



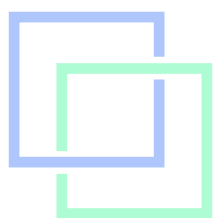
The Electrochemical Society

Advancing solid state & electrochemical science & technology

ANNUAL REPORT



2021



Perseverance and Progress

YEAR IN REVIEW



VOLUNTEER LEADERSHIP

The Electrochemical Society Mission

The mission of The Electrochemical Society is to advance theory and practice at the forefront of electrochemical and solid state science and technology, 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.

Vision

The vision of ECS is to be recognized as the steward of electrochemical and solid state science and technology. By creating uninhibited availability of the science through open access, ECS can *Free the Science*, and accelerate scientific discovery and innovation, leading the community as the advocate, guardian, and facilitator of our technical domain.

Diversity and inclusion

The Electrochemical Society strives to be an inclusive organization that promotes and values diversity. We recognize and respect the rights of all, and are committed to building and maintaining a culture that encourages, supports, and celebrates the unique backgrounds and experiences of our members, volunteers, employees, and constituents.

Diversity is our strength. It fuels innovation, enhances collaboration, enables our best accomplishments, brings us closer to the communities we serve, and advances our mission to promote electrochemical and solid state science worldwide.

Thank you

ECS gratefully acknowledges the outstanding volunteer service of our standing committees, editorial board members, and division chairs. Thank you to the members whose terms of service end in 2021.

Board of Directors

Officers

Eric Wachsman
President
University of Maryland

Turgut Gür
Sr Vice President
Stanford University

Gerardine Botte
2nd Vice President
Texas Tech University

Colm O'Dwyer
3rd Vice President
University College Cork

Marca Doeff
Secretary
Lawrence Berkeley National
Laboratory

Gessie Brisard
Treasurer
Université de Sherbrooke

Christopher Jannuzzi
Executive Director & CEO
The Electrochemical Society

Board members

Stefan De Gendt
Past President
Katholieke Universiteit Leuven

E. Taylor Jennings
Member
Faraday Technology, Inc.

Robert Micek
*Non Profit Financial
Professional*
American Beverage
Association

Division chairs

Y. Shirley Meng
Battery Division

James Noël
Corrosion Division

Peter Mascher
*Dielectric Science and
Technology Division*

Natasa Vasiljevic
Electrodeposition Division

Jennifer Hite
*Electronics and Photonics
Division*

William Mustain
Energy Technology Division

Sean Bishop
*High-Temperature Energy,
Materials, & Processes Division*

Shrisudersan Jayaraman
*Industrial Electrochemistry and
Electrochemical Engineering
Division*

Rong-Jun Xie
*Luminescence and Display
Materials Division*

Hiroshi Imahori
Nanocarbons Division

Sadagopan Krishnan
*Organic and Biological
Electrochemistry Division*

Andrew Hillier
*Physical and Analytical
Electrochemistry Division*

Jessica Koehne
Sensors Division

PERSEVERANCE AND PROGRESS

At the time of this writing, the world is in a dire state. We are now more than two years into the COVID-19 pandemic; the effects of climate change continue to threaten the planet and its future; and we are watching, in real time, the horrific humanitarian tragedy taking place in Ukraine, launched by Russia without provocation or regard to the needless devastation and suffering this action has inflicted on a sovereign people.

To be clear, the Society's mission is not political. We exist to advance the electrochemical and solid state sciences in the service of humanity. However, despite our devoutly apolitical, non-partisan stance, ECS cannot, and has not, sat idly by hoping for things to improve. As scientists and engineers, our job is to push the boundaries of discovery and advance the technologies that benefit humankind. As a scientific society, it is ECS's duty to not only disseminate this knowledge, but to advocate for the best use of this knowledge including influencing governmental policies and fighting misinformation.

Nowhere is this more evident than in the larger scientific community's response to the pandemic. First by providing an understanding of how COVID spread and how masking and social distancing could limit its spread, followed by the rapid development of tests to monitor and understand that spread, and ultimately through the deployment of new vaccines and treatments to help prevent this life-threatening disease. These are incredible, live-saving achievements, about which all members of the scientific community can be proud. It is for these reasons we are so grateful to be part of an organization whose mission is to be part of the solution to the grand challenges facing humanity in the 21st Century, and it is against this backdrop that we review the year that was for ECS.

Once again, COVID dominated every aspect of life and work in 2021, making it another uniquely challenging year. Disrupted operations, meeting cancellations, digital fatigue, the "Great Resignation," all contributed to the stress and challenges that the organization had to face, but the ECS community rose to the occasion. From minimizing the financial losses caused by COVID's impact on meetings, to finding ways to convene and connect our community despite remote operations, to launching new initiatives vital to our future success and significantly increasing the Society's net assets, this Annual Report documents in detail what a truly remarkable year 2021 was for ECS in many critical ways.

In financial terms—2021 was the most successful year ECS has experienced going back to 2011, and quite possibly since our inception. Bolstered by dramatically reduced operating costs, substantially increased revenues from

publications operations, and the outstanding performance of our investment portfolio, ECS's net assets increased by over \$3M in 2021, despite hosting no in-person meetings last year, which typically accounts for 40 percent of the Society's revenue. Also contributing to the financial success of our operations was our rapid transition to successful digital meetings, significantly limiting our COVID-related losses.

However, 2021 was not solely about enduring the pandemic and protecting against losses. For ECS it was also a time to plan for our future. In 2021, we prepared for the launch of two new journals in early 2022, *ECS Advances* and *ECS Sensors Plus*—the first native open access publications in ECS's history. *ECS Advances* is a multidisciplinary forum for peer-reviewed, high-quality content covering all technical areas supported by the Society. *ECS Sensors Plus*, our first topically focused journal, is an international platform for publishing impactful articles on the materials, structures, properties, performance, and characterization of sensing and detection devices and systems. Together with JES and JSS, our venerable flagship publications, ECS is creating a publications ecosystem to ensure we meet the publishing needs of the entire ECS Community.

The pandemic, along with the compounding crises of faltering economies, armed conflict, social unrest, and science denial on an unimaginable scale, changed virtually every aspect of how we lived and worked in 2021, and all indications are we will still be facing these challenges in 2022. Building on our success last year, coupled with critical new initiatives launching this year, the Society will continue to adapt and innovate in order to support, convene, and advocate in the service of science, as we have for the past 122 years and counting.

Our top priority is, and will always be, the well-being of our community. We wish peace and good health to you and your families, and thank you for your continued support of ECS in these uncertain times.



Eric Wachsman
ECS President
2021 – 2022



Christopher J. Jannuzzi
Executive Director & CEO

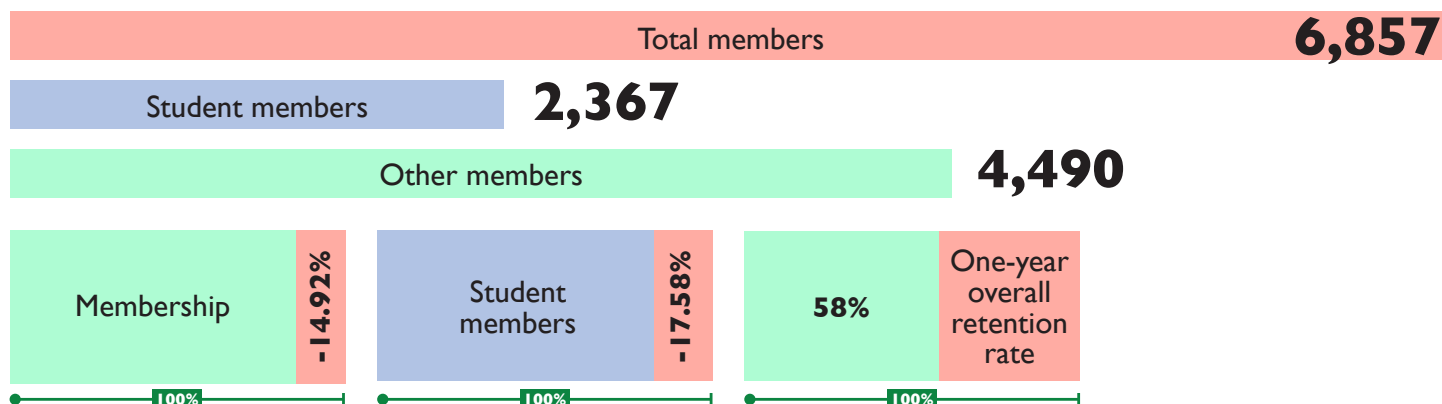
CONNECTING THE ELECTROCHEMICAL COMMUNITY

“The Society’s membership efforts connected the electrochemical community through a record number of webinars; launching our first virtual short courses; growing the number of student chapters; launching new sections; and more!”

– Shannon Reed, ECS Director of Community Engagement

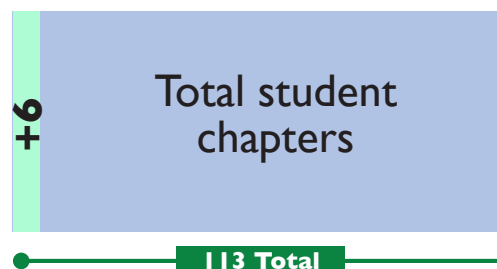


Membership



Support for ECS Student Chapters

- **\$16,741** awarded for Student Chapter Memberships by the ECS Education Fund
- **\$1,740** in Awarded Student Memberships provided by ECS divisions
- ECS student members voted in their first Society Election
- ECS welcomed **six new student chapters** in 2021 bringing the total number of chapters to 113
 - » Austria Student Chapter, *Austria*
 - » Gebze Teknik Üniversitesi, *Turkey*
 - » Harvard University, *U.S.*
 - » Jawaharlal Nehru University, *India*
 - » Massachusetts Institute of Technology, *U.S.*
 - » University of Manitoba, *Canada*
- 13 ECS Student Chapter institutions have 27+ Highly Cited Researchers (2021 Clarivate Analytics)
- ECS chapters in the top 10 institutions with the most Highly Cited Researchers are:
 - » Harvard University; Massachusetts Institute of Technology; University of California, Berkeley; University of California, San Diego; and University of Oxford



ECS Sections



The Society welcomed the new expanded ECS Mid-America Section, including members in Illinois, Ohio, Kentucky, and Indiana.

ECS sections are located in Asia, Southern Asia, Europe, Middle East, Latin America, and North America.

The High-Temperature Energy, Materials, & Processes Division (H-TEMP) celebrated 100 years!



CONNECTING THE ELECTROCHEMICAL COMMUNITY

"I've been a member of ECS since I started researching; I'll probably be a member forever! I went to my first Society meetings as a graduate student and befriended people who are now professors. We grew up in ECS. It's a really strong network and close-knit community. People are very dedicated to ECS."

— Kelsey Hatzell, Assistant Professor of Mechanical and Aerospace Engineering and the Andlinger Center for Energy and the Environment, Princeton University
2019-2020 ECS Toyota Young Investigator Fellow

Awards

\$60,500
awarded for:

8
Society
awards

7
Section
awards

19
Division
awards

\$ 60,500

10
members
inducted as
Fellows of The
Electrochemical
Society

Awards established in 2021

ECS Pacific Northwest Section Award sponsored by *Gamry Instruments* recognizes excellence in electrochemistry and solid state science and technology research in Washington, Oregon, and Idaho.

ECS Pacific Northwest Section Electrochemistry Student Award sponsored by *Thermo Fisher Scientific* recognizes promising young engineers and scientists pursuing PhDs in the field of electrochemical engineering and applied electrochemistry, and encourages recipients to continue careers in electrochemical engineering or applied electrochemistry.

ECS Corrosion Division Rusty Award for Mid-Career Excellence recognizes mid-career scientists' or engineers' achievements and contributions to the field of corrosion science and technology.

ECS Energy Technology Division Walter van Schalkwijk Award in Sustainable Energy Technology recognizes and rewards research scientists, academicians, and entrepreneurs who make innovative and transformative

contributions to sustainable energy technologies (devices, materials, and/or processes).

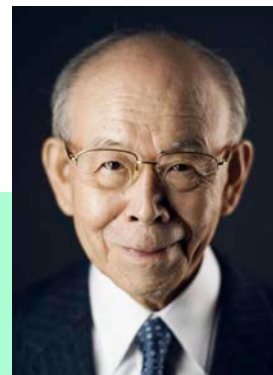
ECS San Francisco Section Award recognizes excellence in the field of electrochemical science and technology and/or solid state science and technology; acknowledges service to The Electrochemical Society; and encourages electrochemistry and solid state science and technology as a profession.

ECS Sensor Division Early Career Award recognizes promising early career engineers' and scientists' research contributions to the field of sensors; encourages recipients to continue careers in the field and remain active in the ECS Sensor Division.

ECS Sensor Division Student Research Award recognizes promising students for conducting outstanding research in the field of sensors during their graduate training, and encourages recipients to continue careers in the field and remain active in the ECS Sensor Division.

- The 2021 Queen Elizabeth Prize for Engineering was awarded to ECS Life Members Isamu Akasaki and Nick Holonyak, Jr. They shared the award with Shuji Nakamura, M. George Craford, and Russell Dupuis. They all interacted with the Society throughout their careers and published much of their critical research in ECS journals.
- The University of Maryland named ECS President Eric Wachsman "Distinguished Professor."
- ECS member Doron Aurbach was included in Stanford University's list of the top 2% of scientists in the world.

The ECS community mourned the passing on April 1, 2021, of Isamu Akasaki, 2014 Nobel laureate in Physics and longtime Society member. He gave his advice to young scientists in a 2016 interview with then ECS Vice President, Yue Kuo: **"No pain, no gain. As Edison said, 'Genius is one percent inspiration and 99 perspiration.' I say this to younger people: experience is the best teacher. Sometimes there is no royal road to learning."**

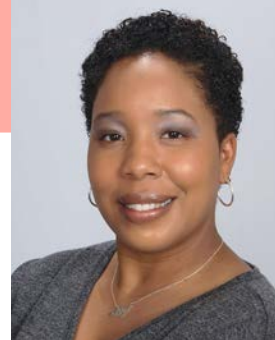


ISAMU AKASAKI

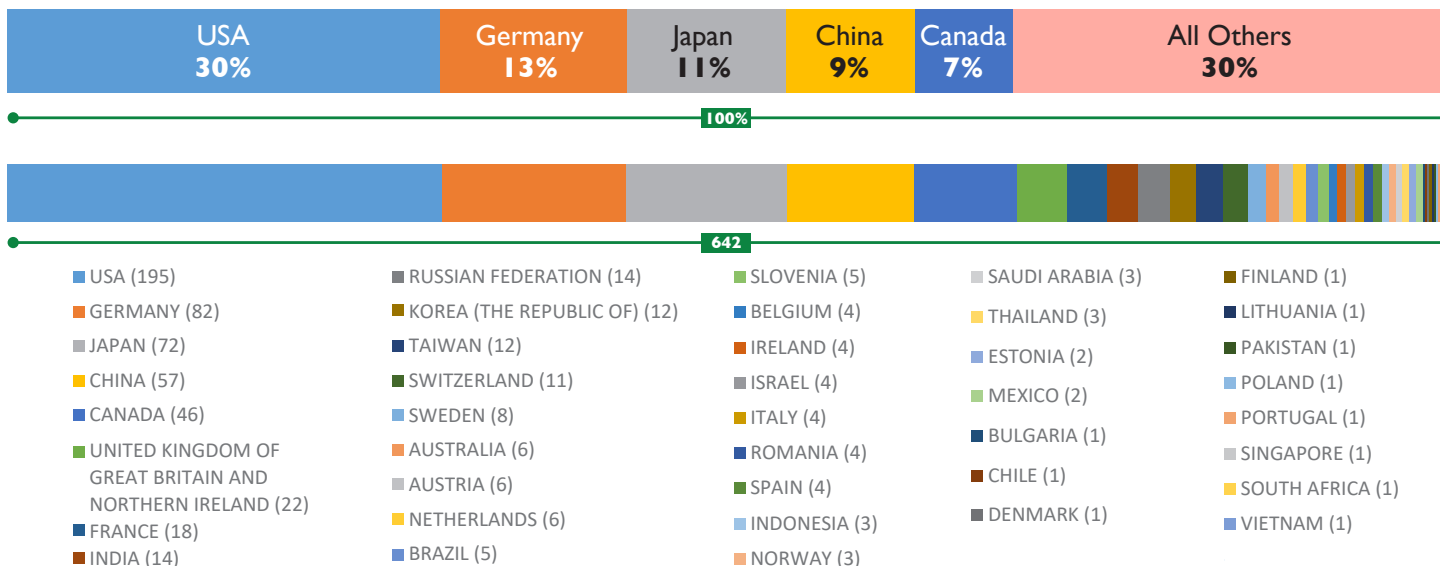
PUBLICATIONS

“We empowered researchers at the forefront of discovery through our publications, with a 72 percent increase in ECS Digital Library downloads and preparation of the launch in January 2022 of two new Gold Open Access journals, *ECS Sensors Plus* (with Ajit Khosla as Founding Editor-in-Chief) and *ECS Advances*.”

– Adrian Plummer, MPA, PMP, ECS Director of Publications



OPEN ACCESS PAPERS PUBLISHED: 642



“I had to follow the *Journal of The Electrochemical Society* when I first worked in industry. It became my dream to publish in JES. I wanted to publish data from my industry research, but it was considered confidential. When I joined a university, I realized my dream and published papers in ECS journals.”

– Shuji Nakamura, 2014 Nobel Prize Laureate in Physics, CREE Distinguished Professor, Materials, University of California, Santa Barbara



Articles and abstracts downloaded from the ECS Digital Library:

6,873,222

Journal articles published in the 2021 volume year:

2,089

Subscribing institutions publishing open access at no cost:

7

Number of papers published by subscribing institutions:

25

Percentage of articles published open access in 2021:

31%



JOHN B. GOODENOUGH

- *Interface* celebrated 30 years of publication.
- The Society completed digitizing *Interface*, making over 29 years of ECS community history available online at the ECS Digital Library on IOPScience.
- *ECS Transactions* published its 100th volume, “IV Congreso Colombiano de Electroquímica.”
- *Electrochemical Systems, Fourth Edition* by John Newman and Nitash P. Balsara was published, the first title released under a revised book program launched by the Society and Wiley Publishing, building on the longstanding joint imprint.

Longtime member John B. Goodenough’s 100th Birthday Celebration preparations began with the call for papers for a joint JES and JSS Focus Issue “**In Honor of John B. Goodenough – A Centenarian Milestone.**”

MEETINGS

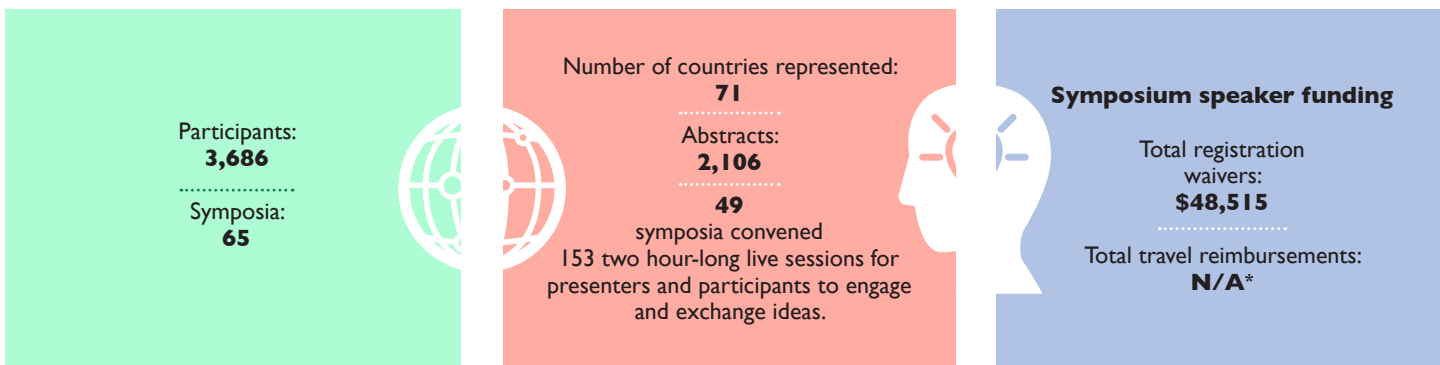


“We accelerated the speed of science by fully converting four meetings from in-person to digital events, bringing together thousands of scientists from around the world. By offering free participation, many who could not attend past in-person biannual ECS meetings, joined us for the first time. Participation in biannual meetings increased by 64 percent from 2019, the last year of in-person meetings.”

– John Lewis, *ECS Director of Meetings*

239TH ECS MEETING WITH THE 18TH INTERNATIONAL MEETING ON CHEMICAL SENSORS (IMCS18)

IMCS's first-ever digital meeting



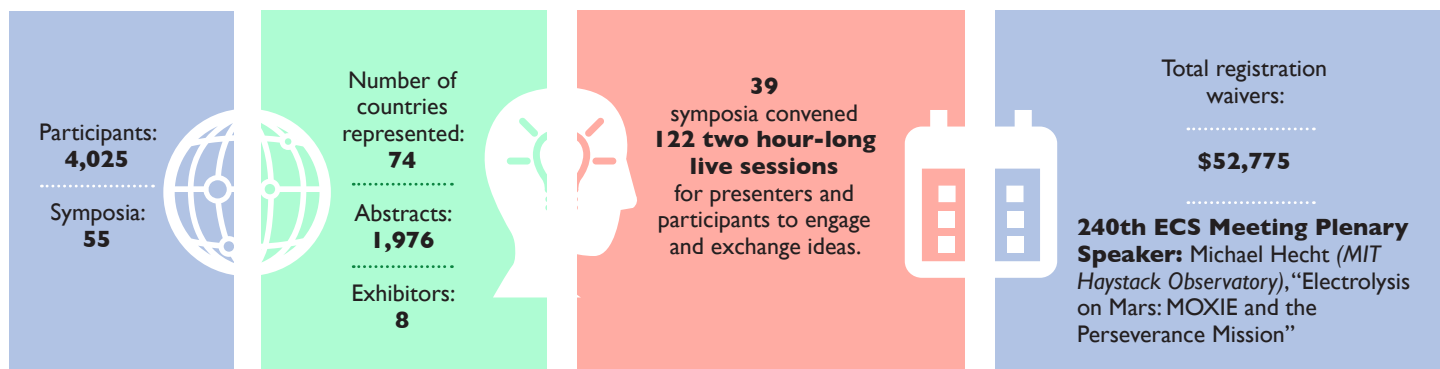
* As the meeting was digital, there were no travel reimbursements. Funding was provided for symposium award winners (\$5,300) and memberships (\$885).

TRAVEL GRANTS**



**As the meeting was digital, travel grants were allocated to memberships and registration fees for students, postdocs, and early career participants.

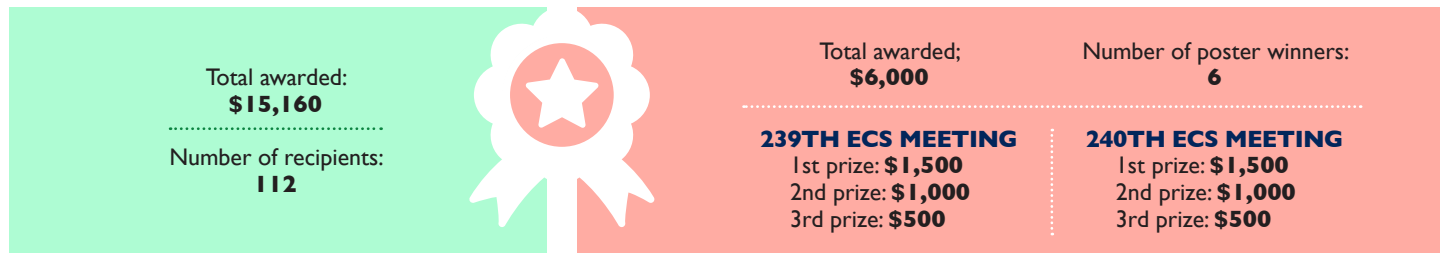
240TH ECS MEETING – Digital meeting



*As the meeting was digital, travel grants were allocated to symposium award prizes (\$2,400) and memberships (\$3,190).

TRAVEL GRANTS**

GENERAL STUDENT POSTER AWARD WINNERS



**As the meeting was digital, travel grants were allocated for memberships and registrations for students, postdocs, and early career participants.

MEETINGS

“The wisdom of the field (of electrochemistry) became apparent to me through ECS meetings. They are where my students go to get educated. ECS meetings are extremely relevant. It’s the go-to meeting if you really want to get on top of the field.”

– Nitash P. Balsara, PhD, Charles W. Tobias Chair in Electrochemistry,
Department of Chemical and Biomolecular Engineering, University of California, Berkeley



17TH INTERNATIONAL SYMPOSIUM ON SOLID OXIDE FUEL CELLS (SOFC-XVII)

Digital meeting

Sponsored by ECS and the ECS High Temperature, Energy,
Materials, & Process (H-TEMP) Division and the SOFC Society of Japan

Participants:
356

Number of countries
represented:
30



Abstracts:
300

Presentations:
263



Exhibitors:
1

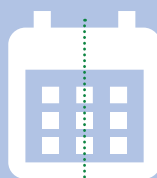
Submissions for SOFC-XVII
ECS Transactions:
209

SOFC-XVII Plenary Speakers

Shailesh Vora, U.S. Department of Energy

Daishu Hara, New Energy and Industrial Technology Development
Organization

Mirela Atanasiu, Fuel Cells and Hydrogen Joint Undertaking



David Peterson, Hydrogen and Fuel Cell Technologies Office,
U.S. Department of Energy

David Tew, Advanced Research Projects Agency – Energy

Nguyen Q. Minh, University of California, San Diego



“It is a very important achievement for me as an Afro-Colombian woman in science and an undergraduate. Awards like this encourage students who will be the new generation of scientists to understand the importance of promulgating science, attending conferences, and sharing knowledge gained through research. It was a very big challenge to make the presentation in another language, but this experience taught me that there are no limits to achieving what you want. Just participating in the event was already an achievement... this award and recognition makes more people aware and motivated to participate.”

– Claudia Patricia Granja, student, Universidad de Cali, Colombia; 239th ECS Meeting Poster Award winner



2021 SOCIETY HONOR ROLL

"We engaged and championed inclusivity, honoring and supporting members' accomplishments at every career level with existing and new honors and awards; provided more ECS Toyota Young Investigator Fellowships; and converted travel grants to meeting registrations and memberships to open doors to participation."

— Shelley Minter, Chair, ECS Honors & Awards Committee

PAST PRESIDENT OF THE SOCIETY

Stefan De Gendt, *Past President, Katholieke Universiteit Leuven/imec*

SOCIETY AWARD WINNERS

Allen J. Bard Award in Electrochemical Science

Marc Koper, *Leiden University*

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

Hiroshi Iwai, *National Yang Ming Chiao Tung University*

Olin Palladium Award of The Electrochemical Society

Gerald Frankel, *Ohio State University*

Carl Wagner Memorial Award of The Electrochemical Society

Yushan Yan, *University of Delaware*

Outstanding Student Chapter Award

Clarkson University Student Chapter

Chapters of Excellence

University of Waterloo Student Chapter

Purdue University Student Chapter

FELLOWS OF THE ELECTROCHEMICAL SOCIETY

Shekhar Bhansali, *Florida International University*

Anja Boisen, *Danmarks Tekniske Universitet*

Stanko Brankovic, *University of Houston*

Ernesto Julio Calvo, *Universidad de Buenos Aires*

Douglas Hansen, *University of Dayton Research Institute*

Jihyun Kim, *Korea University*

Jagjit Nanda, *Oak Ridge National Laboratory*

Rosa Palacin, *Instituto de Ciencia de Materiales de Barcelona*

Slava Rotkin, *Pennsylvania State University*

Xiao-Dong Zhou, *University of Louisiana at Lafayette*

ECS TOYOTA YOUNG INVESTIGATOR FELLOWS

Chibueze Amanchukwu, *University of Chicago*

"Synthesis of novel perfluoroether polymer electrolytes for energy-dense solid-state lithium metal batteries"

Christopher G. Arges, *Pennsylvania State University*

"Understanding electrochemical properties of high-temperature polymer electrolyte membranes and thin film ionomers"

Marm Dixit, *Oak Ridge National Laboratory*

"Li Metal Polymorphism and its Impact on Anode Integration in Solid-State Batteries"

Marta Hatzell, *Georgia Institute of Technology*

"A spectroscopic investigation on water dissociation mechanisms in bipolar membranes for CO₂ electrolysis"

Siddharth Komini Babu, *Los Alamos National Laboratory*

"Novel Gas Diffusion Layer architecture for Improved Performance and Durability"

SUMMER FELLOWSHIPS

Edward G. Weston Fellowship

Krishnakanth Sada, *Indian Institute of Science*

Joseph W. Richards Fellowship

Derrick Butler, *Pennsylvania State University*

F.M. Becket Fellowship

Wesley Wang, *Princeton University*

H. H. Uhlig Fellowship

Sathish Rajendran, *Wayne State University*

Colin Garfield Fink Fellowship

Ali Othman, *Clarkson University*

(continued on next page)

2021 SOCIETY HONOR ROLL

(continued from previous page)

YOUNG AUTHOR AWARDS

Bruce Deal & Andy Grove Young Author Award

Tingyu Bai, *University of California, Los Angeles*
Nicholas Hines, *Georgia Institute of Technology*
Yekan Wang, *University of California, Los Angeles*

Norman Hackerman Young Author Award

Stefan Oswald, *Technische Universität München*

ECS GENERAL SOCIETY STUDENT POSTER SESSION AWARDS

239th ECS Meeting

1st Place

Joshua Coduto, *University of Iowa*, Poster #Z01-2019
"An Algorithm for Fitting Tafel Data and Determining Kinetic Parameters"

2nd Place

Claudia Patricia Granja, *Universidad Santiago de Cali, Columbia*, Poster #Z01-2009
"Synthesis and Comparative Electrochemical Study of Mixed Metal Oxides Derived from Hydrotalcites Modified with Copper (II) and Nickel (II)"

3rd Place

Christian D. Haas, *University of Iowa*, Poster #Z01-2021
"Designing and Implementing a Tailored Alternative Data Analysis Algorithm (TADAA) to Evaluate Quasireversible Heterogeneous Electron Transfer Measurements By Square Wave Voltammetry"

240th ECS Meeting

1st Place

Sara Sheffels, *Massachusetts Institute of Technology*, Poster #Z01-1955
"Proton Transport in Hydrated GdOx Measured with GdCo Magnetic Sensing Layer"

2nd Place

Andrew May, *The City College of New York*, Poster #Z01-1710
"Comparison between Experimental Results and Models for Electrochemical Hydrogenation and Hydrogenolysis of Furfural on Cu in Acidic Media"

3rd Place

Xiujuan Chen, *West Virginia University*, Poster #Z01-1682
"Electrochemical Activation to Unlock the Potential of Manganese Sulfide As High-Performance Cathodes for Rechargeable Aqueous Zn-Ion Batteries"

LEADERSHIP CIRCLE AWARDS

Medallion Level – 65 years of membership

GE Global Research

Gold Level – 25 years of membership

Electrosynthesis Company, Inc.
Scribner Associates Inc.
Technic Inc.

DIVISION AWARDS

Battery Division Early Career Award

Sponsored by Neware

Betar Gallant, *Massachusetts Institute of Technology*

Battery Division Technology Award

Prof. Arumugam Manthiram, *University of Texas at Austin*

Battery Division Research Award

Chunsheng Wang, *University of Maryland*

Battery Division Postdoctoral Associate Research Award Sponsored by MTI Corporation and the Jiang Family Foundation

Lin Ma, *United States Army Research Laboratory*

Battery Division Postdoctoral Associate Research Award Sponsored by MTI Corporation and the Jiang Family Foundation

Wei Sun, *Westfälische Wilhelms-Universität Münster*

Battery Division Student Research Award

Sponsored by Mercedes-Benz Research & Development

Muhammad Mominur Rahman, *Virginia Polytechnic Institute and State University*

Battery Division Student Research Award

Sponsored by Mercedes-Benz Research & Development

Yang Yu, *Massachusetts Institute of Technology*

Corrosion Division Morris Cohen

Graduate Student Award

Thalia Standish, *Surface Science Western, University of Western Ontario*

Electrodeposition Division Research Award

Noam Eliaz, *Tel Aviv University*

Electrodeposition Division

Early Career Investigator Award

Jingxu Zheng, *Cornell University*

2021 SOCIETY HONOR ROLL

Energy Technology Division Research Award

Bryan Pivovar, *National Renewable Energy Laboratory*

Energy Technology Division Supramaniam Srinivasan Young Investigator Award

Iryna Zenyuk, *University of California, Irvine*

Energy Technology Division Graduate Student Award Sponsored by Bio-Logic

Charles Wan, *Massachusetts Institute of Technology*

High-Temperature Energy, Materials, & Processes Division Subhash Singhal Award

Nguyen Minh, *University of California, San Diego*

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

Akshay Subramaniam, *University of Washington*

Industrial Electrochemistry and Electrochemical Engineering Division Student Achievement Award

Eric McShane, *University of California, Berkeley*

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

Faraday Technology, Inc.

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

Urban Electric Power

Physical and Analytical Electrochemistry Division David C. Grahame Award

Bruce Parkinson, *University of Wyoming*

Sensor Division Outstanding Achievement Award

Marc Madou, *University of California, Irvine*

Sensor Division Outstanding Achievement Award

Yasuhiro Shimizu, *Nagasaki University*

A04 Battery Student Slam Poster Award Winners

Ashish Gogia, *University of Dayton*

"Interfaces and Interlayers in Solid-State Batteries"

Stephanie Spence, *Virginia Polytechnic Institute and State University*

"Next-Generation Cathodes"

Susmita Sarkar, *Purdue University*

"Sodium-ion batteries"

Jiaxun Zhang, *University of Maryland*

"Next-Generation Electrolytes and Separators"

Kevin M. Tenny, *Massachusetts Institute of Technology*

"Grid Energy Storage Systems"

SECTION AWARDS

Canada Section W. Lash Miller Award

Fiorenzo Vetrone, *Institut National de la Recherche Scientifique, Université du Québec*

Canada Section Student Award

Holly Fruehwald, *Ontario Tech University*

Europe Section Heinz Gerischer Award

Denis Noel Buckley, *Limerick University*

Korea Section Student Award

Ik Seon Kwon, *Korea University, Sejong*

Pacific Northwest Section Electrochemistry Research Award Sponsored by Gamry Instruments

Wei Wang, *Pacific Northwest National Laboratory*

San Francisco Daniel Cubicciotti Student Award

Iwnetim Iwnetu Abate, *Stanford University*

San Francisco Daniel Cubicciotti Student Award – Honorable Mention

Sarah Berlinger, *University of California, Berkeley*

San Francisco Daniel Cubicciotti Student Award – Honorable Mention

Eric McShane, *University of California, Berkeley*

NEXT GENERATION ACTIVITIES AND SUPPORT

“Academics don’t want to be in an ivory tower. Having this industrial interaction (with Toyota Research Institute of North America) has helped break the jinx of the ivory tower by being closer to practical reality, knowing what is important for industry, and not focusing on esoteric details.”

— Piran Kidambi, Assistant Professor of Chemical and Biomolecular Engineering, Vanderbilt University
ECS Toyota Young Investigators Fellow, 2020-2021



ECS Toyota Young Investigator Fellowship

As of 2021, since the founding of the fellowship program, more than

\$1.2 million

in fellowships has been distributed to young professionals and scholars pursuing research in batteries, fuel cells and hydrogen, and future sustainable technologies.



Total awarded in 2021:

\$250,000



Number of recipients:
5 at

\$50,000 each

ECS Summer Fellowships

Total awarded:
\$20,000

Number of recipients:
4 at
\$5,000 each



Colin Garfield Fink Summer Fellowship

Total awarded:
\$5,000

Number of recipients:
1 at
\$5,000 each

ECS Sponsored Meeting

**10th International Conference
on Molecular Electronics,
Lyon, France**

Digital Short Courses

The Society offered Short Courses in a virtual format for the first time. Online instruction made these intensive in-depth educational opportunities available around the world.

Over 60 total registrants



**Fundamentals of Electrochemistry: Basic
Theory and Kinetic Methods**
Instructor: Dr. James Noël

Advanced Impedance Spectroscopy
Instructor: Dr. Mark Orazem

Free the Science Week 2021

Over 160,000

journal and magazine articles and meeting abstracts accessible to everyone at no cost.

227,489 overall downloads

for JES, JSS, ECST, ECS Meeting Abstracts, and Interface, in April 2020

182,085 downloads
from April 5-11

**#FREE
THE
SCIENCE™**

ECS Digital Library
on IOPScience
paywall was down
from April 5-11.

For the week of April 5-11, a

62% increase

over the previous year

Since 2014,

over 35%

of ECS journal content
published as open access



"ECS is distinguished by its excellent reputation and long history. We're at a hugely critical point where we need to figure out how to decarbonize all industries and build a sustainable future. ECS is in an important space to be the nuclei for these emerging clean energy technologies. Whether we want to electrify chemical separations, fuel production or transportation, all of those technologies fall under the ECS umbrella."

– Shuhui Sun, Professor, Institut National de la Recherche Scientifique (INRS), Université du Québec
ECS Toyota Young Investigator Fellow, 2017-2018

Continuing education

ECS delivered

22 webinars

showcasing distinguished speakers and members of the ECS community.

ECS co-hosted the series with publishing partner IOP Publishing and PhysicsWorld.com.

Participants:
8,937



Speakers:

Prof. Zhichuan J. Xu,
Nanyang Technological University
Prof. Jennifer Rupp,
Massachusetts Institute of Technology
Prof. Jillian L. Dempsey,
University of North Carolina at Chapel Hill
Prof. Raphaële Clément,
University of California, Santa Barbara
Prof. Hiroshi Imahori, Kyoto University
Prof. Shirley Meng,
University of California, San Diego
Prof. Amy Marschillo,
Stony Brook University
Dr. Veronica Augustyn,
North Carolina State University
Prof. Ming Tang, Rice University
Dr. Chock Karuppaiah, Vetri Labs, Ohmium
Prof. John A. Rogers,
Northwestern University
Prof. Jill Venton, University of Virginia

Dr. Kelsey Bridget Hatzell,
Vanderbilt University
Prof. Jenny Pringle, Deakin University
Dr. Ranjani Viswanatha, Jawaharlal Nehru
Centre for Advanced Scientific Research
Dr. Stephen Harris,
Lawrence Berkeley National Laboratory
Prof. Iryna Zenyuk and Mr. Prantik Saha,
University of California, Irvine
Dr. Richard B. Kaner,
University of California, Los Angeles
Dr. Yan Yao, University of Houston
Dr. Reza Javaherdashti,
Eninco Engineering B.V.
Prof. Christopher Muratore,
University of Dayton, Ohio
Dr. María Escudero-Escribano,
Københavns Universitet
Prof. Anita Ho-Baillie, University of Sydney

The Society thanks our series sponsors who make it possible to offer the webinars at no cost to the ECS community:

- AC
- Admiral Instruments
- Biologic USA
- Comsol, Inc.
- Gamry Instruments
- Hiden Analytical
- HORIBA Scientific
- The Royal Society of Chemistry
- Scribner Associates Inc.
- Semilab Semiconduct

Visit the ECS Webinar Archive to view past webinars and preview upcoming events.

electrochem.org/webinars



ECS sponsored events

First International Conference on Smart Green Connected Societies 2021

This biannual conference, founded by:

- Professors Hidemitsu Furukawa and
- Ajit Khosla of Yamagata University, Japan,

is dedicated to the cause of the United Nations Sustainable Development Goals (SDGs) to accelerate Ecosystem Restoration and SDGs.

Stanford University StorageX Initiative Webinars

The series of interactive symposia hosted by StorageX faculty co-directors:

- Yi Cui
- William Chueh

brings together global experts to discuss the latest advances and breakthrough research in energy storage.

6th Annual Next Generational Electrochemistry (NGenE) Workshop: Inescapable

Up to 40

advanced U.S. graduate students and postdocs participated in an intense weeklong summer workshop exploring advanced electrochemistry topics.

FINANCIAL STATEMENTS



We are pleased to present the audited financial statements of ECS for the year ended December 31, 2021. These reports indicate that our financial health continues to be strong and that we continue to work toward the Society's objectives of contributing to the advancement of electrochemical and solid state science through the dissemination of technical content.

Comparing the Statement of Financial Position at December 31, 2021, to the previous year, total assets increased by about \$3.26 million. This was the result of an increase in total net assets of \$3.02 million, plus an increase in total liabilities of \$240 thousand.

Reviewing the Statement of Changes in Net Assets for the year ended December 31, 2021, total net assets increased by \$3.02 million. The increase was a result of operating revenues totaling \$5.4 million, plus investment income gain of \$3.1 million, less the net decrease in the fair value of investments of \$163 thousand, and expenses of \$5.3 million. The increase in operating revenue was primarily due to Publications subscriptions revenue. The investment portfolio yielded a \$2.96 million return.

The total operating expenses increased compared to the prior year. Although the spring and fall meetings were held virtually, all personnel expenses associated with the Meetings department were applicable.

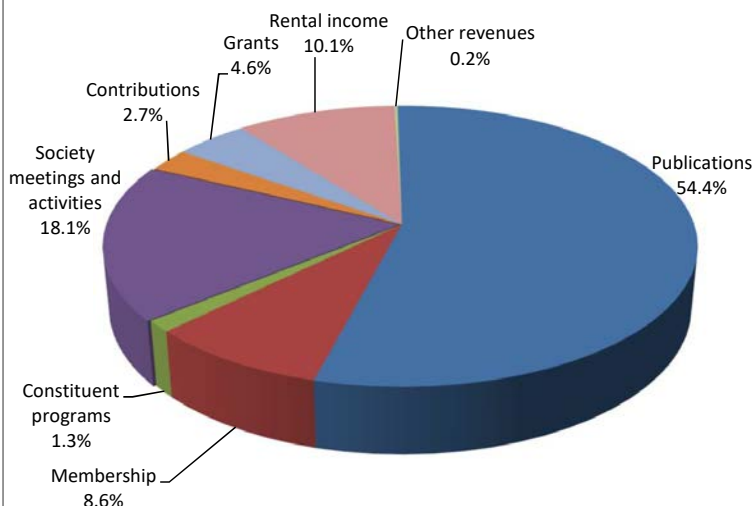
The Society's *Statement of Financial Position* reflects assets of \$23.6 million. Of these total assets, about 65 percent are either custodial or endowment funds. Growth in these funds is important because it is clear that there will be pressure to generate financial support through investment and contribution revenues. Changes in the scientific publishing industry have inspired the Society's *Free the Science* open access initiative, the goal of which is to make ECS content free to publish and free to access. ECS Digital Library subscription revenue, over time, will begin to decline. In anticipation of a declining subscription revenue model, ECS continues to look for opportunities to generate additional revenues and operating margins from both traditional and new revenue sources. Our broader financial goal is to avoid the use of the endowment funds to cover operating expenses, for as long as possible, enabling the funds to maintain future growth.

From an operational perspective, 2021 saw increases in the investment portfolio and positive financial performance of some of our program areas. We anticipate the continued need for program revenue, margin growth, and growth in our investment portfolio to fund advances in our programs, the broader dissemination of our content, and open access initiatives. We continue to take steps toward our goal of maintaining a status of operational breakeven or better each year.

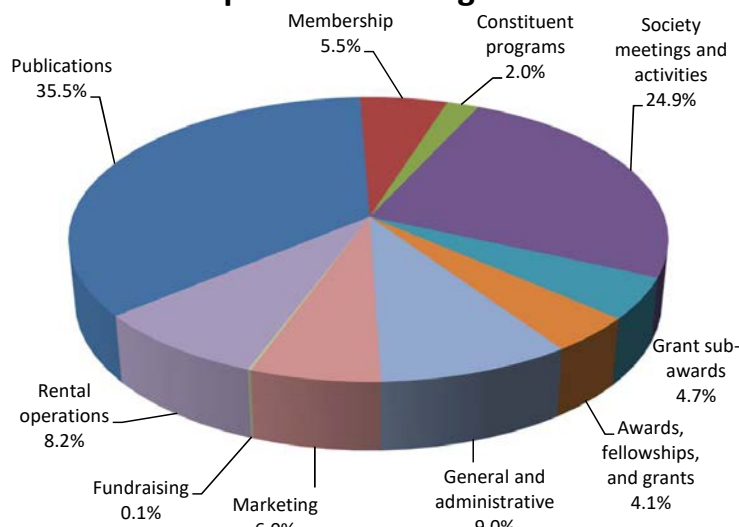
Gessie Brisard, Treasurer

Tim Gamberzky, Chief Operating Officer and Chief Financial Officer

ECS Revenue Percentages - 2021



ECS Expense Percentages - 2021



The Electrochemical Society is a nonprofit international association of scientists and engineers chartered as a tax-exempt organization under Section 501(c)(3) of the United States Internal Revenue Code. The Board of Directors engages the services of an independent auditor to assure that the Society maintains an effective system of financial management, and operates under its nonprofit charter. The Board of Directors received an opinion from their independent auditors, Lear & Pannepacker LLP, that the financial statements present fairly, in all material respects, the financial position of The Electrochemical Society, Inc. and Subsidiary as of December 31, 2021.

To obtain a complete copy of the Audit Financial Statements, interested parties can email their request to sophiap.jorge@electrochem.org.

NOTE: Marketing expense depicted above does not include marketing expenses for program-specific purposes. Those expenses are included in the individual program areas.

CONSOLIDATED STATEMENT OF FINANCIAL POSITION (At December 31, 2021 and 2020)

ASSETS	2021	2020
Cash and cash equivalents	\$2,436,479	\$1,879,581
Accounts receivable, net	439,360	260,887
Prepaid expenses, deposits, and other assets	255,334	174,770
Investments in marketable securities	16,551,335	14,007,177
Custodial account investments	424	424
Rent Receivable	29,088	57,130
Investments in real estate:		
Land	1,603,427	1,603,427
Buildings, less accumulated depreciation of \$1,012,599 and \$285,521	2,296,556	2,370,059
Intangible assets	-	-
Total assets	\$23,612,003	\$20,353,455

LIABILITIES AND NET ASSETS

<i>Liabilities</i>		
Accounts payable and accrued expenses	\$376,464	\$208,805
Deferred revenue	1,605,778	1,556,212
Custodial account liability	2,260	2,262
Other Liabilities	73,037	42,713
Deferred compensation	2,295	10,413
<i>Net Assets</i>		
Unrestricted	19,773,954	16,795,628
Donor restrictions perpetual in nature	985,068	985,068
Purpose restricted	793,147	752,354
Total net assets	21,552,169	18,533,050
Total liabilities and net assets	\$23,612,003	\$20,353,455

CONSOLIDATED STATEMENT OF CHANGES IN NET ASSETS (For the years ended December 31, 2021 and 2020)

REVENUES		
Publications	\$2,940,847	\$2,738,279
Membership	466,438	557,639
Constituent programs	72,026	39,359
Society meetings and activities	975,064	893,962
Investment income	-	-
Contributions	143,996	71,848
Grants	250,378	150,000
Rental income	547,573	583,327
Other revenues	9,998	91,194
Total Revenues	5,406,320	5,125,608

EXPENSES

<i>Program services</i>		
Publications	\$1,897,521	\$1,918,303
Membership	292,431	374,577
Constituent programs	107,573	132,639
Society meetings and activities	1,327,875	1,183,358
Grant sub-awards	251,075	150,040
Awards, fellowships, and grants	217,860	215,413
Total Program Services Expenses	4,094,335	3,974,330
<i>Supporting services</i>		
General and administrative	478,526	445,667
Marketing	323,046	258,661
Fundraising	6,724	6,934
Rental operations	440,098	413,501
Total Supporting Services Expenses	1,248,394	1,124,763
Total Expenses	5,342,730	5,099,094
Increase in net assets from operations	63,591	26,515
Investment Income	3,118,666	(1,117,551)
Net change in fair value of investments	(163,138)	1,620,043
Change in net assets	3,019,119	529,007
Net assets, beginning of year	18,533,050	18,004,043
Net assets, end of year	\$21,552,169	\$18,533,050

These financial statements are a condensed version of the audited statements of ECS for the years ending December 31, 2021 and 2020. ECS is pleased to provide complete copies along with all footnotes and the unqualified report of our auditors upon request.



1 - Summary of Significant Accounting Policies

The consolidated financial statements include the accounts of The Electrochemical Society, Inc. (the Society) and its Divisions, Groups, and Sections, and ECS Holdings, LLC, (the LLC). All intercompany balances and transactions have been eliminated in consolidation. The consolidated financial statements are prepared on the accrual basis of accounting. Revenue, other than contributions, is recognized when earned, and expense is recognized when the obligation is incurred.

The consolidated financial statements have been prepared to focus on the Society and its subsidiaries 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 are 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 United States 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, the 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, 2021.

3 - Investments

Investments in equities and fixed income instruments are reported at fair market value (FMV). Investment income and realized and unrealized net gains and losses on investments of restricted net assets are reported as increases or decreases in net assets subject to donor restrictions. Investment income and realized and unrealized net gains and losses on investments of net assets not subject to donor restrictions are reported as increases or decreases in unrestricted net assets. Market values at December 31, 2021, are summarized as follows:

	VALUE
Equities (FMV)	\$12,260,846
Corporate bonds (FMV)	\$1,070,484
Mutual Funds (FMV)	\$105,859
U.S. Treasuries (FMV)	\$2,722,509
Real estate investment trust (FMV)	\$391,637
TOTAL	\$16,551,335

4 - Endowment Funds

The Society’s endowment funds consist of several funds established to support awards, as well as an education fund and *Free the Science* fund. These funds include both donor-restricted funds and funds designated by the Board of Directors. 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 restricted net assets the original value of gifts donated to the fund and the original value of subsequent gifts to the fund.

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 \$5,198,213. The Society occupies one of the five buildings and all are classified as an investment. The LLC leases office space in these four buildings to various tenants under operating lease arrangements expiring through 2025. Rental income under the aforementioned leases totaled \$547,573 (excluding intercompany rentals of \$92,946) for the year ended December 31, 2021.

Report of the ECS Audit Committee

The ECS Audit Committee provides oversight of The Electrochemical 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 2021 were Stefan De Gendt (Chair), Gessie Brisard, Turgut Gür, Eric Wachsman, and Robert Micek.

The ECS Audit Committee 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 recommended for acceptance to the Board of Directors the audited financial statements for the year ended December 31, 2021, and the Board unanimously approved.



CORPORATE AND INSTITUTIONAL DONORS

“There was no specific department that overlapped directly with my graduate research interests combining mechanical and chemical engineering, and electrochemistry. I was interested in a multidisciplinary place, where I could learn from others, attend related symposia, and network for collaborations and career opportunities. I found my professional home in ECS which is at the forefront of emerging clean energy technologies, batteries, and fuel cells.”

– Ahmet Kusoglu, *Chemist Staff Scientist/Engineer, Lawrence Berkeley National Laboratory (LBNL)*
2017-2018 ECS Toyota Young Researchers Fellow
LBNL Member Representative

ECS thanks these companies and institutions. With their support, ECS advances the world’s most cutting-edge research through meetings and publications.

Air Liquide
ALine, Inc.
ALS Co., Ltd
American Chemical Society Sensors
Applied Materials, Inc.
Army Research Office
ASM
BASi
BioLogic USA
Bloom Energy
Central Electrochemical Research Institute
Cummins, Inc.
Cymmetrik
Deutsches Zentrum für Luft- und Raumfahrt (DLR)
Duracell
ECS Sensor Division
EIT Raw Materials
EL-CELL
Electrosynthesis Company, Inc.
Elsevier
Energizer
Faraday Technology, Inc.
Ford Motor Company
Gamry Instruments
GE Global Research Center
Gelest Inc.
General Motors Holdings LLC
Georgia Institute of Technology
Giner, Inc.
GS-Yuasa Corporation
Hiden Analytical Inc.
Honda R&D Co., Ltd.
Hydro-Québec
IMCS – CMC Microsystems
Ion Power
JSPS Grant-in-Aid for Transformative Research Areas,
Dynamic Exciton: Emerging Science and Innovation
Kanto Chemical Co., Inc.

KWJ
Lam Research
Lawrence Berkeley National Laboratory
Los Alamos National Laboratory
MDPI
Mattson Technology, Inc.
Medtronic, Inc.
Microsoft Corporation
National Science Foundation
Neware Corporation
Nissan Motor Co., Ltd.
Occidental Chemical Corporation
Office of Naval Research
Pacific Northwest National Laboratory (PNNL)
Panasonic Corporation
Permascand AB
Photon etc.
Pine Research Instrumentation
Sandia National Labs
Scribner Associates Inc.
Semilab SDI, LLC
Sensirion AG
Shanghai MeeHealth Healthcare IT Company
SPEC Sensors
Taiyo Nippon Sanso
Technic, Inc.
TEL
Teledyne Energy Systems, Inc.
Thermo Fisher
Toyota Research Institute of North America
Umicore Precious Metals NJ, LLC
Waterloo Institute for Nanotechnology,
University of Waterloo
Western Digital GK
Westlake
Yeager Center for Electrochemical Sciences at CWRU
Yield Engineering Systems, Inc.
ZSW, Center for Solar Energy & Hydrogen Research

INDIVIDUAL DONORS

"Recognizing achievement through honors and awards is a hallmark of The Electrochemical Society. ECS endows some; others our members create. This year, long-standing ECS and Energy Technology Division member Dr. Walter van Schalkwijk generously endowed a new award for researchers, academics, technologists, and entrepreneurs making innovative and transformative contributions to sustainable energy technologies. We are very excited to use this new platform to showcase our colleagues' contributions."



– William Mustain, ECS Energy Technology Division Chair

Thank you to our generous individual donors whose support makes the Society's mission to move science forward possible today and tomorrow.

Kuzhikalail M. Abraham
Miguel Angel Abrego Tello
James C. Acheson
Michael Adachi
Brahim Ahammou
Mahmoud Gamal Ahmed
Nadiyah Alahmadi
Kristen Alanis
Dalva Alves de Lima Almeida
Khalil Amine
Lawrence Anderson
Susumu Arai
Alberto Nova Araujo
Blanca Isabel Arias Serrano
Thomas M. Arruda
Masamichi Asano
Mariam Awara
Albert G. Baca
Palani Balaya
Perla B. Balbuena
Andrea Balducci
JH Bang
Pete Barnes
Fiona Barry
Rajesh Baskaran
Cameron Donald Bathgate
Estate of Theodore R. Beck
Michael Bending
Valerie Bertagna II
Vikrant Kumar Beura
Jolly Bhadra
Gili Bisker
Lindsey Blohm
Marta Boaro
Pierre Boillat
Vincenzo Bongiorno
Trevor Michael Braun
Gessie Brisard
Kelly Brown
Peter G. Bruce
Justin C. Bui
Estate of Kathryn Bullock
Keith T. Burnette
Chiara Busa
Scott A. Calabrese Barton
Catherine Carlin
Michael K. Carpenter
Ronald A. Carpio
Murat Ceylan

Chanyut Chayawattana
Aicheng Chen
Chao-Yu Peter Chen
Hui Chen
Jingyuan Chen
Pascale Chenevier
Xiyuan Cheng
Alexandr Ilich Chernomorski
Giovanni Pietro Chiavarotti
Yu Chikaoka
Jaesik Chung
Xin Cui
Zeus De los Santos
Steven C. DeCaluwe
Carsten Deibel
Howard D. Dewald
Luis A. Diaz Aldana
Ahmad Diraki
Marca M. Doeff
Megan M. Dorri
Christopher J. Easley
S. Elangovan
Ahmet Gün Erat
Bastian J. M. Etzold
Stephen Exarhos
Jeffrey A. Fagan
Larry R. Faulkner
Hai Feng
James M. Fenton
Jeffrey W. Fergus
Fernando Massa Fernandes
Christina Forbes
Antoni Forner-Cuenca
Randall Fowler
Martin Frankenberger
Estate of Robert P. Frankenthal
K. Andreas Friedrich Jr.
Ingrid Fritsch
Mathias Fritz
Shinji Fujimoto
Yasuhiro Fukunaka
Tao Gao
Pablo Angel Garcia-Salaberri
Fernando H. Garzon
Hubert Gasteiger
Cristina Gentili
Don F. Gervasio
Federico Giannini
Kellie Gilbert

Baltej Singh Gill
Hubert H. Girault
Tobias Glossmann
David Go
David Alexandro Graves
Lorenz Gubler
Dirk M. Guldi
Oystein Gullbrekken
Hongliang Guo
Turgut M. Gür
Arturo Gutierrez
Salvador Gutierrez-Portocarrero
Joel I. Haberman
Elena Haddon
David Fredrik Hakala
Amir Hamid
Leslie Charles Hardy
Eneli Hark
Akari Hayashi
Hidetaka Hayashi
Rong He
Ester Heath
Kurt R. Hebert
Arman Hejazi
Adam Heller
Dennis W. Hess
Philipp Heugel
Seiichiro Higashi
Mariana Hildebrand
Abdelkader Hilmi
Fumihiko Hirose
Michael Hoff
Curtis F. Holmes
Natalie A. W. Holzwarth
Jefferson Honorio Franco
Teruhisa Horita
W. Jean Horkans
Lisa M. Housel
Brandon Daniel Howard
Enyuan Hu
Shu Hu
Gary W. Hunter
David Steven Hurt
Bing-Joe Hwang
Haejin Hwang
Ioannis Ieropoulos
Ahamed Irshad M.
Hiroshi Ito

Hiroyuki Ito
Etsuro Iwama
Greg S. Jackson
Rémy Richard Jacquemond
Christopher Jannuzzi
Jemin Jeon
The Jiang Family Foundation
Jianbing Jimmy Jiang
Yongkang Jin
Christopher S. Johnson
Derek A. Johnson
Eric A. Joseph
Norbert Jux
Hironori Kaji
Nitul Kakati
Hideyuki Kanematsu
Chan Soon Kang
Chockalingam Karuppaiah
Jun Kawaji
Yumiko Kawano
Kenta Kawashime
Robert G. Kelly
Hessan Khalid
Aniruddh Jagdish Khanna
Sanjay J. Khatau
Hyeonghun Kim
Minkyu Kim
Su-Kyung Kim
Yongjae Kim
Evangelia Kiosidou
Marco Kirm
Yasuhiro Kobori
Jessica Koehne
Ruediger Koetz
Suryanarayana Kolluri
Masatoshi Koyama
Ulrike Krewer
Ryoma Kumagai
Sriram Kumar
B. Leo Kwak
Lynne LaRochelle Richard
Kelly C. Lazzaroni
Robert T. Leah
Gabriel Adrien LeBlanc
Johna Leddy
Da-Hoon Lee
Doohee Lee
Tae-Ju Lee
Mark C. Lefebvre

INDIVIDUAL DONORS

Yu Leng
Lin Feng Li
Min Li
Mohan Li
Phoebe Li
Shuxing Li
Wenzhen Li
Ye Li
Yan-Kui Liang
Bruce E. Liebert
Feng Lin
Jing-Wei Lin
Qiyuan Lin
Clovis A. Linkous
Shawn Litster
Feng Liu
Haodong Liu
Hengzhou Liu
Maggie Liu
Te-I Liu
Sheena Louisia
Zijie Lu
Stuart B. Lyon
Neal Ma
Tianxiao Ma
Tyler X. Mahy
Stephen Maldonado
Gael Maranzana
Surendra K. Martha
Sanela Martic
Kazuma Matsui
Hajime Matsumoto
Yoshiaki Matsuo
Toyoaki Matsuura
Alexis Maurel
James A. McIntyre
David C. McNulty
Guowen Meng
Kenneth L. Menningen
Rotraut Merkle
Michael Metzger
Jeremy P. Meyers
Robert Micek
Prateek Mittal
Tomofumi Miyashita
Yuhei Miyauchi
Yasunobu Mizutani
Harry Keith Moffat
Thomas Polk Moffat
Nahla B. Mohamed
Bapuji Mohapatra
Mariana Monteiro
Alessandro Hugo Monteverde
Joy Marie Mora
Venkata Sai Sriram Mosali
Robert Mroczynski
Sanjeev Mukerjee
Guido Mul
Pavithra Murugavel Shanthi
Noseung Myung

Hironori Nakajima
Tatsuya Nakamura
Jagjit Nanda
Ciro Napoletano
Sri Narayan
Riccardo Narducci
David Brian Naughton
Jeanne N'Diaye
Bernd J. Neudecker
Trung Van Nguyen
Naoya Nishi
Michael Njuki
Cora Noble
Takeshi Nogami
Jorge Luis Ocampo Espindola
Patrick Ian Oden
Colm O'Dwyer
Yusuke Ogihara
Hyeseong Oh
Seungmin Oh
Simon Edward James O'Kane
Toshikazu Okubo
Anna Olsen
Takahito Ono
Ozlem Ozcan
Stephen J. Paddison
Gabriele Panzeri
Linsea Paradis
Habin Park
Osvaldo Pensado
Peter N. Pintauro
Elizabeth J. Podlaha
Jeffrey Poirier
Olga Y. Polevaya
Joseph L. Powell
Mo Qiao
Haozheng Qu
A. V. Radha
Muhammad Musaddique Ali
Rafique
Y. K. Rao
Shannon C. Reed
Sarish Rehman
W. Matthew Reichert
Jonas Rein
Tatyana Reshetenko
Francisco Restrepo
Cynthia A. Rice
Donald A. Robinson
Marco-Tulio F. Rodrigues
Teofilo Rojo
Uwe Rossow
Ashish Rudola
Haruka Saito
Yutaro Sakamoto
Michael D. Sanders
Yoshitaka Sasago
Keith Y. Sasaki
Yoshinori Sato
Yoshinori Satou

Emily Searles
Jieren Shao
Yang Shao-Horn
Scott K. Shaw
Masahiro Shimizu
Yasuhiro Shimizu
David W. Shoesmith
Kurt D. Sieber
Carla Oliveira Pereira Silva
Eddy R. Simoen
David M. Sims
Poom Sittisomwong
Mohammad Soltani
Hanna Sopha
Narasi Sridhar
Rengaswamy Srinivasan
Suresh Sriramulu
John A. Staser
Daniel Steingart
Hans-Georg Steinrück
Benjamin Strehle
Eric M. Stuve
Akshay Subramaniam
Venkat R. Subramanian
Wataru Sugimoto
Yipeng Sun
Graeme McCallum Suppes
Katsuaki Suzuki
Greg M. Swain
Mark D. Symes
Ryo Takata
Kazuhisa Tamura
Samantha Tan
Cheng Tang
Li Tang
Tanvir Reza Tanim
Ying Fan Tay
David Early Tew
Hazhir Teymourian
Michael M. Thackeray
Jivan Thakare
Todd Thompson
Chris Thomsen
Jiashen Tian
Carl W. Townsend
Hoang Phi Tran
Liliana Trevani
Paul Chappell Trulove
Wei-Tsu Tseng
Hiroaki Tsuchiya
Mingjie Tu
John Augustus Turner
Tomoki Uchiyama
Atsushi Ueda
Naoki Ueda
Ulderico Ulissi
Nils Ulrich
Walter A. van Schalkwijk
Natasa R. Vasiljevic
Mariana Madelen Vasquez

Lucien Veleva
Muthuraja Velpandian
Ramakrishnan Venkataraman
Nataliia Vereshchuk
Carlos Villa
Eric D. Wachsman
Maximilian Wagner
Robert John Wainright
Jan Wallis
Chunyang Wang
Jyun-Siang Wang
Ting Wang
Yudong Wang
Yufeng Wang
Hikari Watanabe
Adam Z. Weber
Li Wei
John Weidner
David P. Wilkinson
Clinton S. Winchester
Terence Kin Shun Wong
Ryszard Jozef Wycisk
David Xia
Xinyi Xia
Hongyi Xu
Sheng Xu
Tongtong Xuan
Zvi Yaari
Nandakishor Yadav
Kaoru Yaegashi
Shuo Yan
Hui Ying Yang
Xingyi Yang
Lietai Yang
Sanjida Yeasmin
Inwon Yeu
Jihong Yim
Wonseok Yoon
Kazunari Yoshida
Yasuo Yoshimi
Robert Scott Young
Xiaozi Yuan
Giovanni Zangari
John M. Zavada
Yangbing Zeng
Zhenhua Zeng
Chao Zhang
Guangsheng Zhang
Ronghuan Zhang
Songwei Zhang
Wu Zhang
Yuxuan Zhang
Xueru Zhao
Meng Zhou
Nanxin Zhou
Hongli Zhu
Mengnan Zhu
Zhaoran Zhu
Yixi Zhuang
Joseph Michael Ziegelbauer

2021 INSTITUTIONAL MEMBERS

Thanks to its Institutional Members, ECS supports scientific education, sustainability, and innovation, and serves as lead advocate, guardian, and facilitator of electrochemical and solid state science and related technologies.



2021 Leadership Circle Awards

Medallion Level – 65 years of membership



GE Global Research

Gold Level – 25 years of membership

Electrosynthesis

Electrosynthesis Company, Inc.



Scribner Associates Inc.



Technic Inc.

Benefactor

BioLogic USA (13*)
Duracell (64)
Gamry Instruments (14)

Gelest Inc. (12)
Hydro-Québec (14)
Pine Research Instrumentation (15)

Patron

Energizer (76)
Faraday Technology, Inc. (15)
GE Global Research Center (69)

Lawrence Berkeley National Laboratory (17)
Scribner Associates Inc. (25)
Toyota Research Institute of North America (TRI-NA) (13)

Sponsoring

BASi (6)
Central Electrochemical Research Institute (28)
DLR-Deutsches Zentrum für Luft- und Raumfahrt e.V. (13)
Electrosynthesis Company, Inc. (25)
EL-CELL GmbH (7)
Ford Motor Corporation (7)
GS-Yuasa International Ltd. (41)
Honda R&D Co., Ltd. (14)

Medtronic, Inc. (41)
Nissan Motor Co., Ltd. (14)
Pacific Northwest National Laboratory (PNNL) (2)
Panasonic Corporation (26)
Permascand AB (18)
Teledyne Energy Systems, Inc. (22)
ZSW-Center for Solar Energy & Hydrogen Research Baden-Württemberg (17)

Sustaining

Cummins, Inc. (3)
General Motors Holdings LLC (69)
Giner, Inc./GES (35)
Ion Power, Inc. (7)
Kanto Chemical Co., Inc. (9)
Los Alamos National Laboratory (13)
Microsoft Corporation (4)

Occidental Chemical Corporation (79)
Sandia National Laboratories (45)
Technic, Inc. (25)
Western Digital GK (7)
Westlake (26)
Yeager Center for Electrochemical Sciences at CWRU (23)

*Membership years

Help continue the Society's vital work by joining as an ECS Institutional Member today.
Contact Anna.Olsen@electrochem.org for more information.

WAYS TO GIVE



Send a check

*The Electrochemical Society
65 South Main Street,
Building D
Pennington, NJ 08534*



For more information, email development@electrochem.org

Stipend/Award

Donate your stipends or awards to ECS.

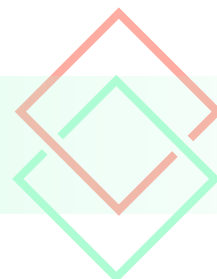


Recurring

Give monthly with a recurring credit card payment.



Make a gift at
www.electrochem.org



Transfer Securities

Make a tax deductible contribution of stocks, bonds, and/or mutual funds.



Carl Hering Legacy Circle

Support the future of ECS with a planned gift in your will.

Employer Match

Have your employer match your donation.



The Electrochemical Society (ECS) is a nonprofit international association of scientists and engineers chartered as a tax-exempt organization under Section 501(c)(3) of the United States Internal Revenue Code. ECS's U.S. Tax ID: 13-177126.