ECS Annual Report 2010

the society for solid-state and electrochemical science and technology

Energized in 2010

We are proud and energized to present the **ECS 2010 Annual Report**.

We are proud because of the number of accomplishments we experienced in 2010 and the progress we made toward the mission of the ECS. The ECS technical activities this year have set some new standards for excellence with our biannual meetings in Vancouver and Las Vegas and the ECS publications, which you will see in the report. We have also experienced growth in meetings and publications through our affiliation with other organizations and conferences like: the Society for the Advancement of Electrochemical Science and Technology (India), the Sociedad Mexicana de Electroquimica (Mexico), Simposio Brasileiro de Eletroquímica e Eletroanalítica (Brazil), the International Meeting on Lithium Batteries, and the Chinese Semiconductor Technology International Conference.

We are energized because the science of electrochemical energy storage and conversion has never been more relevant, and has been largely responsible for the growth in our technical activities and the financial success we experienced in 2010. It has also increased the relevance of ECS and our importance in the scientific community and the world community at large. ECS has always been a very mission-focused organization, and by committing our attention and resources to electrochemical energy, we will be advancing a science that provides sustainable solutions to the world energy demands.

This is truly an important responsibility and one that makes us proud and energized to improve our technical meetings and publications, and to increase our capacity to disseminate the technical content from these activities to a greater extent than ever before. In 2010, we embraced our role in the advancement of electrochemical energy and laid the plans for the next quantum leap in our ability to accomplish our mission and goals. With your support we are looking forward to a future with amazing achievements in our field of science.

We appreciate the contributions from our leaders on the ECS Division Executive Committees, Boards, and Standing Committees, and from our authors, reviewers, symposium organizers, and all the numerous contributors. The strength of ECS comes from its members and constituents working in the trenches to make our programs successful. With your continued support we look forward to a great year in 2011 and beyond.

William Brown
ECS President 2010-11

Roque Calvo
Executive Director

"*The mission of the Society is to advance theory and practice at the forefront of electrochemistry, solid-state science, and allied subjects. To encourage research, discussion, critical assessment, and dissemination of knowledge in these fields, the Society holds meetings, publishes scientific papers, fosters training and education of scientists and engineers, and cooperates with other organizations to promote science and technology in the public interest."

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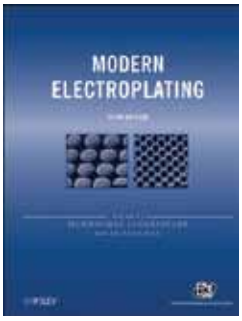
PUBLICATIONS

Energy was a major focus of several issues of ***Interface*** in 2010. The summer 2010 issue took a look at leadership and education in electrochemical engineering, and included a *Chalkboard* column on "Anion Exchange Membrane Fuel Cells." Introducing electrochemical engineering to future generations is an important challenge for all of ECS, but most particularly a focus of the Society's Industrial Electrochemistry & Electrochemical Engineering Division, whose members prepare outreach programming such as the "intelligent fuel cell car lab" demonstration (see *Interface*, summer 2010, page 39).

The phrase "smart grid" may only recently have become more prominent in consumer literature, but the subject has long been the purview of ECS. In the fall 2010 issue of *Interface*, the magazine took a look at the issues surrounding the smart grid, such as storing energy for it, batteries for large-scale stationary energy storage, flow batteries, and advancing supercapacitor materials and technology. Editor **Krishnan Rajeshwar** noted that the search for more energy has created more environmental issues, which demand a long-term outlook that emphasizes sustainability, social responsibility, and safety. ECS members are working on technological ways to safeguard growth in these areas without hindering it.

The ***Journal of The Electrochemical Society*** (JES), the most cited journal in electrochemistry, was featured in part two of "JES Classics Redux: ECS Science at Its Best," published in the spring 2010 issue of *Interface*. In the issue, Divisions named a specific paper from JES that had maximal impact on the technical activities of its particular group of scientists and engineers. The ongoing energy and impact of the Society's authors is in evidence in this issue, which continued to look at the most highly-cited papers published in JES. The Society's journals continue to publish the work of outstanding and influential scientists.

The Society's first monograph, *Modern Electroplating*, began life as a 1941 symposium on plating, sponsored by the Electrodeposition Division. A revised volume with some new material appeared in 1953, also published as *Modern Electroplating*, sponsored by the Society and published by John Wiley & Sons (New York). Edited by **Mordechay Schlesinger** and **Milan Paunovic**, the fifth edition, published in 2010, reflected the dramatic growth in electroplating, including in the areas of nanotechnologies, the automotive and biomedical industries, and environmental issues.

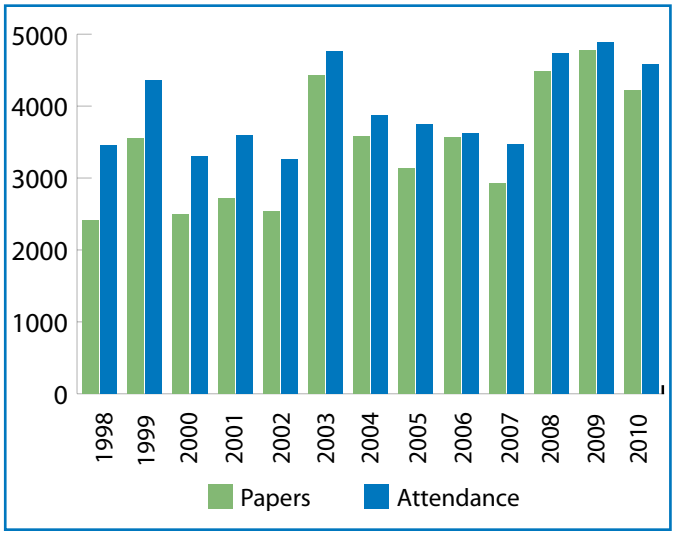


MEETINGS

The good energy at ECS is perhaps most exemplified when scientists and engineers, members and nonmembers, students and professionals, gather at the ECS biannual meetings.

The spring 2011 meeting was held in Vancouver, Canada, an exciting venue for the **217th ECS Meeting**. This was the first time the Society held a meeting in this city of over 500,000 people. Over 1,800 attendees who were able to choose from 1,849 papers in 42 sessions, many in energy-related areas.

The ECS Lecture, "The Future of Energy Conversion: A Perspective from the Chemical Industry" was given by **William Banholzer**.



The chemical industry perspective on fuels is naturally hinged on fossil fuels being an important chemical feedstock. He noted that devices such as solar cells and fuel cells are not new. Why the time had come for these technologies to mature formed the essence of Dr. Banholzer's message, which for one, was that thermodynamic considerations should never be forgotten in the initial assessment of a technology. Dr. Banholzer underlined the magnitude of the energy problem: with the chemical industry itself using 10,500 TWh, that roughly translates to 8% of world consumption. Dr. Banholzer focused on four energy areas: biofuels, photovoltaics, fuel cells, and batteries. In each case, he addressed aspects related to material and energy balance, cost, sustainability, and control volume.

The Vittorio de Nora Award lecture also focused on energy with a talk entitled, "Toward Energy Storage for Renewable Generation." The talk was given by **Derek Pletcher**, who outlined the current need for a sustainable, long term supply of energy and pointed out how electrochemical technology can contribute in several ways to energy storage in such an economy. He listed the requirements of a storage technology candidate and showed the extent to which approaches based on water electrolysis or batteries met these criteria.

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The ECS Lecture was given by **William Banholzer** (left) at the plenary session of the ECS meeting in Vancouver. With Dr. Banholzer is ECS President **Paul Natishan** (right).

Derek Pletcher (left) was the recipient of the 2010 ECS Vittorio de Nora Award. One of the Society's most prestigious awards, it is given for contributions to the field of electrochemical engineering and technology. The award was presented at the meeting in Vancouver by ECS President **Paul Natishan** (right).

The ECS Henry B. Linford Award for Distinguished Teaching is given to recognize excellence in teaching in subject areas of interest to the Society. The 2010 award was presented to **Daniel Schwartz** (left) by ECS President **Paul Natishan** (right).

Students enjoyed some in-depth testing of a fuel cell car at the Britannia Secondary School in Vancouver, as part of the IE&EE Division's Outreach Program.

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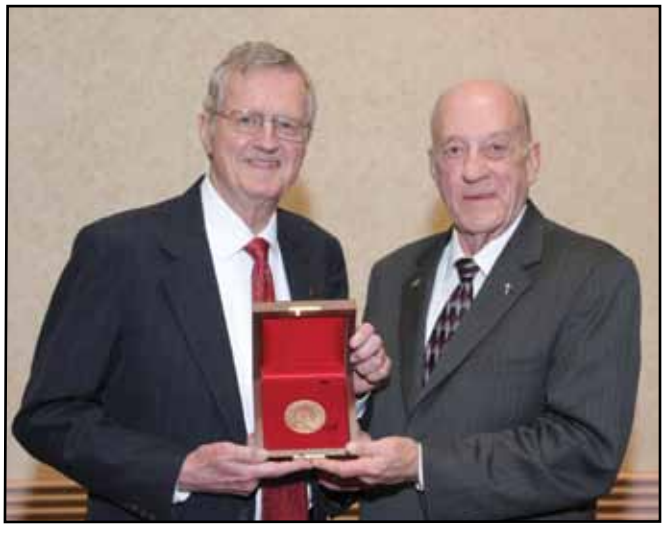
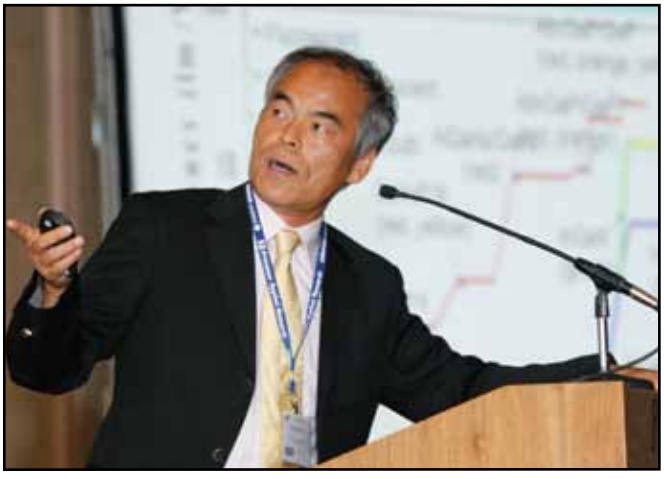


John S. Newman (left) received the 2010 Edward Goodrich Acheson Award from President **William D. Brown** (right) in Las Vegas.

Thomas J. Schmidt (right) was the 2010 recipient of the Charles W. Tobias Young Investigator Award. The award was presented by ECS President **William D. Brown** (left) in Las Vegas.



Shuji Nakamura delivered The ECS Lecture in Las Vegas, entitled "Current and Future Status of Nitride-Based Solid State Lighting."

The **Las Vegas Exhibit Hall** floor at the Monday Evening Mixer and Student Poster Session was full of energy.

The 2010 Class of ECS Fellows was presented by ECS President **William D. Brown** (front row, center). Seated, from left to right, are: **Toshio Fuchigami**, **Peter N. Pintauro**, (President Brown), **Francis D'Souza**, and **David Young**. Standing, from left to right, are: **Robert G. Kelly**, **Bernard Tribollet**, **Michel Houssa**, **John Weidner**, **David Shoesmith**, and **Roger C. Newman**. Missing from the photo are **Rudolph G. Buchheit** and **Peter C. Searson**.

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The **218th ECS Meeting** was the third time ECS met in the city of Las Vegas; the last time being 25 years ago (in 1985) at Caesar's Palace. The third time proved to a record-setting event—the meeting had the largest attendance for an ECS meeting in the continental U.S.: 3,239. Outstanding feature lectures were a highlight of the program that included 2,374 presentations in 43 different technical symposia.

John S. Newman, recipient of the Edward Goodrich Acheson Award, presented a lecture on "Energy Storage." The talk illustrated the essentials of modeling electrochemical systems for energy applications, with a focus on energy and power as well as life and failure. The examples presented included modeling battery size and capacity use in a hybrid- or plug-in hybrid electric vehicle, among other topics.

Shuji Nakamura presented a highly informative talk for The ECS Lecture at the plenary session in Las Vegas. He spoke about three topics involving Group III nitrides: LEDs derived from polar c-plane semiconductors, LD counterparts based on non-polar/semi-polar material, and finally, bulk GaN growth. He pointed out the dramatic improvements in luminous efficiencies of white LEDs so much so that they have largely displaced incandescent lamps and their performance approach the popular compact fluorescent lamp (CFL) technology. He also outlined the three major strategies for designing LEDs and noted the many R&D advances currently on-going to make solid-sate lighting more cost effective and efficient.

In addition to a very full program of its own meetings, the ECS staff dipped into an extra well of energy to manage and sponsor the **15th International Meeting on Lithium Batteries** (IMLB 2010). The conference was held in Montréal, Canada from June 27 to July 2. Attendees were able to choose from 842 oral and poster presentations on the state of lithium battery science and technology, as well as current and future applications in transportation, commercial, aerospace, biomedical, and other promising sectors.

The meeting was held in honor of John B. Goodenough, a long-time ECS member, known for identifying the $LiFePO_4$ cathode for the Li^+-ion battery, developing new electrolyte and electrode materials for the solid oxide fuel cell, and for contributing significantly to the understanding of the unusual physical phenomena encountered at the crossover from localized to itinerant electronic behavior.

The meeting also included tours of Hydro-Québec's Research Institute for a visit to the High Voltage Lab and facilities devoted to research on battery materials: Dry Room, Nano Powder Room, and battery safety test installations. Attendees could also take advantage of an electric vehicle demonstration, and could try out production-ready or prototypes of electric cars on the Gilles-Villeneuve Formula One Circuit on Notre-Dame Island.

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IMLB 2010 was held in honor of **John B. Goodenough** of the University of Texas at Austin.

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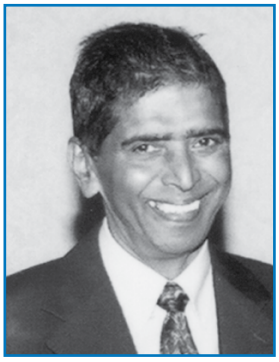
Technical Divisions

In a continuing tradition of fostering excellence and leadership, the **Energy Technology Division** of ECS has established a new award for young investigators, named after the late Dr. **Supramaniam Srinivasan**. The Supramaniam Srinivasan Young Investigator Award complements existing ECS awards, which recognize outstanding technical achievements in electrochemistry and solid-state science and technology. Dr. Srinivasan, who died in 2004, had a long and successful fuel cell and related technologies research and development career spanning several decades and prestigious institutions.



SUPRAMANIAM SRINIVASAN

A worldwide energy crisis is imminent and will affect all of society either in direct or indirect ways. Fuel cells and hydrogen constitute important parts of the solution to this issue. It is thus fitting that one of the early fuel cell and water electrolysis research and development pioneers and advocates was chosen for the name of this award to continue his legacy. The first award is planned to be given in 2011.

While only one of the **ECS Divisions** carries the word "energy" in its name, all of the Society's Divisions are very actively involved in energy-related technical areas. These activities encompass materials, research, and technologies for renewable and alternate energy; clean energy; solar energy; photovoltaics; sensors; corrosion inhibition; carbon sequestration; green manufacturing; and materials management and development—in service of improved energy efficiency and mitigated environmental impacts of technology, manufacturing, and energy production.

The **IE&EE Division** has been reaching high school students in cities where ECS holds its biannual meetings. At the 217th ECS meeting in Vancouver , the Division continued its Outreach Program. The program demonstrated the tenets of a renewable and sustainable energy economy and the role of electrochemistry and electrochemical engineering in such a scenario. This event marked the 8th consecutive time that volunteers from the IE&EE Division conducted this outreach program. The first seven programs were conducted in Cancun, Chicago, Washington, DC, Phoenix, Honolulu, Oakland, and Vienna and over 400 middle and high school students have benefitted from this program to date.

Membership

ECS Corporate Membership provides a direct relationship between ECS and industry. Corporate Members are valuable partners in helping ECS to advance the Society's purpose. In 2010, ten organizations were recognized with the Leadership Circle Award for continuous service to the ECS including: Greatbatch, Inc.; Broddarp of Nevada; Coolohm, Inc.; Pine Research Instrumentation; Giner, Inc.; Teledyne Energy Systems Inc.; ElectroChem, Inc.; Faraday Technology, Inc.; Metrohm USA; and Johnson Matthey Technology Centre.

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The **IE&EE Outreach Program** held another successful event at the Britannia Secondary School in Vancouver. The class was sub-divided into five teams of students, each of which participated in the traditional electrolyzer/fuel cell car activity, in which the teams had to produce sufficient hydrogen and oxygen (through electrolysis, based on data from prior calibration experiments) to propel their fuel cell car a pre-determined distance.

Membership Statistics

(as of October 1, 2010)

Table I. ECS Membership by Class

Category	2004	2005	2006	2007	2008	2009	2010	2010/2009 %Change
Active	5405	5126	5061	4974	5082	5129	4858	-5.3
Member Reps	66	61	73	89	116	98	126	28.6
Life	46	46	46	45	46	46	49	6.5
Emeritus	215	230	229	234	248	266	282	6.0
Honorary	27	25	24	26	25	24	23	-4.2
Subtotal Active in Good Standing	**5759**	**5488**	**5433**	**5368**	**5517**	**5563**	**5338**	**-4.0**
Delinquent	823	1054	1014	941	945	1130	1503	33.0
Total Active on Record	**6582**	**6542**	**6447**	**6309**	**6462**	**6693**	**6841**	**2.2**
Students	889	792	864	1206	1428	1592	1466	-7.9
Delinquent	389	450	440	304	512	648	946	46.0
Total Students	**1278**	**1242**	**1304**	**1510**	**1940**	**2240**	**2412**	**7.7**
Total Individual Members	**7860**	**7784**	**7751**	**7819**	**8402**	**8933**	**9253**	**3.6**

Table II. ECS Membership by Sections

Section	2004	2005	2006	2007	2008	2009	2010	2010/2009 %Change
Arizona	125	115	132	118	150	116	127	9.5
Brazilian	32	39	42	54	71	58	65	12.1
Canadian	241	292	258	283	267	292	380	30.1
Chicago	174	162	166	208	184	188	159	-15.4
China				62	78	123	101	-17.9
Cleveland	135	122	114	114	138	134	125	-6.7
Detroit	95	81	92	105	91	99	98	-1.0
European	1033	1062	1019	1043	1081	1266	1256	-0.8
Georgia	198	161	154	172	168	151	165	9.3
India							58	-
Israel	35	30	28	25	23	35	31	-11.4
Japan	774	755	757	756	789	920	791	-14.0
Korea	197	192	175	187	212	246	262	6.5
Mexico				66	28	38	36	-5.3
National Capital	212	186	200	188	182	181	159	-12.2
New England	351	326	318	327	311	321	291	-9.3
Pittsburgh	84	88	89	98	98	87	87	0.0
San Francisco	419	383	387	366	364	425	415	-2.4
Taiwan				122	126	207	97	-53.1
Texas	198	178	181	167	174	160	160	0.0
Twin Cities	85	92	91	91	87	85	86	1.2

Table III. ECS Membership by Division*

Division	2004	2005	2006	2007	2008	2009	2010	2010/2009 %Change
Battery	2625	2549	2511	1378	1450	1130	1575	39.4
Corrosion	1716	1656	1584	531	521	515	476	-7.6
Dielectric Science & Technology	1425	1339	1278	377	375	377	301	-20.2
Electrodeposition	1888	1782	1727	509	509	500	471	-5.8
Electronics & Photonics	2152	1999	1812	815	759	821	671	-18.3
Energy Technology	2377	2427	2434	929	1060	1145	1196	4.5
Fullerenes, Nanotubes and Carbon Nanostructures	706	687	713	194	205	212	176	-17.0
High Temperature Materials	1113	1096	991	205	196	209	203	-2.9
Industrial Electrochemistry & Electrochemical Engr	1454	1393	1343	277	297	301	303	0.7
Luminescence & Display Materials	841	793	701	110	120	122	102	-16.4
Organic & Biological Electrochemistry	1243	1122	1026	188	215	222	188	-15.3
Physical & Analytical Electrochemistry	2614	2554	2426	643	664	652	596	-8.6
Sensor	1419	1382	1271	242	247	276	222	-19.6

*From 2007 Division statistics include only primary interest. Previous years' include primary and secondary interests.

Table IV. ECS Membership by Occupation

Occupation	2004	2005	2006	2007	2008	2009	2010	2010/2009 %Change
Academic			2244	2274	2446	2558	2467	-3.6
Industry			2412	2334	2456	2160	2034	-5.8
Government			399	388	431	436	391	-10.3
Retired				69	77	119	112	-5.9

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Leadership Cirlce Awards

Ashish Shah (left) and **Randy Leising** (center), both of Greatbatch, Inc. received a Gold Level Leadership Circle Award from ECS President **Paul Natishan** (right), for 25 years of membership.

John Staser (right) of Giner, Inc. received a Gold Level Leadership Circle Award for 25 years of Corporate Membership from ECS. ECS President **William D. Brown** (left).

E. Jennings Taylor (right), received a Bronze Level Leadership Circle Award for Faraday Technology, Inc.'s five years of Corporate Membership from ECS President **William D. Brown** (left).

Ralph Brodd (left), of Broddarp of Nevada, received a Silver Level Leadership Circle Award, for 10 years of Corporate Membership from ECS President **Paul Natishan** (right).

Pinakin M. Shah (right) of Teledyne Energy Systems, Inc. received a Silver Level Leadership Circle for 10 years of Corporate Membership from ECS President **William D. Brown** (left).

ECS President **William D. Brown** (left) presented a Bronze Level Leadership Circle Award, for five years of Corporate Membership, to Johnson Matthey Technology Centre. On hand to receive the award were **Rachel O'Malley** (center), and **Sarah Ball** (right).

Frank Dalton (left), of Pine Research Instrumentation, received a Bronze Level Leadership Circle Award from ECS President **Paul Natishan**, for five years of Corporate Membership.

Metrohm USA, with five years of Corporate Membership, received a Bronze Level Leadership Circle Award. ECS President **William D. Brown** (far left) presented the award to **Mike Kubicsko** (second from left), **Martijn Van Dijk** (second from right), and **Jeffrey Tompkins** (far right).

Sections & Student Chapters

ECS Sections provide members with a venue to meet, network, and exchange information with colleagues in electrochemistry and solid-state science. With Sections located all over the globe, members have a great opportunity to get involved and participate. Sections provide key programming, symposia, grants, awards, and activities to members.

The **India Section** is the most recent ECS Section to form. The Indian electrochemical community is mainly affiliated with three professional organizations: the Society for Advancement of Electrochemical Science and Technology (SAEST), the Electrochemical Society of India (ECSI), and the Indian Society for Electroanalytical Chemistry (ISEAC). Membership in these societies is largely confined to professionals working in India, and this community felt a need to extend its reach outside of the country. Great contributions in this effort were made in 2007 by the late S. K. Rangarajan, then President of SAEST; A. K. Shukla, then Director of the Central Electrochemical Research Institute at Karaikudi; T. Prem Kumar, then Secretary of SAEST; Roque Calvo, Executive Director of the Electrochemical Society (ECS); and Rajeshwar Krishnan, Editor of *Interface*. Subsequent deliberations with ECS officials, notably Paul Kohl, Daniel Scherson, and William Brown, culminated in a formal recognition of the formation of the ECS India Section in Vancouver on April 29, 2010. A formal announcement of the India Section of the ECS was made by Roque Calvo at the Ninth International Symposium on Advances in Electrochemical Science and Technology (ISAEST-9) in Chennai on December 2, 2010.

Roque Calvo (left), Executive Director of ECS, officially recognizes the formation of the ECS India Section, and presents the certificate of recognition to **A. K. Shukla** (right), first Chair of the India Section.

The **Canadian Section** experienced significant growth to nearly 350 members in 2010, and was very active. The Section's Annual General Meeting took place during a break of a symposium on "Electrochemistry and Electrocatalysis" at the 93rd Canadian Chemistry Conference and Exhibition. The Section's 2010 R. C. Jacobsen Award was presented to **Jacek Lipkowski** (University of Guelph) for his notable and significant contributions to the functioning of the Canadian Section; and the Section's 2010 Electrochemical Award was presented to **David W. Shoesmith** (University of Western Ontario) for his significant contribution to the advancement of electrochemistry in Canada.

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Jacek Lipkowski (left) received the Canadian Section's 2010 R. C. Jacobsen Award from **Sasha Omanovic** (right).

David W. Shoesmith (left) received the Canadian Section's 2010 Electrochemical Award from **Sylvie Morin** (right).

ECS Sections

Asia/Japan
- China
- Japan
- Korea
- Taiwan

Europe
- European

Latin America
- Brazilian
- Mexican

Middle East
- Israel

North America
- Arizona
- Canadian
- Chicago
- Cleveland
- Detroit
- Georgia
- National Capital
- New England
- Pittsburgh
- San Francisco
- Texas
- Twin Cities

Southern Asia
- India

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ECS Student Chapters

- **Atlanta Student Chapter at Georgia Tech**, *founded 2008,* Peter J. Hesketh, Faculty Advisor
- **Auburn University Student Chapter**, *founded 2007,* Jeffrey Fergus, Faculty Advisor,
- **Boston Student Chapter**, *founded 2009,* Eugene Smotkin, Faculty Advisor, Northeastern University; Harvard University; MIT
- **Technical University Brno Student Chapter**, *founded 2006,* Jiri Vondrak, Faculty Advisor
- **University of California - Berkeley Student Chapter**, *founded 2006,* John Newman, Faculty Advisor
- **University of Central Florida Student Chapter**, *founded 2000,* Kalpathy Sundaram, Faculty Advisor
- **Central Illinois Student Chapter**, *founded 2008,* Andrzej Wieckowski, Faculty Advisor
- **University of Cincinnati Student Chapter**, *founded 2007,* Marc Cahay, Faculty Advisor
- **ECS Cleveland Section and Ernest B. Yeager Center for Electrochemical Sciences Joint Student Chapter**, *founded 2005,* James D. Burgess, Faculty Advisor
- **Florida International University Student Chapter**, *founded 2009,* Chunlei Wang, Faculty Advisor
- **University of Florida Student Chapter**, *founded 2005,* Juan Nino, Faculty Advisor
- **Grand Valley State University Student Chapter**, *founded 2008,* Cory M. DiCarlo, Faculty Advisor
- **Kerala, India Student Chapter at CUSAT**, *founded 2008,* M. K. Jayaraj, Faculty Advisor
- **Lahore, Pakistan Student Chapter**, *founded 2008,* Inam Ul Haque, Faculty Advisor
- **Montréal Student Chapter**, *founded 2010,* Steen B. Schougaard, Faculty Advisor
- **New York Capital Region Student Chapter**, *founded 2006,* Dan Lewis, Faculty Advisor
- **The Ohio State University Student Chapter**, *founded 2006,* Gerald Frankel, Faculty Advisor
- **Research Triangle Student Chapter**, *founded 2009,* Wesley Henderson, Faculty Advisor
- **South Brazilian Student Chapter**, Univ. Fed. do Rio Grande do Sul, *founded 2010,* Luis Frederico P. Dick, Faculty Advisor
- **Tel Aviv University Student Chapter**, *founded 2009,* Eliezer Gileadi and Yosi Shacham-Diamand, Faculty Advisors
- **University of South Carolina Student Chapter**, *founded 2010,* Xiao-dong Zhou, Faculty Advisor
- **University of Texas at Austin Student Chapter**, *founded 2006,* Ram Manthiram, Faculty Advisor
- **Tyndall National Institute Student Chapter**, *founded 2010,* Alan O'Riordan, Faculty Advisor
- **University of Virginia Student Chapter**, *founded 2006,* Rob Kelly, Faculty Advisor

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The Section's spring symposium was held at the Burnaby Campus of Simon Fraser University. The symposium topic was "Applied Electrochemistry: From Biosensing to Energy Storage." The symposium was comprised of education sessions, a poster session, tours of lab facilities, and social functions. Prizes were awarded to the Poster Session winners.

ECS Student Chapters provide students with an organized venue to enhance their knowledge of electrochemical and solid-state sciences. The Student Chapters are located at educational institutions throughout the world and students have the opportunity to meet fellow students, participate in a wide range of programs and activities, receive recognition for scholarly activities, as well as develop career preparation skills.

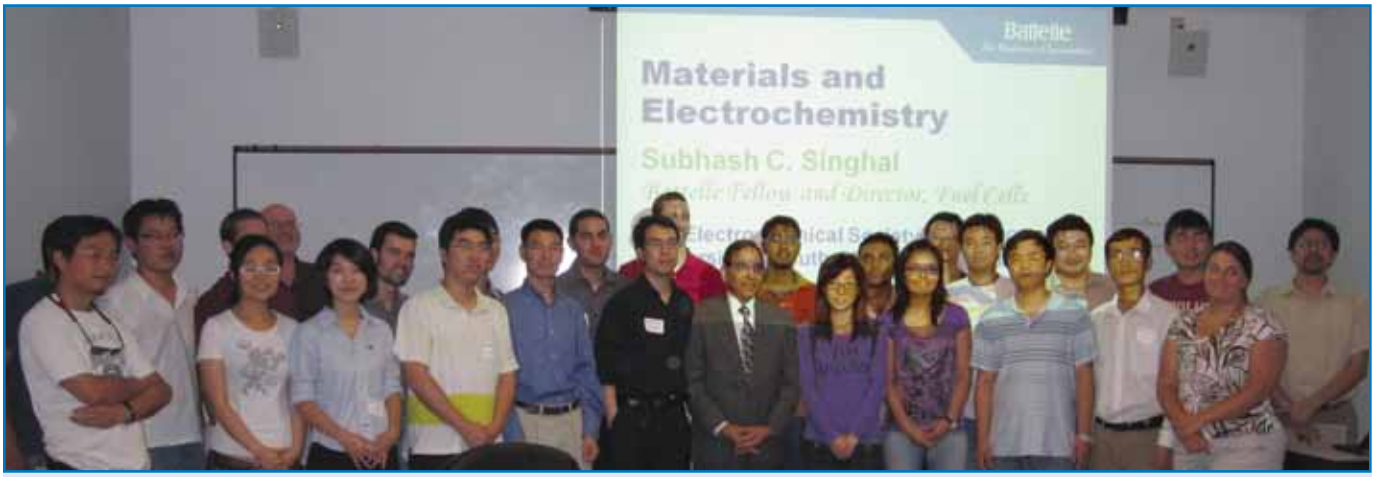
The Society welcomed four new Student Chapters in 2010 including the Montréal Student Chapter, South Brazilian Student Chapter, Tyndall National Institute Student Chapter, and the University of South Carolina Student Chapter. All four Student Chapters were officially recognized at the 218th meeting Las Vegas, Nevada.

The **South Carolina Student Chapter** was busy prior to forming its chapter and scheduled an important event to help bring students, faculty, and experts in electrochemistry together. A poster symposium featured Subhash C. Singhal, Battelle Fellow, Director of Fuel Cells Research at the Department of Energy's Pacific Northwest National Laboratory, and member of the National Academy of Engineering. Rui Zhang, Chapter President and founding student member introduced Dr. Singhal as guest lecturer. Dr. Singhal discussed the future of energy, the critical issues facing a new generation of scientists, provided valuable information on the benefits of ECS membership, and guidance for sustaining a successful student chapter. The event was a great success. A student poster session was held at the conclusion of the event and included 13 posters from students representing the departments of Chemical Engineering, Chemistry, and Mechanical Engineering. The poster session allowed students to display and critique their projects, and practice poster display for future ECS meetings.

The **University of South Carolina Student Chapter** was approved for formation by the ECS Individual Membership Committee in October at the ECS meeting in Las Vegas. The new Chapter will provide an important forum for students to share their knowledge and research work in electrochemistry.

The **Tel Aviv University Student Chapter** established an important relationship with the battery industry in Israel by organizing an industrial tour of Vulcan Batteries Ltd. Twenty Chapter members participated in the tour which started with introduction presentations by Meir Arnon, CEO, Abraham Kerem, COO, and Shimon Hazan, Plant Manager. The tour included viewing the manufacturing process of a lead wet battery, the manufacturing and coating of aluminum matrix framework until final packaging, and quality tests for different types of batteries. The tour ended in the research and development room where various experiments were conducted, giving Chapter members a better perspective on challenges facing the battery industry. Vulcan officials also held discussions with Chapter members on ways to increase current density in batteries. The tour resulted in an agreement between the Tel Aviv University Student Chapter and Vulcan to continue to meet in the future and discuss industry issues and possible solutions.

The **Atlanta Student Chapter at Georgia Tech** continued its momentum of holding successful events by organizing an important seminar at the Molecular Sciences Building at Georgia Tech. The attendees included students and post-docs. Faculty from different departments included Jiri Janata, Paul Kohl, Gleb Yushin, Peter Hesketh, and Lawrence



Members of the new **University of South Carolina Student Chapter**.

The newly-formed **Tel Aviv University Student Chapter** took a tour of a complete manufacturing process of a wet battery in Vulcan Batteries' factory.

Bottomley. The coffee session before the talk and social session and after the presentation provided ample opportunity for interaction. Peter Hesketh, faculty advisor of the Chapter introduced the speaker for the seminar, Lawrence Bottomley, from the Chemistry Department at Georgia Tech. The hour-long interesting talk entitled, "Designing Better Experiments, Single vs. Multi-Factor Experimentation" gave insight into statistical approaches for an intelligent, methodological way of designing experiments to obtain results with good fidelity, keeping in mind the time constraints as well. Interest among the students was evident during the discussion session that followed the talk and the event was a great success.

Outreach

One way in which ECS contributes to the energy of electrochemistry and solid state science throughout the world is through sponsorship and partnership arrangements. The 2010 edition of the annual **China Semiconductor Technology International Conference** (CSTIC), held on March 18-19, 2010, is an excellent example of ECS support. As a major semiconductor technology conference in China, CSTIC is organized jointly by ECS and SEMI. The joined strength of these two major world organizations has provided a consistent operational support for the conference. ECS again sponsored travel awards for the best student poster presentations. These substantial awards provide free registrations to the winners and travel funds to allow the winners to attend an ECS meeting.

The conference symposia covered most of the aspects of semiconductor technology including devices, design, lithography, integration, materials, processes, and

(continued on next page)

Annual Report

ECS provided three travel grants that were awarded to the best poster presentations at the **CSTIC 2010** meeting in Shanghai. From left to right are: **Hanming Wu**, Conference Chair; **Abudureheman Abudukelimu**, Tokyo Institute of Technology, 3rd place; **Yue Kuo**, ECS Board member; **Lijie Zhan**,. Peking University, 2nd place; **Tianchun Ye**, Director, Institute of Microelectronics of the Chinese Academy of Sciences (IMECAS); and **Lili Ma**, University of Electronic Science and Technology of China, 1st place.

Participants at the joint meeting of **SMEQ** and the **ECS Mexican Section** in June 2010.

Petr Vanýsek (right) represented ECS at the Congressional Visit Days on April 29. Prof. Vanýsek met with Senator **Dick Durbin** (left), Democrat from Illinois and also the Senate Majority Whip.

(continued from previous page)

manufacturing, as well as emerging semiconductor technologies and silicon material applications. Papers from the conference were published in *ECS Transactions*.

On another continent, ECS sponsored the XXV Meeting of the **Mexican Society of Electrochemistry** (SMEQ) with the 3rd Meeting of the **ECS Mexican Section**, which was held in the colonial city of Zacatecas, Mexico from May 31 to June 4. These events were hosted by the Autonomous University of Zacatecas. During the opening ceremony Daniel A. Scherson, Editor of the *Journal of The Electrochemical Society*, delivered the plenary lecture.

As a part of the traditional activities, there was a competition to award the best poster and thesis work for bachelor's, master's, and doctoral levels. At this meeting, the best poster was awarded to the doctoral candidate Cesia Ávila-González for the work entitled, "Use of Silica Nanotubes for the Storage of Corrosion Inhibitors." The prize, sponsored by ECS, included a registration fee for the 219th ECS meeting in Montréal, Canada, and travel support. Many of the papers were published in *ECS Transactions*.

The Federation of Materials Societies (FMS), of which ECS is a member, organizes **Congressional Visit Days** (CVDs) each spring in Washington, DC, to provide an opportunity for scientists, engineers, and students from universities to discuss various issues with their representatives in Congress.

This year the Congressional Visit Days took place on Capitol Hill on April 28 and 29. ECS was represented on the Hill by its FMS trustee Petr Vanýsek. Vanýsek made several visits to legislative offices, namely the office of Senator Durbin and Representative Foster. The delegation visits are arranged by the hometown of the visitors, and Petr Vanýsek, Professor from Northern Illinois University, visited the legislators from Illinois.

Congressional Visit Days are just one way that ECS helps to mobilize scientists and engineers in addressing the importance of adequately funding research and development in the sciences and engineering. This will become even more important in the years ahead as the world deals with critical energy issues. As in 2010, ECS will continue to be there to support its scientists and engineers who can make a difference in our world.

Finance

We are pleased to present the audited financial reports of ECS. These reports indicate that the financial health of the Society continues to be strong.

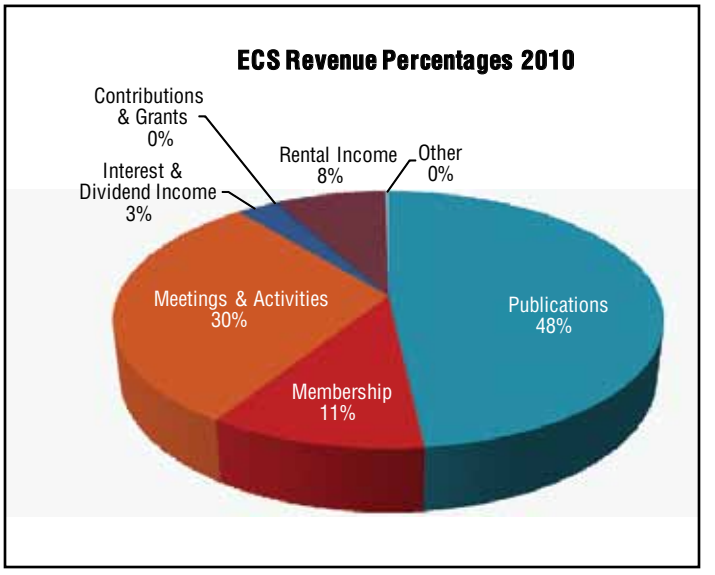
The Society's Statement of Financial Position shows total assets of $13.6 million at December 31, 2010, an increase of $1.5 million over 2009. That increase is largely attributable to increases in investments through appreciation in the market value of securities and through additional investment. At the same time, liabilities increased by only $0.4 million, resulting in an increase in net assets (reserves) of $1.1 million.

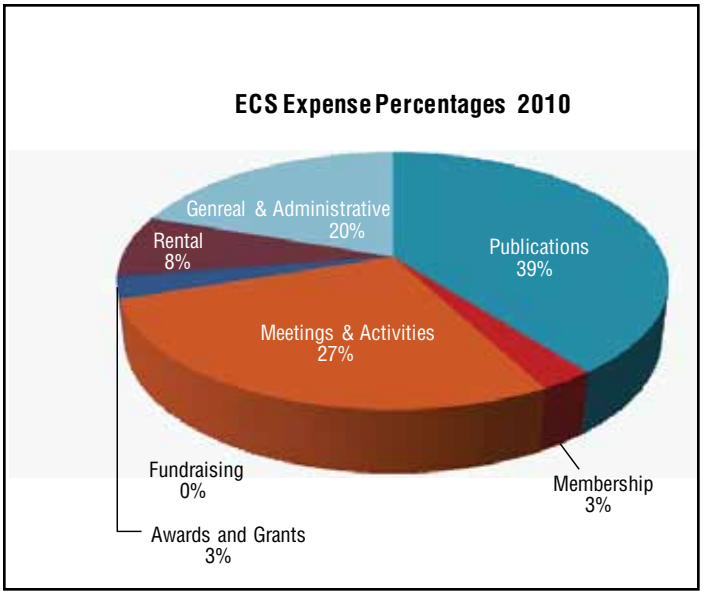
In 2010, the Society had operating revenues of $6.9 million, which is virtually unchanged from the previous year, as shown by the Society's Statement of Activities. Increases in publications revenues were offset by decreases in meeting revenues. Operating expenses of $6.1 million are slightly less than 2009, due to decreases in the meetings expenses, offsetting the reduction in meeting revenue mentioned above. The surplus from operations of $780,562 was 28.9% greater than the previous year. The total net surplus for 2010 was $1.1 million.

The Society received an unqualified or clean opinion from WithumSmith+Brown, LLC in the Independent Auditor's report. The independent auditors meet with the Society's Audit Committee to discuss the scope and results of their audit, their review of the adequacy of internal accounting controls and the quality of financial reporting prior to issuing their opinion.

The Society is tax exempt under Section 501(c)(3) of the Internal Revenue Code.

Christina Bock, *Treasurer*





Annual Report

Financial Summary

Consolidated Statement of Financial Positions *(For the years ended December 31, 2010 and 2009)*

Assets	2010	2009
Cash and cash equivalents	$ 1,001,637	$ 989,327
Accounts receivable, net	257,990	197,441
Prepaid expenses, deposits, and other assets	90,112	117,602
Investments in marketable securities	6,912,397	5,453,003
Custodial account investments	740,584	634,119
Deferred Rent	67,094	67,537
Investments in real estate:		
Land	1,603,427	1,603,427
Buildings, less accumulated depreciation of $265,884	2,932,017	3,011,455
Total assets	**$13,605,258**	**$12,073,911**

Liabilities and Net Assets		
Liabilities		
Accounts payable and accrued expenses	$ 482,022	$ 409,522
Deferred revenue	1,088,811	844,568
Custodial Account Liability	740,584	634,119
Security deposits	34,382	40,453
Deferred Compensation	26,432	3,088
Net assets		
Unrestriced	10,013,098	8,916,135
Temporarily restricted	404,571	417,173
Permanently restricted	815,358	808,853
Total net assets	11,233,027	10,142,161
Total liabilites and net assets	**$13,605,258**	**$12,073,911**

Consolidated Statement of Changes in Net Assets *(For the years ended December 31, 2010 and 2009)*

Revenues		
Publications	$ 3,122,834	$ 2,917,414
Membership	693,200	703,672
Society meetings and activities	1,947,271	2,241,386
Interest and dividend income	388,814	398,091
Contributions and grants	68,488	67,858
Rental Income	496,339	442,325
Other revenues	141,741	29,872
	$ 6,858,687	**$ 6,800,618**

Expenses		
Program services		
Publications	$ 2,400,538	$ 2,192,140
Membership	192,778	155,451
Society meetings and activities	1,643,637	1,842,981
Awards, fellowships, and grants	167,073	196,001
	$ 4,404,026	**$ 4,386,573**
Supporting services		
General and administrative	1,192,615	1,309,424
Fundraising	19,106	31,183
Rental operations	462,378	467,951
	$ 1,674,099	**$ 1,808,558**
Increase in net assets from operations	$ 780,562	$ 605,487
Net change in fair value of investments	304,457	579,083
Other non-operation revenue	5,847	-
Change in net assets	1,090,866	1,184,570
Net assets, beginning of year	10,142,161	8,957,591
Net assets, end of year	$11,233,027	$ 10,142,161

These financial statements are a condensed version of the audited statements of ECS for the years ending December 31, 2010 and 2009. ECS will be pleased to provide complete copies along with all footnotes and the unqualified report of our auditors upon request.

Notes to Financial Statement

1. Summary of Significant Accounting Policies

The consolidated financial statements include the accounts of The Electrochemical Society and its Divisions, Groups, and Sections, and the LLC. All intercompany balances and transactions have been eliminated in consolidation.

The consolidated financial statements have been prepared to focus on The Electrochemical Society and Subsidiary (the Society) as a whole, and to present balances and transactions according to the existence or absence of donor-imposed restrictions. Accordingly, net assets and changes therein are classified as follows: Unrestricted net assets – net assets not subject to donor-imposed stipulations; Temporarily restricted net assets – net assets subject to donor-imposed stipulations that will be met by actions of the Society and/or by the passage of time; Permanently restricted net assets (endowment funds) – net assets subject to donor-imposed stipulations that they be maintained permanently by the Society.

2. Income Tax Status and Income Taxes

ECS and its Divisions, Groups, and Sections qualify as a tax-exempt organization described under Section 501(c)(3) of the Internal Revenue Code and all of its income, except income generated through the advertising included in its publications, is exempt from Federal income taxes.

As a single-member limited liability company, LLC is treated as a "disregarded entity" for income tax purposes and, as such, its financial activity is reported in conjunction with the Federal income tax filings of ECS. The Society has adopted the accounting pronouncement that provides guidance on uncertain tax positions. The Society has no unrecognized tax benefits at December 31, 2010.

3. Investments

Investments in equities and fixed income instruments are reported at fair market value, and investment in real estate is reported at cost. Investment income and realized and unrealized net gains and losses on investments of permanently restricted net assets are reported as follows: as increases or decreases in temporarily restricted net assets if the terms of the gift impose restrictions on the use of the income and/or net gains; as increases or decreases in unrestricted net assets in all other cases. Cost, market value and unrealized appreciation (depreciation) at December 31, 2010 and 2009 are summarized as follows:

	Cost	Market Value	Unrealized Appreciation (Depreciation)
Money market funds	$ 296,003	$ 296,003	$ -
Stocks and mutual funds	3,956,799	4,240,170	283,371
Certificate of deposit	1,013,400	1,028,460	15,060
Corporate and U.S. bonds	1,869,895	2,088,348	218,453
Real estate	4,883,326	4,883,326	--
Total	$12,019,423	$12,536,307	$ 516,884

4. Endowment Funds

The Society's endowment funds consist of several funds established to fund awards, as well as an educational endowment fund, publications endowment fund and an ECS endowment fund. The endowment funds include both donor-restricted funds and funds designated by the Board of Directors to function as endowments. As required by generally accepted accounting principles (GAAP), net assets associated with endowment funds are classified based on the existence or absence of donor-imposed restrictions.

The Society's policy requires the preservation of the fair value of the original gift as of the gift date of the donor-restricted endowment funds absent explicit donor stipulations to the contrary. As a result, the Society classifies as permanently restricted net assets the original value of gifts donated to the permanent endowment and the original value of subsequent gifts to the permanent endowment. The remaining portion of the donor-restricted endowment fund that is not classified in permanently restricted net assets is classified as temporarily restricted net assets until those amounts are appropriated for expenditure by the Society.

5. ECS Holdings, LLC

ECS Holdings LLC was chartered in 1998 to manage the real estate assets of the Society. Current real estate holdings include five buildings at Howe Commons in Pennington, NJ valued at a cost of $4,883,326. The Society occupies one of the buildings and the other four are classified as an investment. ECS Holdings LLC leases office space in these four buildings to various tenants under operating leases arrangements expiring through 2019. Rental income under the aforementioned leases totaled $496,339 (net of Society's rentals of $74,340) for the year ended December 31, 2010.

6. Report of the ECS Audit Committee

The ECS Audit Committee provides oversight of the Society's financial reporting process on behalf of the Board of Directors. Management (ECS Staff Directors and Officers) is responsible for the financial statements and the financial reporting process, including the system of internal control. In fulfilling its oversight responsibilities, the Committee discussed the financial statements in the annual report with management, including a discussion of quality, not just the acceptability, of the accounting principles; the reasonableness of significant judgments; and the clarity of disclosures in the financial statements.

The members of the Audit Committee in 2010 were Ralph White (Chair), John Susko, Petr Vanýsek, Robert Kelly and Lloyd George.

The ECS Audit Committee, with the exception of John Susko and Robert Kelly (not present), discussed with the independent auditors the overall scope and plans for their respective audits. The Committee meets with the independent auditors with and without management present, to discuss the results of their examinations, their evaluations of the Society's internal control, compliance with laws and regulations, and the overall quality of the Society's financial reporting.

Based on the discussions referenced above, the ECS Audit Committee has recommended for acceptance to the Board of Directors the audited financial statements for the year ended December 31, 2010.

Annual Report

Board of Directors

(as of October 2010)

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First Vice-President

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Kalpathy Sundaram, Chair, Dielectric Science & Technology Division

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ECS Editorial Boards

(as of December 31, 2010)

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Thomas Fuller
Raymond J. Gorte
Takayuki Homma
Charles L. Hussey
Yue Kuo
Dolf Landheer
Mark Orazem
Ashok Shukla
Martin Winter

Interface
Krishnan Rajeshwar, *Editor*

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Albert Fry, Organic & Biological Electrochemistry Division
Andrew Hoff, Electronics & Photonics Division
Prashant V. Kamat, Fullerenes, Nanotubes, & Carbon Nanostructures Division
Uwe Happek, Luminescence & Display Materials Division
Wesley Henderson, Physical & Analytical Electrochemistry Division
Peter Hesketh, Sensor Division
Mani Manivannan, Energy Technology Division
Arumugam Manthiram, Battery Division
Durga Misra, Dielectric Science & Technology Division
Barbara Shaw, Corrosion Division
John Staser, Industrial Electrochemistry & Electrochemical Engineering Division
Giovanni Zangari, Electrodeposition Division

Electrochemical and Solid-State Letters
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Doron Aurbach
Jennifer Bardwell
Andrew Gewirth

ECS Transactions
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(as of June 15, 2011)

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Dinia Agrawala, *Interface* Production Manager

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Tim Fest, Associate Director of Exhibits and Sponsorship

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Stephanie Plassa, Director of Meetings and Exhibits

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Beth Anne Stuebe, ECST Production Assistant

Ellen M. Tiano, Constituent Services Associate

Paul J. Urso, Associate Director of Technical Programming

ECS Donors

The following individuals and organizations have helped support ECS's many activities. We thank them for their generous support of the Society.

Endowed Funds

We are grateful to the following donor for its generous support of our Education Endowment. This endowment helps to insure the continuation of bold advances in electrochemical and solid-state science and technology.

Fondazione Oronzio de Nora Casella

Businesses, Corporations, and Organizations

We are grateful to the following businesses, organizations, and corporations for their generous support of $5,000 and above in support of our mission.

AMETEK
Applied Materials
Applied Nanofluorescence, LLC
Bio-Logic USA/SAS
Cambridge NanoTech
Duracell
Fuel Cell Technologies
Gelest, Inc.
Hydro-Québec
IBM Corporation
Maccor
Matheson Tri-Gas
NuVant Systems
Saft Batteries, Specialty Batteries Group
Scribner Associates

Government

We are grateful to the following government institution for its generous support of $5,000 and above in support of our mission.

Air Force Office at Scientific Research
Army Office of Research
Office of Naval Research

Individuals

We are grateful to the following individuals for their generous gifts of $1,000 and above in support of our mission.

James Acheson
James Amick
John Newman

The Legacy Society

The Legacy Society honors benefactors who have provided for the Society in a variety of ways—through their wills, a charitable trust, a life-income arrangement, a life insurance policy, or a retirement plan.

Robert P. Frankenthal

Annual Report

Corporate Partners

3M Company
5Pascal S.r.l.
Acta S.p.A.
Advance Research Chemicals, Inc.
AFCC Automotive Fuel Cell Cooperation Corp
AFOSR
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Air Liquide Electronics, ALOHA
Air Products
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AMETEK
Applied Materials
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Asahi Kasei E-Materials Corp
ASM International
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BVT Technologies, a.s.
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Cabot Corporation
Cambridge NanoTech Inc.
Canon ANELVA Corp
Celgard
Central Electrochemical Research Inst.
Centrotherm Thermal Solutions GmbH + Co. KG
CH Instruments, Inc.
Chemetall GmbH
CNR - Molecular Design Department
Comsol, Inc.
Consorzio INSTM
Crosslight Software Inc.
CSIR
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DropSens
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Dynatronix
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ECO Energy Conversion
eDAQ, Inc.
E-Kem Sciences
ElectroChem, Inc.
Electrochemical Society of Japan
Electrosynthesis Company, Inc.
Elektroniklabor Peter Schrems
EMD Chemicals
ENEOS CELLTECH Co., Ltd.
Energizer
Energy Innovation Group, Ltd.
ENrG Inc.
E-One Moli Energy Ltd.
ESL Electro-Science
EV Group E. Thallner GmbH
Evans Analytical Group
Evonik Litarion GmbH
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Giner, Inc./GES
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HEKA Elektronic GmbH
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HPL S.A. - High Power Lithium
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Hysitron Inc.
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IJ Cambria Scientific
IMLB 2010
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Pine Research Instrumentation
Plansee
Plasmionique, Inc.
PPG Industries, Inc.
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Sandia National Labs
SANYO Electric Co., Ltd.
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Semitool, Inc.
SES Research
Shimadzu
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Sonoscan, Inc.
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Wasatch Molecular
Webcom Communications Corp
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Yeager Center for Electrochemical Sciences
Zahner-Elektrik GmbH & Co KG
Zhangjiagang Guotai Harong New Chemical
ZSW

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W. D. Bancroft 1905-1906
C. Hering 1906-1907
C. F. Burgess 1907-1908
E. G. Acheson 1908-1909
L. H. Baekeland 1909-1910
W. H. Walker 1910-1911
W. R. Whitney 1911-1912
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E. F. Roeber 1913-1914
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L. Addicks 1915-1916
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F. J. Tone 1918-1919
W. D. Bancroft 1919-1920
W. S. Landis 1920-1921
A. Smith 1921-1922
C. G. Schluederberg 1922-1923
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F. M. Becket 1925-1926
W. Blum 1926-1927
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P. J. Kruesi 1928-1929
F. C. Frary 1929-1930
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R. M. Burns 1943-1944
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W. C. Moore 1946-1947
G. W. Heise 1947-1948
J. A. Lee 1948-1949
A. L. Ferguson 1949-1950
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R. M. Hunter 1951-1952
J. C. Warner 1952-1953
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M. J. Udy 1954-1955
H. H. Uhlig 1955-1956
H. Thurnauer 1956-1957
N. Hackerman 1957-1958
S. Swann 1958-1959
W. C. Gardiner 1959-1960
R. A. Schaefer 1960-1961
H. B. Linford 1961-1962
F. L. LaQue 1962-1963
W. J. Hamer 1963-1964
L. I. Gilbertson 1964-1965
E. B. Yeager 1965-1966
H. J. Read 1966-1967
H. C. Gatos 1967-1968
I. E. Campbell 1968-1969
N. C. Cahoon 1969-1970
C. W. Tobias 1970-1971
C. V. King 1971-1972
T. D. McKinley 1972-1973
N. B. Hannay 1973-1974
D. A. Vermilyea 1974-1975
T. R. Beck 1975-1976
M. J. Pryor 1976-1977
D. N. Bennion 1977-1978
D. R. Turner 1978-1979
J. B. Berkowitz 1979-1980
E. M. Pell 1980-1981
R. J. Brodd 1981-1982
F. J. Strieter 1982-1983
J. B. Wagner, Jr. 1983-1984
P. C. Milner 1984-1985
R. C. Alkire 1985-1986
R. E. Enstrom 1986-1987
F. G. Will 1987-1988
B. E. Deal 1988-1989
E. J. Cairns 1989-1990
J. M. Woodall 1990-1991
L. R. Faulkner 1991-1992
W. L. Worrell 1992-1993
R. P. Frankenthal 1993-1994
J. A. Amick 1994-1995
K. R. Bullock 1995-1996
D. W. Hess 1996-1997
B. Miller 1997-1998
G. M. Blom 1998-1999
D.E. Hall 1999-2000
C. M. Osburn 2000-2001
J. Talbot 2001-2002
K. Spear 2002-2003
B. Scrosati 2003-2004
R. Susko 2004-2005
W. Smyrl 2005-2006
Mark Allendorf 2006-2007
Barry MacDougall 2007-2008
D. Noel Buckley 2008-2009
Paul Natishan 2009-2010

Past Secretaries of the Society

C. Hering 1902
C. J. Reed 1902-1904
S. S. Sadtler 1904-1907
J. W. Richards 1907-1921
C. G. Fink 1921-1947
R. M. Burns 1947-1949
H. B. Linford 1949-1959
I. E. Campbell 1959-1965
R. F. Bechtold 1965-1968
D. R. Turner 1968-1974
P. C. Milner 1974-1980
F. A. Trumbore 1980-1984
J. A. Amick 1984-1988
E. W. Brooman 1988-1992
J. McBreen 1992-1996
R. Susko 1996-2000
P. Natishan 2000-2004
P. Vanýsek 2006-2010

Past Treasurers of the Society

P. G. Salom 1902-1920
F. A. Lidbury 1920-1924
A. Smith 1924-1931
R. M. Burns 1931-1943
W. W. Winship 1943-1949
E. G. Widell 1949-1955
L. I. Gilbertson 1955-1961
E. G. Enck 1961-1964
R. H. Schaefer 1964-1967
R. H. Cherry 1967-1973
F. J. Strieter 1973-1976
J. L. Griffin 1976-1982
J. Kruger 1982-1986
R. P. Frankenthal 1986-1990
R. E. White 1990-1994
W. M. Bullis 1994-1997
Y. H. Wong 1997-1998
W. D. Brown 1998-2002
P. Fedkiw 2002-2006
J. Susko 2006-2010

Annual Report

Edward Goodrich Acheson Award

E. G. Acheson....1929
E. F. Northrup....1931
C. G. Fink....1933
F. J. Tone....1935
F. M. Becket....1937
F. C. Frary....1939
C. F. Burgess....1942
W. Blum....1944
H. J. Creighton....1946
D. A. MacInnes....1948
G. W. Vinal....1950
J. W. Marden....1952
G. W. Heise....1954
R. M. Burns....1956
W. J. Kroll....1958
H. B. Linford....1960
C. L. Faust....1962
E. A. Gulbransen....1964
W. C. Vosburgh....1966
F. L. LaQue....1968
S. Ruben....1970
C. W. Tobias....1972
C. V. King....1974
N. B. Hannay....1976
D. A. Vermilyea....1978
E. B. Yeager....1980
H. C. Gatos....1982
N. Hackerman....1984
E. M. Pell....1986
H. H. Uhlig....1988
T. R. Beck....1990
D. R. Turner....1992
J. B. Wagner, Jr.....1994
R. C. Alkire....1996
J. M. Woodall....1998
L. R. Faulkner....2000
B. Deal....2002
W. L. Worrell....2004
V. de Nora....2006
Robert P. Frankenthal....2008
John Newman....2010

Olin Palladium Medal Award

(formerly the Palladium Medal Award, 1951-1977)

C. W. Wagner....1951
N. H. Furman....1953
U. R. Evans....1955
K. F. Bonhoeffer....1957
A. N. Frumkin....1959
H. H. Uhlig....1961
N. Hackerman....1965
P. Delahay....1967
T. P. Hoar....1969
L. Brewer....1971
V. G. Levich....1973
M. J. N. Pourbaix....1975
H. Gerischer....1977
R. Parsons....1979
I. M. Kolthoff....1981
M. Cohen....1983
M. Fleischmann....1985
A. J. Bard....1987
B. E. Conway....1989
J. Newman....1991
J.-M. Savéant....1993
J. Kruger....1995
R. W. Murray....1997
J. B. Goodenough....1999
N. Sato....2001
E. Gileadi....2003
R. Rapp....2005
Sergio Trasatti....2007
Dieter M. Kolb....2009

Gordon E. Moore Medal for Outstanding Achievement in Solid-State Science and Technology

(formerly the Solid State Science & Technology Award, 1973-2005)

W. G. Pfann....1973
H. C. Gatos....1975
R. N. Hall....1977
M. B. Panish....1979
G. L. Pearson....1981
N. Holonyak, Jr.....1983
J. M. Woodall....1985
A. Y. Cho....1987
J. F. Gibbons....1989
J. D. Plummer....1991
B. E. Deal....1993
W. L. Worrell....1995
K. E. Spear....1997
I. Akasaki....1999
A. Reisman....2001
R. B. Fair....2003
D. Hess....2005
Tak H. Ning....2007
C. Grant Willson....2009

Vittorio de Nora Award in Electrochemical Engineering and Technology

(formerly the Electrochemical Science and Technology Award, 1974-1977)

A. Brenner....1974
R. B. MacMullin....1976
F. T. Bacon....1978
H. B. Beer....1980
J. C. Schumacher....1982
D. E. Danly....1984
K. Kordesch....1986
A. Heller....1988
C. W. Tobias....1990
E. B. Yeager....1992
L. T. Romankiw....1994
R. Baboian....1996
W. G. Grot....1998
D. R. Turner....2000
R. C. Alkire....2004
F. Mansfeld....2006
John S. Newman....2008
Derek Pletcher....2010

Carl Wagner Memorial Award

A. J. Bard....1981
G. C. Wood....1983
R. C. Alkire....1985
R. W. Murray....1987
W. L. Worrell....1989
D. D. Macdonald....1991
J. Jorné....1993
B. R. MacDougall....1995
M. J. Weaver....1997
C. R. Martin....1999
P. A. Kohl....2001
R. M. Crooks....2003
J. Hupp....2005
F. Mansfeld....2006
Philip N. Bartlett....2007
Henry S. White....2009

Henry B. Linford Award for Distinguished Teaching

C. W. Tobias 1982
B. E. Conway 1984
A. J. Bard 1986
L. Brewer 1988
J. Newman 1990
K. Nobe 1992
J. O'M. Bockris 1994
T. C. Franklin 1996
R. A. Rapp 1998
G. Stoner 2000
D. Peters 2002
R. M. Latanision 2004
D. Pletcher 2006
Eliezer Gileadi 2008
Daniel T. Schwartz 2010

Charles W. Tobias Young Investor Award

Stuart B. Adler 2004
Hock Min Ng 2006
Yang Shao-Horn 2008
Thomas J. Schmidt 2010

Honorary Members

Charles F. Chandler 1919
Edgar F. Smith 1919
Carl Hering 1922
Edward G. Acheson 1923
Wilder D. Bancroft 1925
Edward Weston 1926
Thomas A. Edison 1928
W. Lash Miller 1929
Edward Dean Adams 1930
Charles F. Burgess 1932
Frederick M. Becket 1934
L. H. Baekeland 1936
Robert A. Witherspoon 1940
Archer E. Wheeler 1941
W.R. Whitney 1944
Paul J. Kruesi 1944
Colin G. Fink 1946
Oliver W. Brown 1946
John W. Marden 1947
William Blum 1953
Robert M. Burns 1959
George W. Heise 1959
Frank C. Mathers 1959
Stanislaus Skowronski 1962
Oliver W. Storey 1962
A. Kenneth Graham 1963
Howard A. Acheson 1971
Charles L. Faust 1971
Cecil V. King 1973
Herbert H. Uhlig 1973
Norman Hackerman 1973
Henry B. Linford 1974
Sherlock Swann 1974
Ernest G. Enck 1975
W. C. Gardiner 1975
Ivor E. Campbell 1976
Ernest B. Yeager 1977
David A. Vermilyea 1977
Charles W. Tobias 1977
Harry C. Gatos 1978
Ralph M. Hunter 1979
Dennis R. Turner 1980
Henry F. Ivey 1980
Walter J. Hamer 1980
Michael J. Pryor 1981
Francis L. LaQue 1981
N. Bruce Hannay 1982
Theodore R. Beck 1982
Vittorio de Nora 1982
John L. Griffin 1983
Erik M. Pell 1983
Samuel Ruben 1983
Paul C. Milner 1986
Harold J. Read 1986
Forrest A. Trumbore 1986
Douglas N. Bennion 1987
Ralph J. Brodd 1987
Jerome Kruger 1987
Glenn W. Cullen 1990
James C. Acheson 1990
Richard C. Alkire 1991
Bertram Schwartz 1991
J. Bruce Wagner, Jr. 1991
V. H. Branneky 1991
R. S. Karpiuk 1996
F. J. Strieter 1996
W. L. Worrell 1996
Barry Miller 1999
Jefferson Cole 2001
L. Faulkner 2003
R. Frankenthal 2003
L. Romankiw 2003
Gordon E. Moore 2007
John S. Newman 2007
Jerry M. Woodall 2007

Honorary Associate Members

Mrs. Colin G. Fink

Fellows of The Electrochemical Society

Allen J. Bard 1990
Robert B. Comizzoli 1990
Glenn W. Cullen 1990
Theodore I. Kamins 1990
Paul C. Milner 1990
Edward H. Nicollian 1990
Robert A. Osteryoung 1990
Arnold Reisman 1990
Lubomyr T. Romankiw 1990
Geraldine C. Schwartz 1990
Ben G. Streetman 1990
J. Bruce Wagner, Jr. 1990
Theodore R. Beck 1991
Elton J. Cairns 1991
Bruce E. Deal 1991
Werner Kern 1991
William A. Pliskin 1991
Charles W. Tobias 1991
Rolf Weil 1991
Richard C. Alkire 1992
Vittorio de Nora 1992
Jerome Kruger 1992
Barry Miller 1992
Dennis R. Turner 1992
Jerry M. Woodall 1992
Richard P. Buck 1993
Larry. R. Faulkner 1993
Dennis W. Hess 1993
Vik J. Kapoor 1993
Rolf H. Muller 1993
Carlton M. Osburn 1993
Robert A. Rapp 1993
George L. Schnable 1993
Y. H. Wong 1993
Petr Zuman 1993
George K. Celler 1994
Sung-Nee George Chu 1994
John P. Dismukes 1994
Richard B. Fair 1994
Adam Heller 1994
Richard A. Oriani 1994
Boone B. Owens 1994
Wayne L. Worrell 1994
Fred Anson 1995
Laurence D. Burke 1995
Brian E. Conway 1995
Robert P. Frankenthal 1995
Karl M. Kadish 1995
Digby D. Macdonald 1995
Gleb Mamantov 1995
Florian Mansfeld 1995
Royce W. Murray 1995
John Newman 1995
Yutaka Okinaka 1995
Howard W. Pickering 1995
George Rozgonyi 1995
Mordechay Schlesinger 1995
Karl E. Spear 1995
John M. Blocher, Jr. 1996
Hans K. Böhni 1996
Der-Tau Chin 1996
Hugh Isaacs 1996
Wolfgang J. Lorenz 1996
S. J. Pearton 1996
Subhash C. Singhal 1996
Venkataraman Swaminathan 1996
James A. Amick 1997
Denis Noel Buckley 1997
Eliezer Gileadi 1997

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Annual Report

(Fellows continued)

Michel J. Froment 1997
Koji Hashimoto 1997
Chung-Chiun Liu 1997
Edward McCafferty....1997
Theodore D. Moustakas 1997
Shyam P. Muraka 1997
Stella W. Pang....1997
Joachim Walter Schultze....1997
James D. Sinclair 1997
Norman L. Weinberg....1997
Lawrence Young 1997
Huk Y. Cheh....1998
Donald E. Danly....1998
Dennis H. Evans....1998
Fumio Hine....1998
Dennis C. Johnson....1998
Zoltan Nagy....1998
Katsumi Niki....1998
Jun-ichi Nishizawa 1998
Fan Ren....1998
Antonio J. Ricco....1998
David A. Shores 1998
William H. Smyrl....1998
George Thompson 1998
Eric Brooman 1999
Stanley Bruckenstein....1999
Kathryn Bullock....1999
Shimshon Gottesfeld....1999
Yue Kuo 1999
Dieter Landolt 1999
Jerzy Ruzyllo....1999
Norio Sato....1999
Ralph White 1999
William Yen 1999
Cammy Abernathy....2000
Kuzhikalail M. Abraham....2000
John C. Angus....2000
W. Ronald Fawcett 2000
David S. Ginley....2000
Yasuhiko Ito 2000
Howard Huff....2000
Robert F. Savinell 2000
Roger Staehle 2000
Charles W. Struck....2000
Sergio Trasatti....2000
Dieter M. Kolb 2001
David J. Lockwood....2001
James McBreen 2001
Patrick J. Moran....2001
Shohei Nakahara....2001
William E. O'Grady 2001
Supramanian Srinivasan 2001
Mark Allendorf 2002
William Brown....2002
Cor Claeys....2002
Martin Kendig 2002
Kim Kinoshita....2002
Paul Kohl....2002
Zempachi Ogumi....2002
Tetsuya Osaka 2002
Krishnan Rajeshwar 2002
Israel Rubinstein 2002
Sigeru Torii....2002
Toshio Shibata 2002
Sorin Cristoloveanu....2002
David Duquette 2003
Peter Fedkiw 2003
Charles Hussey 2003
Richard McCreery 2003
Frank McLarnon....2003
Robin Susko 2003
Darrel Untereker....2003
Osamu Yamamoto....2003
G. T. Burstein 2004
C. Clayton....2004
G. Davis 2004
M. J. Deen....2004
S. Fonash....2004
M. Meyyappan 2004
J. F. Rusling 2004
M. Seo 2004
M. Shur....2004
J. Simonet....2004
M. Stratmann....2004
J. Talbot 2004
M. S. Whittingham....2004
R. Adzic....2005
J. Davidson 2005
T. Hattori 2005
J. P. Leburton....2005
P. Marcus 2005
C. Martin 2005
P. Natishan 2005
D. Pletcher 2005
B. Scrosati 2005
J. Scully 2005
R. Singh....2005
H. H. Strehblow....2005
M. Williams....2005
A. Baca....2006
S. Bandyopadhyay 2006
T. Fahidy....2006
G. Frankel....2006
C. Jagadish 2006
N. Koshida 2006
J. Lessard 2006
H. Massoud....2006
H. Yokokawa 2006
B. MacDougall....2006
M. Orazem 2006
D. Misra 2006
A. Virkar....2006
A. Wieckowski....2006
Simon S. Ang....2007
Viola Birss....2007
Marc Cahay....2007
James M. Fenton....2007
Dennis G. Peters 2007
Daniel A. Scherson....2007
Eric D. Wachsman....2007
Doron Aurbach....2008
Albert J. Fry 2008
Fernando Garzon....2008
Yury Gogotsi 2008
Curtis F. Holmes....2008
Prashant V. Kamat....2008
Patrik Schmuki....2008
Gery R. Stafford 2008
Joseph R. Stetter 2008
John Stickney 2008
Thomas Thundat....2008
Vladimir Bagotsky....2009
Ugo Bertocci 2009
Manfred Engelhardt....2009
Tom Fuller 2009
Peter Hesketh....2009
Uziel Landau 2009
Dolf Landheer 2009
Thomas P. Moffat....2009
Ikuzo Nishiguchi 2009
Kohei Uosaki 2009
Rudolph G. Buchheit....2010
Francis D'Souza 2010
Toshio Fuchigami....2010
Michel Houssa 2010
Robert G. Kelly....2010
Roger C. Newman....2010
Peter N. Pintauro....2010
Peter C. Searson 2010
David Shoesmith....2010
Bernard Tribollet....2010
John W. Weidner....2010
David J. Young....2010

Edward G. Weston Summer Fellowship

(formerly the Edward G. Weston Fellowship, 1930-1945)

E. B. Sanigar 1930
K. Solliner 1931
M. E. Fogle....1932
R. D. Blue....1933
P. A. Jacquet 1934
M. A. Coler....1935
H. B. Linford....1936
G. L. Putnam....1937
V. de Nora 1938
W. P. Ruemmier 1940
R. E. Black....1941
W. E. Roake....1942
R. D. Misch 1947
M. T. Simnad....1948
R. L. Brubaker....1961
D. Yohe 1962
H. O. Daley, Jr. 1963
M. D. Hawley....1964
T. G. McCord 1965
J. D. McLean....1966
K. B. Prater....1967
K. Doblhofer....1968
L. R. Faulkner....1969
W. J. Horkans....1970
W. J. Horkans....1971
W. J. Bover....1972

(Edward G. Weston Summer Fellowship continued)

B. J. Alexander 1973
S. S. Fratoni, Jr. 1974
M. Suchanski 1975
R. J. Nowak....1976
P. A. Kohl....1977
C. D. Jaeger 1978
L. Bottomley....1979
G. L. McIntire....1980
J. Pemberton 1981
M. E. Kordesch....1982
R. G. Tompson 1983
P. M. Kovach 1984
J. N. Harb....1985
S. E. Creager 1986
X. Zhang....1987
C. Amass....1988
R. J. Phillips....1989
J. E. Franke 1990
S. R. Snyder....1991
P. Pantano 1992
G. J. Edens....1993
B. Idriss 1994
D. Bizzotto....1995
L. A. Lyon....1996
C. Claypool....1997
B. Bath 1998
A. C. Templeton....1999
P. W. Wuelfing....2000
K. Balss....2001
T. Hu 2002
J. Mauzeroll 2003
J. Seegmiller 2004
E. Blair 2005
F. Laforge 2006
Aleix G. Güell....2007
Matthew J. Banholzer....2008
Shulei Chou....2009
Binh-Minh Nguyen 2010

Colin Garfield Fink Summer Fellowship

P. Brown....1962
W. G. Lemmermann 1963
W. G. Stevens....1964
J. P. Carney 1965
S. Piekarski 1966
B. S. Pons 1967
R. E. Bonewitz....1968
L. Papouchado 1969
R. G. Reed....1970
R. Fike....1971
D. L. McAllister 1972
R. R. Chance 1973
P. I. Lee 1974
J. B. Flanagan....1975
J. S. Hammond 1976
P. D. Tyma....1977
S. M. Wilhelm 1978
J. D. Porter....1979
R. S. Glass 1980
E. E. Bancroft 1981
T. D. Cabeika 1982
B. L. Wheeler 1983
E. T. T. Jones....1984
D. A. Van Galen 1985
J. S. Hanson....1986
P. Gao....1987
D. T. Schwartz....1988
A. E. Russell....1989
J. Xue....1990
C. K. Rhee....1991
M. J. Shane....1992
C. M. Pharr....1993
J. M. Lauerhaus 1994
S. M. Hendrickson 1995
J. C. Hutchinson....1996
P. V. A. Pamidi....1997
G. S. Hwang 1998
W. Baker....1999
A. Crown 2000
R. Maus 2001
S. Peper 2002
M. Alpuche-Aviles 2003
A. Mugweru 2004
G. Lica....2005
A. Martinson 2006
Prabeer Barpanda 2007
Sau Yen Chew 2008
Hyea Kim....2009
Brian Adams 2010

Joseph W. Richards Summer Fellowship

V. E. Hauser, Jr. 1960
M. J. Schaer....1961
R. E. Visco 1961
A. K. Postma....1962
C. C. Liu 1963
M. J. Vasile 1964
M. J. Vasile 1965
C. C. Liu 1966
B. N. Baron....1967
L. P. Zajicek, Jr. 1968
K. R. Bullock 1969
S. H. Cadle 1970
J. W. Webb....1971
C. P. Keszthelyi....1972
M. Shabrang 1973
D. H. Karweik 1974
T. P. DeAngelis 1975
D. L. Feke....1976
H. Faulkner....1977
D. M. Novak 1978
B. R. Karas....1979
R. M. Cohen 1980
R. N. Dominey....1981
R. M. Ianniello....1982
D. F. Tessier....1983
N. T. Sleszynski 1984
C. M. Lieber 1985
J. L. Valdes 1986
R. Q. Bligh....1987
D. W. Conrad....1988
S. A. Schofield 1989
J. A. Roberts 1990
M. S. Freund 1991
L. Gao 1992
H. Gasteiger 1993
J. Schoer....1994
S. Morin 1995
N. Madigan....1996
S. Petrovic 1997
J. J. Sumner....1998
A. Wijayawardhana....1999
B. Liu 2000
C. Noble 2001
C. B. France....2002
P. Ramadass 2003
J. Carroll 2004
K. Salaita....2005
J. Breger 2006
Sadagopan Krishnan 2007
Meng Jiang 2008
Haizhou Liu 2009
Mohammad Rez Khajavi....2010

F. M. Becket Summer Fellowship

(formerly the F. M. Becket Memorial Award 1962-1999)

R. B. Johnson 1962
J. K. Johnstone 1964
K. Lehman....1966
H. K. Bowen 1967
T. E. Parker....1971
G. M. Crosbie....1973
N. A. Godshall 1975
J. D. Hodge 1977
W. Cheng....1979
P. Davies 1981
P. A. Barron....1983
G. J. Miller 1985
M. Rosenbluth 1987
J. D. Cotton....1989
J. Philliber....1991
P. Agarwal 1993
H. C. Slade 1995
K. S. Weil 1997
G. S. Hwang 1999
J. Parrish 2001
S. Wasileski....2002
E. Clark....2003
F. Deng 2004
S. Harrison....2005
Y. Yang 2006
Michael Orthner 2007
Marcos Jose Leitos Santos 2008
Steve Rhieu....2009

(continued on next page)

Annual Report

Herbert H. Uhlig Summer Fellowship

Natalia Shustova 2008
Venkatasubramanian Viswanathan 2009

Energy Research Summer Fellowship

(supported by the U.S. Department of Energy)

M. R. Deakin 1985
P. B. Johnson 1985
D. A. La Hurd 1985
S. E. Morris 1985
D. P. Wilkinson 1985
D. G. Frank 1986
K.-C. Ho 1986
R. G. Kelly 1986
I.-H. Yeo 1986
J. Kwak 1986
L. C. Dash 1987
S. A. Naftel 1987
T. R. Nolen 1987
D. Schwartz 1987
T. H. Wong 1987
S. D. Fritts 1988
D. A. Koos 1988
D. A. Hazlebeck 1988
M. O. Schloh 1988
S. S. Perine 1988
J. E. Baur 1989
C.-P. Chen 1989
D. W. Eng 1989
R. L. McCarley 1989
C. J. Murphy 1989
C. K. Nguyen 1990
I.-H. Oh 1990
T. G. Strein 1990
J. W. Weidner 1990
S. E. Gilbert 1990
C. S. Johnson 1991
H. Huang 1991
D. R. Lawson 1991
B. D. Pendley 1991
C. C. Streinz 1991
P. A. Connick 1992
A. C. Hillier 1992
D. L. Taylor 1992
K. K. Lian 1992
T. T. Nadasdi 1992
D. G. Jensen 1993
J. C. Bart 1993
G. Seshadri 1993
J. A. Poirier 1993
K. W. Vogt 1993
Z. Shi 1994
C.-C. Hsueh 1994
V. A. Adamian 1994
K. M. Maness 1994
K. M. Richard 1994
Y.-E. Sung 1995
J. C. Conboy 1995
L. A. Zook 1995
W. R. Everett 1995
H. Zhang 1995
S. Grabtchak 1996
J.-B. Green 1996
S. Motupally 1996
C. Nasr 1996
S. Nayak 1996
K. Hu 1997
M. E. Williams 1997
A. Zolfaghari 1997
C. R. Horne 1997
G. K. Jennings 1997
M. Zhao 1998
S. Sriramulu 1998
J. Ritchie 1998
M. A. Elhamid 1998
S. Zou 1998
K. Cooper 2000
K. Grant 2000
D. Hansen 2000
J. F. Hicks 2000
Z. Liu 2000

Oronzio de Nora Industrial Electrochemistry Fellowship

N. Mano 2004
N. Mano 2005
N. Mano 2006
Vijayasekaran Boovaragavan 2007
Vijayasekaran Boovaragavan 2008
Vijayasekaran Boovaragavan 2009
Wenjing (Angela) Zhang 2010

Norman Hackerman Young Author Award

(formerly the Young Authors Prize, 1929-1988)

W. C. Gardiner 1929
D. K. Alpern 1930
F. L. Jones 1931
F. W. Godsey, Jr. 1932
B. L. Bailey 1933
J. R. Heard, Jr. 1934
U. B. Thomas, Jr. 1935
W. A. Johnson 1936
R. S. Soanes 1937
N. B. Nichols 1938
G. A. Moore 1939
J. S. Mackay 1940
E. Adler 1941
S. Speil 1942
W. G. Berl 1943
J. P. Coyle 1944
A. E. Hardy 1945
N. A. Nielsen 1946
H. Leidheiser, Jr. 1947
M. A. Streicher 1948
J. C. Griess, Jr. 1949
G. W. Murphy 1950
J. T. Byrne 1951
W. E. Kuhn 1952
J. Halpern 1953
M. J. Pryor 1954
M. Stern 1955
R. S. Cooper 1956
P. Ruetschi 1957
M. Stern 1958
F. A. Posey 1959
A. C. Makrides 1960
J. D. Newson 1961
M. J. Dignam 1962
J. A. Cunningham 1963
R. E. Westerman 1964
R. E. Visco 1965
J. Newman 1966
H. W. Pickering 1967
G. G. Charette 1968
G. Dryhurst 1969
J. Newman 1969
W. R. Parrish 1969
A. J. Appleby 1970
D. C. Johnson 1970
D.-T. Chin 1971
M. S. Whittingham 1971
M. A. Hopper 1972
F. Kuhn-Kuhnenfeld 1972
M. J. Bowden 1973
L. Thompson 1973
D. Simonsson 1973
S. H. Cadle 1974
A. D. Dalvi 1974
L. R. Faulkner 1975
S. Solmi 1975
P. Negrini 1975
B. MacDougall 1976
S. K. Ubhayakar 1976
C. W. Manke 1977
W. J. Horkans 1977
A. G. Gonzalez 1978
C. H. Tsang 1978
D. A. Antoniadis 1978
D. Y. Wang 1979
C. W. Magee 1979
E. Takayama 1980
H. Reller 1980
W. J. P. Van Enckevort 1981
M. W. M. Graef 1981
C. Y. Chao 1981
L. F. Lin 1981
D. W. Sittari 1982
T. P. Chow 1982
P. G. Pickup 1983
K. F. Jensen 1983
D. B. Graves 1983
N. A. Godshall 1984
E. K. Broadbent 1984
J. C. Farmer 1985
G. S. Oehrlein 1985
J. Richer 1986
T. Tanaka 1986
C. P. Wilde 1987
P. N. Bartlett 1987
J. Maier 1987
J. A. Bardwell 1988

(Norman Hackerman Young Author Award continued)

C.-J. Han 1988
A. E. Husser 1989
D. H. Craston 1989
J. M. Rosamilia 1989
J. H. Comfort 1989
M. W. Verbrugge 1990
C. J. Giunta 1990
T. J. Mountziaris....1991
J. V. Cole 1991
D. W. Suggs 1991
B. W. Gregory....1991
D. B. Bonham....1992
E. S. Aydil....1992
P. P. Apte 1993
A. West 1993
H. A. Gasteiger 1994
F. R. Myers 1994
R. Vidal 1995
G. D. Papasouliotis....1995
J. H. Nordlien 1996
J. Lee 1996
A. K. Padhi 1997
S. M. Han 1997
A. D. Robertson 1998
Y. Shao-Horn....1998
S. R. Kaluri....1998
A. Bautista....1999
P. A. O'Neil 1999
R. T. Leah....2000
J. W. Klaus 2000
J. F. Whitacre 2001
P. Feichtinger....2001
T. J. Pricer....2002
P. S. Lee 2002
K. Jambunathan 2003
S. Noda 2003
M. Miyamoto....2003
R. Akolkar 2004
Y.-K. Hong....2004
S. Borini 2005
M. Kunimatsu....2005
Mathieu Bervas 2006
Pradeep Dixit....2006
Steffen Eccarius 2007
A. T. J. van Niftrik....2007
Kevin Ralston....2008
Eu Jin Tan 2008
Yudi Setiawan 2008
Paul Albertus....2009
Louis Hutin 2009
Gijs Dingemans....2010
Erik Langereis 2010
Stephen E. Potts 2010
Xingbao Zhu....2010

Turner Book Prize

S. Speil....1942
W. G. Berl....1943
J. P. Coyle 1944
J. T. Waber 1945
B. Cartwright....1946
A. E. Hardy 1947
M. A. Streicher 1948
R. E. Hoeckelman....1949
P. Delahay 1950
K. H. Stern 1951
C. C. Templeton....1951
P. T. Gilbert....1952
R. B. Holden....1953
D. A. Vermilyea 1954
J. G. Jewell....1955
J. H. Westbrook 1956
A. C. Makrides....1957
J. P. Pemsler 1958
R. G. Carlson....1959
R. E. Meyer 1960
P. C. Milner....1960
H. Freitag 1961
P. J. Boddy 1962
E. J. Cairns....1963
M. Weinstein 1963
R. W. Bartlett....1964
E. M. Hofer....1965
C. S. Tedmon, Jr.....1966
F. P. Kober 1967
J. M. Hale....1968

Leadership Circle Awards

Medallion Level

Dow Chemical Co., Central Research 2005
Olin Chlor Alkali Products Division.....2005
Occidental Chemical Corp. 2007
Atotech USA, Inc.....2009
Energizer....2009

Diamond Level

General Electric Co., Corporate Research & Development....2001
General Motors Research Laboratories...2001
Rayovac 2002
Duracell....2006
IBM Corporation 2006

Gold Level

Toshiba Corp., Research & Development Center....1998
Siltronic AG....1998
Osram Sylvania, Inc., Chemical & Metallurgical Division....1999
Sandia National Laboratories 2000
International Lead Zinc Research Organization, Inc.....2003
Medtronic, Inc., Energy and Component Center 2004
Toyota Central Research and Development Labs, Inc.....2004
Yuasa Corp....2004
Princeton Applied Research/ Solartron Analytical....2005
Saft Batteries....2006
CSIRO Minerals....2007
Industrie de Nora 2007
Ballard Power Systems, Inc. 2008
ECO Energy Conversion 2008
Varta Automotive GmbH, Advanced Battery Division 2008
Leclanche S.A., ...2009
Max-Planck-Institut für Festkorperförschung,....2009
Giner, Inc....2010
Greatbatch, Inc.,....2010

Silver Level

Eltech Systems Corp.....1992
Tronox LLC....1994
TIMCAL Graphite and Carbon Ltd. 1996
Japan Storage Battery Co., Ltd. 1997
3M Company....1998
E. I. Du Pont de Nemours & Co., Inc., HD Microsystems 1998
Solartron Instruments....1999
Central Electrochemical Research Institute 2002
TDK Corp., R&D Center....2002
Valence Technology 2002
DAISO, Co., Ltd.....2003
Panasonic Corp.....2003
C. Uyemura & Co., Ltd., Central Research Lab 2005
Electrosynthesis Co., Inc.....2005
FMC Corporation, Active Oxidants Division....2005
Nacional de Grafite, LTDA 2005
Permelec Electrode, Ltd. 2005
PG Industries, Inc., Chemicals Group Technical Center....2005
Scribner Associates, Inc. 2005
Technic Inc.....2005
Advance Research Chemicals, Inc..... 2007
Yeager Center for Electrochemical Sciences at CWRU 2007
PEC North America 2009
Quallion, LLC 2009
UTC Power....2009
Broddarp of Nevada 2010
Teledyne Energy Systems, Inc.....2010

Bronze Level

Hach Company, Radiometer Analytical Division....2002
De Nora Technologie Elettrochimiche S.r.L.....2003
BAE Systems Battery Technology Center, ...2005
OM Group, Inc. 2005
Agilent Laboratories....2008
Evonik Degussa GmbH....2008

(continued on next page)

(Leadership Circle Awards continued)

Samsung SDI 2008
GAIA-Akkumulatorenwerke GmbH 2009
Permascand AB 2009
ZSW Center for Solar Energy & Hydrogen Research 2009
Coolohm, Inc. 2010
ElectroChem, Inc. 2010
Faraday Technology, Inc. 2010
Johnson Matthey 2010
Metrohm USA 2010
Pine Research Instrumentation 2010

Battery Division Student Research Award

J. R. Waggoner 1980
K. E. Yee 1980
W. A. van Schalkwijk 1981
C. Y. Mak 1986
T. I. Evans 1987
C. C. Streinz 1988
J. Weidner 1989
M. G. Lee 1990
E. J. Podlaha 1991
G. E. Gray 1992
D. Qu 1993
P. De Vidts 1994
S. Motupally 1995
J. Xu 1996
Y. Shao-Horn 1997
I. Courtney 1998
G.E. Rousse 1999
V. Srinivasan 2000
M. Zhao 2001
V. Subramaniam 2001
L. Fransson 2002
K.-W. Park 2003
A. Weber 2004
C. Delacourt 2005
K. Kang 2006
Feng Jiao 2007
Nonglak Meethong 2009
Yi-Chun Lu 2010

Battery Division Research Award

J. J. Lander 1958
D. M. Smyth 1959
T. P. Dirkse 1962
F. G. Will 1964
J. Burbank 1966
C. P. Wales 1966
D. Tuomi 1968
Y. Okinaka 1970
A. C. Simon 1972
S. M. Caulder 1972
J. McBreen 1974
T. Katan 1976
S. Szpak 1976
A. Heller 1978
K. R. Bullock 1980
R. A. Huggins 1982
D. Pavlov 1984
G. H. J. Broers 1985
J. L. Devitt 1986
D. H. McClelland 1986
J. P. Gabano 1987
M. Armand 1988
J. Jorne 1989
A. N. Dey 1990
R. E. White 1991
D. N. Bennion 1992
E. Peled 1993
K. M. Abraham 1995
J. Dahn 1996
B. Scrosati 1997
C. Delmas 1999
J. B. Bates 2000
S. Wittingham 2002
K. Kinoshita 2003
J. Newman 2004
G. Ceder 2004
M. Thackeray 2005
T. Ohzuku 2006
Clare P. Grey 2007
Peter G. Bruce 2008
Linda Nazar 2009
Dominique Guyomard 2010

Battery Division Technology Award

Y. Nishi 1994
K. Ozawa 1994
E. S. Takeuchi 1995
S. Gilman 1996
J.-M. Tarascon 1997
G. E. Blomgren 1998
A. Yoshino 1999
H. Y. Cheh 2000
B. B. Owens 2001
D. Wilkinson 2002
M. Winter 2002
J. Yamaki 2003
M. Yoshio 2003
M. Ue 2004
D. Aurbach 2005
P. Novak 2005
K. Lee 2006
Michel Broussely 2007
Hiroshi Inoue 2008
Satoshi Mizutani 2008
Eiji Endoh 2009
Khalil Amine 2010

Corrosion Division H. H. Uhlig Award

(formerly the Outstanding Achievement Award of the Corrosion Division 1973-1983)

M. Cohen 1973
D. A. Vermilyea 1975
J. Kruger 1977
M. J. Pryor 1979
T. R. Beck 1981
N. Sato 1983
P. Kofstad 1985
H. W. Pickering 1987
R. P. Frankenthal 1989
H. Leidheiser 1991
H. Isaacs 1993
W. H. Smyrl 1995
M. J. Graham 1997
K. Hashimoto 1999
D. Macdonald 2001
F. Mansfeld 2002
C. Leygraf 2003
R. Newman 2004
P. Marcus 2005
G. T. Burstein 2006
Edward McCafferty 2007
Martin Stratmann 2008
John R. Scully 2009
Gerald S. Frankel 2010

Corrosion Division Morris Cohen Graduate Student Award

(formerly the Corrosion Division Award for Summer Study 1986-1988)

S. D. Scarberry 1986
C. C. Streinz 1987
R. Bianco 1988
M. A. Harper 1992
R. G. Buchheit 1993
J.-F. Yan 1994
B. V. Cockeram 1995
I. Odnevall 1996
D. G. Kolman 1997
C. S. Brossia 1998
M. Verhoff 1999
S. Yu 2000
S. F. Nitodas 2001
K. Cooper 2002
T. Ramgopal 2003
Q. Meng 2004
D. Chidambaram 2005
H. Tsuchiya 2006
Magnus Johnson 2007
Christopher D. Taylor 2008
Mariano Iannuzzi 2009
Pouria Ghods 2010

Dielectric Science and Technology Division Thomas D. Callinan Award

J. A. Davies 1968
J. P. S. Pringle 1968
G. M. Sessler 1970
J. E. West 1970
C. A. Mead 1971
W. Kern 1972
J. R. Szedon 1973
C. M. Osburn 1975
T. W. Hickmott 1976
J. R. Ligenza 1977
R. Williams 1978
R. J. Kriegler 1979
B. E. Deal 1982
L. Young 1983
A. K. Sinha 1985
A. C. Adams 1986
S. P. Murarka 1987
R. B. Comizzoli 1988
E. A. Irene 1988
R. A. Levy 1989
M. H. Woods 1990
V. J. Kapoor 1991
S. I. Raider 1992
D. W. Hess 1993
Y.-H. Wong 1994
K. L. Mittal 1995
W. D. Brown 1996
J. P. Dismukes 1997
R. Singh 1998
A. Rohatgi 1999
K. Saraswat 2000
P. Ho 2001
J. Deen 2002
S. K. Banerjee 2003
A. G. Revesz 2003
S. Fonash 2004
Paul A. Kohl 2008

Electrodeposition Division Research Award

W. Weil 1980
Y. Okinaka 1981
E. B. Budevski 1982
R. C. Alkire 1983
L. T. Romankiw 1984
R. J. von Gutfeld 1984
J. W. Dini 1985
H. R. Johnson 1985
H. Leidheiser 1986
J. P. Hoare 1987
H. Y. Cheh 1988
D. S. Lashmore 1989
S. Nakahara 1990
T. C. Franklin 1991
R. E. White 1992
P. C. Andricacos 1993
M. J. Froment 1994
D. Landolt 1995
T. Osaka 1996
M. Schlesinger 1997
Madhav Datta 1998
R. Winand 1999
H. Honma 2000
D. Kolb 2002
J. Switzer 2003
J. Dukovic 2004
P. Bartlett 2005
T. P. Moffat 2006
Ibro Tabakovic 2007
Olaf Magnussen 2008
John Stickney 2009
Takayuki Homma 2010

Electronics and Photonics Division Award

F. A. Trumbore 1970
F. C. Palilla 1971
M. B. Panish 1972
W. A. Pliskin 1973
B. E. Deal 1974
H. M. Manasevit 1975
M. G. Craford 1976
A. Y. Cho 1977
C. M. Wolfe 1978
E. Sirtl 1979
J. M. Woodall 1980
G. A. Rozgonyi 1981
G. W. Cullen 1982
D. W. Shaw 1983
A. Reisman 1984
S-M. Hu 1985
E. H. Nicollian 1986
B. Schwartz 1987
K. E. Bean 1988
T. Kamins 1989
D. M. Brown 1990
C. M. Osburn 1991
G. S. Oehrlein 1992
B. S. Meyerson 1993
G. K. Celler 1994
L. C. Kimerling 1995
H. Huff 1996
A. F. Tasch 1997
U. M. Gösele 1999
S. N. G. Chu 2000
S. P. Murarka 2001
S. Cristoloveanu 2002
T. Ohmi 2003
C. Claeys 2004
S. Pearton 2005
H. Massoud 2006
Yue Kuo 2007
Fan Ren 2008
Eicke R. Weber 2009
Lih J. Chen 2010

Energy Technology Division Research Award

M. W. Verbrugge 1994
S. Srinivasan 1996
H. R. Kunz 1998
A. W. Czanderna 1999
R. Selman 2001
I. Uchida 2001
A. Nozik 2003
K. Kinoshita 2004
K. Kanamura 2005
S. Licht 2006
Radoslav Adzic 2007
Yang Kook Sun 2007
Tom Fuller 2008
Krishnan Rajeshwar 2009
Jai Prakash 2009
John Weidner 2010
Karim Zaghib 2010

Fullerenes, Nanotubes, and Carbon Nanostructures Richard E. Smalley Research Award

Sumio Ijima 2008
Phaedon Avouris 2009

Fullerenes, Nanotubes, and Carbon Nanostructures SES Research Young Investigator Award

Nikhil Koratkar 2009
Mark C. Hersam 2010

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High Temperature Materials Division Outstanding Achievement Award

J. B. Wagner, Jr. 1986
W. L. Worrell 1988
R. A. Rapp 1990
H. Schmalzried 1992
S. C. Singhal 1994
C. G. Vayenas 1996
C. Bernard 2001
H. Yokokawa 2002
K. Spear 2004
A. Virkar 2006
David J. Young 2008
Harry L. Tuller 2010

High Temperature Materials Division J. B. Wagner, Jr. Young Investigator Award

S. Mohney 1999
S. M. Haile 2001
M. Swihart 2003
R. Mukundan 2005
Xiao-Dong Zhou 2007
Juan Claudio Nino 2009

Industrial Electrochemistry and Electrochemical Engineering Division New Electrochemical Technology (NET) Award

Asahi Glass Company 1999
DeNora Tecnologie 2005
E-Tek 2005
Bayer Material Science AG 2005
Ballard Power Systems 2007
FuelCell Energy 2009

Industrial Electrochemistry and Electrochemical Engineering Division H. H. Dow Memorial Student Achievement Award

R. Bakshi 1991
G. J. Yusem 1992
J. A. Poirier 1993
S. Siu 1994
M. Vreeke 1995
A. E. Thomas 1996
S. A. Leith 1997
P. Soo 1998
S. Sriramulu 1999
K. M. Jeerage 2000
A. L. Prieto 2001
W. He 2002
J. Zhang 2003
S. Basker 2004
V. Ramani 2005
N. Jalani 2006
Brenda L. Garcia-Diaz 2007
Sunil Roy 2008
Prabeer Barpanda 2009
Brandon Bartling 2010

Industrial Electrochemistry and Electrochemical Engineering Division Student Achievement Award

Y.-E. Sung 1995
J. K. N. Mbindyo 1996
C. A. Smith 1997
J. A. Drake 1998
R. Lowrey 1999
C. Arvin 2000
B. Djurfors 2001
V. Subramanian 2002
P. M. Gomadam 2003
I. AlNashef 2004
V. Sethuraman 2006
Minhua Shao 2007
Vinten Dewikar 2008
Paul Albertus 2009
Satheesh Sambandam 2010

Luminescence and Display Materials Division Centennial Award

A. Meijerink 2004
A. Srivastava 2004
H. Guedel 2006
David J. Lockwood 2010

Organic and Biological Electrochemistry Division Manuel Baizer Memorial Award

T. Shono 1994
H. Lund 1996
H. Schäfer 1998
S. Torii 1998
J. Simonet 2000
J. Utley 2000
J. M. Savéant 2002
M. Tokuda 2004
D. Evans 2004
I. Nishiguchi 2006
Albert Fry 2008
Toshio Fuchigami 2010

Physical and Analytical Electrochemistry Division David C. Grahame Award

F. C. Anson 1983
J. Newman 1985
A. Heller 1987
M. J. Weaver 1989
B. Miller 1991
A. T. Hubbard 1993
R. M. Wightman 1995
D. M. Kolb 1997
P. N. Ross, Jr. 1999
D. A. Scherson 2001
A. Wieckowski 2003
H. White 2005
Joseph T. Hupp 2007
Héctor D. Abruña 2009

Physical and Analytical Electrochemistry Division Max Bredig Award in Molten Salt Chemistry

M. Blander 1987
G. P. Smith 1990
R. A. Osteryoung 1992
G. Mamantov 1994
N. Bjerrum 1996
H. A. Øye 1998
Y. Ito 1999
G. N. Papatheodorou 2002
M. Gaune-Escard 2004
J. Wilkes 2006
Bernard Gilbert 2008
C. Austen Angell 2010

Sensor Division Outstanding Achievement Award

J. Janata 1994
R. P. Buck 1996
I. Lundström 1998
A. J. Ricco 2000
M. Aizawa 2002
N. Yamazoe 2004
W. Heineman 2006
Chung-Chiun Liu 2008
Thomas Thundat 2010