin.org/article/10.3389/fenrg.2014.00001/full>



### About the Author

**ZOLTAN NAGY** is a semi-retired electrochemist. After 15 years in a variety of electrochemical industrial research, he spent 30 years at Argonne National Laboratory carrying out research on electrode kinetics and surface electrochemistry. Presently he is at the Chemistry Department of the University of North Carolina at Chapel Hill. He welcomes suggestions for entries; send them to [nagy@email.unc.edu](mailto:nagy@email.unc.edu).

# In the **NEXT** issue of **INTERFACE**

- The fall 2015 issue of *Interface* will be a special issue focused on the theme of **BIOELECTROCHEMICAL ENERGY CONVERSION**. Guest-edited by **Ramaraja Ramasamy** of the University of Georgia, the issue will feature the following technical articles (titles are tentative): “Photosynthetic Energy Conversion: Recent Advances and Future Perspective,” by **Narendran Sekar** and **Ramaraja P. Ramasamy**, University of Georgia; “Microbial Fuel Cells and Microbial Electrolyzers,” by **Abhijeet P. Borole**, Oak Ridge National Laboratory; and “1D Models for Enzymatic Biological Fuel Cells,” by **Scott Calabrese Barton**, Michigan State University.
- **TECH HIGHLIGHTS** continues to provide readers with free access to some of the most interesting papers published in the ECS journals, including articles from the Society’s newest journals: *ECS Journal of Solid State Science and Technology*, *ECS Electrochemistry Letters*, and *ECS Solid State Letters*.
- Don’t miss the next edition of **WEBSITES OF NOTE** which gives readers a look at some little-known, but very useful sites.



**Your article.  
Online.  
FAST!**

**More than 100,000 articles in all areas of electrochemistry and solid state science and technology from the only nonprofit publisher in its field.**



**www.ecsdl.org**

If you haven’t visited  
the ECS Digital Library recently,  
please do so today!



**www.electrochem.org**

Not an ECS member yet?  
Start taking advantage of  
member benefits right now!

**Leading the world in electrochemistry and solid state science and technology for more than 110 years**