Advanced Energy Storage

scialog 2018®

The Second Annual Scialog Conference
November 8-11, 2018 at Westward Look Resort
Tucson, Arizona

Alfred P. Sloan FOUNDATION

RESEARCH CORPORATION *for* SCIENCE ADVANCEMENT

Objectives

Engage in dialogue with the goal of accelerating high-risk/high-reward research.

Identify and analyze bottlenecks to advancing energy storage and develop approaches for breakthroughs.

Build a creative, better-networked community that is more likely to produce breakthroughs.

Form teams to write proposals to seed novel projects based on highly innovative ideas that emerge at the conference.

Process

Brainstorming is welcome; don't be afraid to say what comes to mind.

Consider the possibility of unorthodox or unusual ideas without immediately dismissing them.

Discuss, build upon and even constructively criticize each other's ideas – in a spirit of cooperative give and take.

Make comments concise to avoid monopolizing the dialogue.

Diversity, Inclusion and Avoiding Harassment

Research Corporation for Science Advancement fosters an environment for listening and considering new ideas from a diverse group, with respect for all participants without regard to gender, race, ethnicity, sexual orientation, age or any other aspect of how we identify ourselves other than as fellow scientists.

RCSA does not tolerate any form of harassment, which could include verbal or physical conduct that has the purpose or effect of substantially interfering with anyone else's participation or performance at this conference, or of creating an intimidating, hostile, or offensive environment; any such harassment may result in dismissal from the conference.

From the President

Welcome to Research Corporation's 2018 *Scialog: Advanced Energy Storage* meeting. This is the second of three Scialog meetings on this theme. We are delighted to have the Alfred P. Sloan Foundation join Research Corporation as a cosponsor of Scialog this year.

The goal of this Scialog is to catalyze theorists, computational scientists, and experimentalists across multiple disciplines to collaborate on developing new and innovative projects to accelerate fundamental science to drive advances in energy storage.

Scialog's over-arching purpose is to help solve real-world problems of global significance by catalyzing innovative, basic research leading to fundamental discoveries. Our focus is on scientists in the early years of their independent careers. Through the unique Scialog process, we seek to lay the foundation for an ongoing, highly creative, cross-disciplinary community of energy scientists that will prove adept at identifying exciting areas for research advances.

To that end, under the guidance of Senior Program Directors **Richard Wiener** and **Silvia Ronco**, we hope you will be engaged in passionate discussions with colleagues, many of whom you will have met for the first time at Scialog. The process may even push you out of your comfort zone with the goal of stimulating new and better ideas. The result, we expect, will be a meeting unlike others that you attend. We are confident that you will find the next few days to be extremely worthwhile.

This is your opportunity to air that wild idea you have been reluctant to share with others, or to discuss a nagging hunch that does not yet have sufficient supporting data, or to take a leap on a high-impact/high-risk project instead of concentrating all your effort on somewhat more "incremental" studies. This is the time to come up with, and be open to, completely new ideas that may truly change the world.

We hope this first meeting on this topic yields a crop of outstanding team proposals, which will make our job of determining who receives funding very challenging. I wish you every success in exploring new and compelling ideas over the next few days.

Have a terrific meeting!

Daniel Linzer
President
Research Corporation for Science Advancement

From the Program Director

This year Research Corporation and the Alfred P. Sloan Foundation are cosponsoring the second annual meeting of *Scialog: Advanced Energy Storage*. Research Corporation's highly interactive Scialog meetings have the goal of catalyzing new collaborations based on blue-sky ideas among Scialog Fellows who constitute a highly select group of exemplary early career U.S. scientists. The emphasis is on dialogue, networking, and building new collaborations to pursue novel high-risk discovery research. The second meeting is always an exciting opportunity for returning Fellows to once again experience the unique aspects of Scialog and new Fellows to participate for the first time.

Research Corporation chose to focus on advanced energy storage because we believe this critical area of science requires major breakthroughs in fundamental understanding of electrochemical and physical processes that will lead to a new era of technological advance. Just as firmly, we believe these breakthroughs can be accelerated by chemists, engineers, material scientists and physicists working collaboratively on novel, high-risk projects, particularly with theorists and experimentalists combining efforts.

We have one outstanding keynote speaker:

→ **Sarbajit Banerjee**, Texas A&M University

Along with **Sarbajit**, we have a lineup of outstanding discussion facilitators: **Mookie Baik**, Korea Advanced Institute of Science and Technology, **George Crabtree**, Argonne National Laboratory, **Prashant Kamat**, University of Notre Dame, **Karl Mueller**, Pacific Northwest National Laboratory, **Amy Prieto**, Colorado State University, **Stan Whittingham**, Binghamton University, and **Yiying Wu**, Ohio State University.

Evan Michelson, a Program Director at the Alfred P. Sloan Foundation, is also joining us for the meeting and looking forward to interacting with Fellows and Facilitators. We also have two representatives from the Science Philanthropy Alliance, **Kate Lowry** and **Sue Merrilees**.

Scialog conferences focus on dialogue and team building with the goal of creating novel strategies and collaborative approaches. An important feature of Scialog meetings is the opportunity for Scialog Fellows to form teams and write proposals to pursue particularly creative ideas that emerge through the dialogue. We hope this competition is exciting, but regardless of which proposals are funded, the purpose is to catalyze a deeper and more meaningful exchange of ideas than ordinarily occurs at scientific conferences. Our intent is for this process to facilitate participants gaining new insights and connections that significantly advance efforts to understand fundamental science to enable major advances in energy storage.

We hope each participant finds the Scialog experience of great value. Please do not hesitate to provide feedback on how to make the conference better. My fellow Senior Program Director, **Silvia Ronco**, the RCSA staff, and I are here to listen and to help make this a great experience for you!

Richard Wiener
Senior Program Director
Research Corporation for Science Advancement

Conference Agenda
Westward Look Resort
November 8-11, 2018

Thursday, November 8

1:00 pm	**Registration Opens**	Lobby
1:00 - 5:00 pm	**Snacks & Informal Discussions**	Palm Room & Terrace
5:00 - 6:30 pm	**Poster Session & Reception**	Palm Room & Terrace
6:00 - 6:30 pm	**Meeting for Discussion Facilitators**	Ocotillo & Cholla
6:30 - 7:30 pm	**Dinner**	Ocotillo & Cholla
7:15 - 7:30 pm	**Welcome** Dan Linzer, *President, RCSA*	Ocotillo & Cholla
7:30 - 7:45 pm	**Conference Overview, Desired Outcomes & Guidelines for Collaborative Proposals** Richard Wiener, *RCSA*	Ocotillo & Cholla
7:45 - 8:30 pm	**Keynote Presentation** *Defining Conduction Pathways in Cathode Materials* Sarbarjit Banerjee, *Texas A&M University*	Ocotillo & Cholla
8:30 - 11:00 pm	**AES Starlight Café** Snacks, conversations, etc.	Palm Room & Terrace

Friday, November 9

7:00 - 8:00 am	**Breakfast**	Palm Room & Terrace
8:00 - 9:00 am	**Introductions**	Ocotillo & Cholla
9:00 - 9:15 am	**Breakout Sessions Overview**	Ocotillo & Cholla
9:15 - 10:30 am	**Breakout Session I**	Ocotillo & Cholla*
10:30 - 10:50 am	**Report Out**	Ocotillo & Cholla
10:50 - 11:20 am	**Mini Breakout Session I**	Ocotillo & Cholla
10:50 - 11:20 am	**Facilitators Debrief**	Ocotillo & Cholla
11:20 am - 12:05 pm	**2017 Team Presentations**	Ocotillo & Cholla
12:05 - 1:15 pm	**Conference Photo & Lunch**	Palm Room & Terrace
1:15 - 2:00 pm	**2017 Team Presentations**	Ocotillo & Cholla
2:00 - 3:15 pm	**Breakout Session II**	Ocotillo & Cholla
3:15 - 3:30 pm	**Report Out**	Ocotillo & Cholla
3:30 - 4:00 pm	**Mini Breakout Session II**	Ocotillo & Cholla
4:00 - 5:00 pm	**Afternoon Break**	
5:00 - 6:30 pm	**Poster Session & Reception**	Sonoran Ballroom
6:30 - 7:30 pm	**Dinner**	Ocotillo & Cholla
7:15 - 7:45 pm	**NASEM Sexual Harassment Report Overview** Sue Merrilees, *Science Philanthropy Alliance*	Ocotillo & Cholla
7:45 - 11:00 pm	**AES Starlight Café** Snacks, Conversations, etc.	Palm Room & Terrace

Saturday, November 10

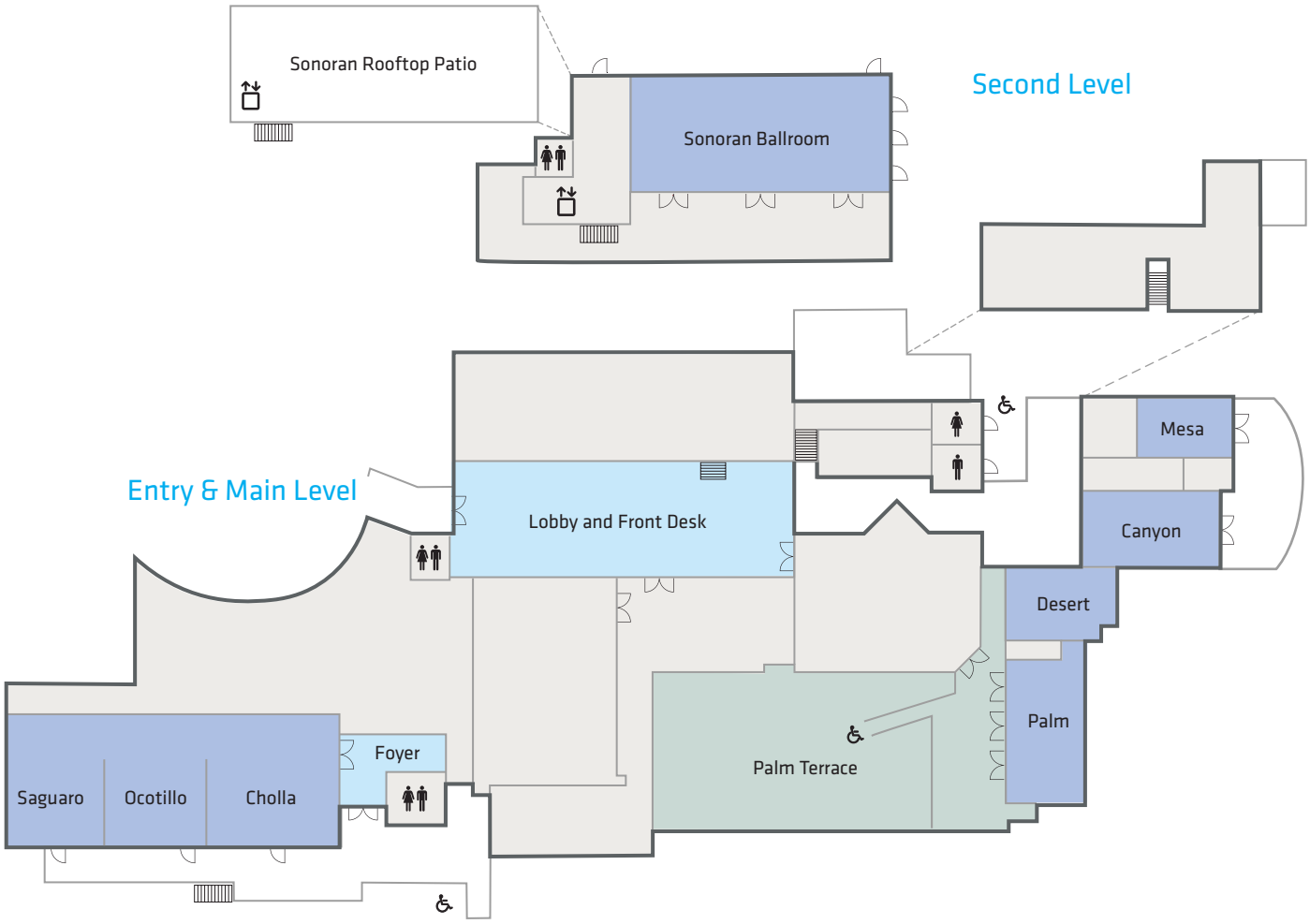
6:45 - 7:30 am	**Optional Guided Nature & Garden Walk**	WL Trails–Meet in Lobby
7:00 - 8:00 am	**Breakfast**	Palm Room & Terrace
8:00 - 9:15 am	**Breakout Session III**	Ocotillo & Cholla*
9:15 - 9:30 am	**Report Out**	Ocotillo & Cholla
9:30 - 10:00 am	**Mini Breakout Session III**	Ocotillo & Cholla*
10:00 - 10:30 am	**Morning Break**	
10:30 - 11:45 am	**Breakout Session IV**	Ocotillo & Cholla*
11:45 am - 12:00 pm	**Report Out**	Ocotillo & Cholla
12:00 - 12:30 pm	**Mini Breakout Session IV**	Ocotillo & Cholla*
12:00 - 12:30 pm	**Facilitators Debrief**	Ocotillo & Cholla
12:30 - 1:30 pm	**Lunch**	Palm Room & Terrace
1:30 - 6:00 pm	**Team Formation, Informal Discussion & Proposal Writing** Proposals due 6:30 am Sunday morning	
6:00 - 6:30 pm	**Reception**	Sonoran Ballroom
6:30 - 7:30 pm	**Dinner**	Ocotillo & Cholla
7:30 - 11:00 pm	**AES Starlight Café** Snacks, Conversations, etc.	Palm Room & Terrace

Sunday, November 11

6:30 - 7:30 am	**Breakfast**	Palm Room & Terrace
7:30 - 10:30 am	**Presentations of Proposal Ideas**	Ocotillo & Cholla
10:30 - 11:00 am	**Assessment Survey & Wrap-up**	Ocotillo & Cholla
11:00 am - 12:00 pm	**Lunch** Available to go	Saguaro Room

*Breakout Sessions will be held in Ocotillo & Cholla, Desert, Canyon, Mesa, and Saguaro meeting rooms. Fellows will first meet in Ocotillo & Cholla and then disperse to their discussion groups.

Westward Look Resort



Keynote Speakers

Defining Conduction Pathways in Cathode Materials: Resolving Logjams through Atomistic Design and Mesoscale Structuring

Sarbajit Banerjee
Texas A&M University

Abstract: The deficiencies of electrochemical energy storage are a major constraint in many areas of technological design. Using a canonical intercalation host, V_2O_5, as a model system, I will first discuss the structural and electronic origins of diffusion barriers in cathode materials. Scanning transmission X-ray microscopy measurements in conjunction with resonant inelastic X-ray scattering and density functional theory provide a rich picture of the evolution of electronic structure with increasing intercalation. The mitigation of diffusion impediments will be discussed with reference to the stabilization of metastable phases that provide frustrated coordination environments and enable the relatively facile diffusion of polarons. This approach has led to the discovery of several promising intercalation hosts for Mg- and Ca-ion batteries. I will focus on a tunnel-structured ζ-V_2O_5 polymorph that provides an unprecedented combination of high voltage, excellent cyclability, and good capacity and will discuss further elaboration of this concept to other polymorphs of V_2O_5. A promising advantage of switching to Mg-based batteries derives from the many reports which claim that Mg is inherently non-dendrite forming. I will address the issue of whether Mg is truly impervious to dendritic growth. The targeted navigation of electrodeposition landscapes to achieve controllable film morphologies will also be discussed, and holds potential for yielding low-volume expansion, lower current density anode materials.

Bio: Sarbajit Banerjee is the Davidson Professor of Chemistry and Professor of Materials Science & Engineering at Texas A&M University. Sarbajit is a graduate of St. Stephen's College (B.Sc.) and the State University of New York at Stony Brook (Ph.D.). He was a post-doctoral research scientist at the Department of Applied Physics and Applied Mathematics at Columbia University with Irving P. Herman prior to starting his independent career at the University at Buffalo in 2007, where he served as a founding co-director of the New York State Center of Excellence in Materials Informatics. He moved to Texas A&M University as Professor of Chemistry in 2014. He was awarded a National Science Foundation CAREER award in 2009; the American Chemical Society ExxonMobil Solid-State-Chemistry Fellowship in 2010; the Cottrell Scholar Award in 2011; the Minerals, Metals, and Materials Society Young Leader Award in 2013; the American Chemical Society Journal of Physical Chemistry Lectureship in 2013; the Scialog Fellowship in 2013; the IOM3 Rosenhain Medal and Prize in 2015; and the Royal Society of Chemistry/IOM3 Beilby Medal in 2016. He is a Fellow of the Royal Society of Chemistry and the Institute of Physics. In 2012, MIT Technology Review named Sarbajit to its global list of "Top 35 innovators under the age of 35" for the discovery of dynamically switchable smart window technologies are currently being commercialized by a startup company in Amherst, NY. He has published over 150 papers in peer-reviewed journals and his technologies have been licensed by three companies. His research interests are focused on solid-state chemistry, electron correlated materials, mechanisms of electrochemical energy storage, energy relevant catalysis, and heavy oil processing.

2017 Scialog AES Funded Teams

Ion REASSIN: Ion Re-coordination at Solid-State Interfaces
Veronica Augustyn, Materials Science, North Carolina State University
Matthew McDowell, Materials Science, Georgia Institute of Technology
Aleksandra Vojvodic, Chemistry, University of Pennsylvania

Defining interfacial reactivity in high-capacity Li-ion cathode Materials
Jordi Cabana, Chemistry, University of Illinois at Chicago
Bryan McCloskey, Chemistry, University of California, Berkeley
Aleksandra Vojvodic, Chemistry, University of Pennsylvania

Proton-Coupled Electron Transfer in Batteries based on Quinone Crystals: Integrated Experimental and Theoretical Approach
Jahan Dawlaty, Chemistry, University of Southern California
Puja Goyal, Chemistry, SUNY-Binghamton University
Yan Yao, Electrical and Computer Engineering, University of Houston

High-Voltage Dual-Ion Batteries
Zhenxing Feng, Chemical Engineering, Oregon State University
Shyue Ping Ong, Nanoengineering, University of California, San Diego
Scott Warren, Chemistry, University of North Carolina at Chapel Hill

Discovery of New Metal Nitrides for Divalent Cation Intercalation Systems
Aaron Holder, Chemistry, University of Colorado Boulder
James Neilson, Chemistry, Colorado State University

ReO3: A model for understanding the participation of anions in redox processes
Brent Melot, Chemistry, University of Southern California
Louis Piper, Physics, SUNY-Binghamton University

2018 Proposal Guidelines & Collaborative Awards

Scialog: Advanced Energy Storage

1. Awards are intended to provide seed funding for teams of two to three Scialog Fellows formed at this conference for high-impact projects.
2. Two-page proposals should describe the project and the role of each team member. No budget is necessary. A third page may be used for references.
3. Awards will be in the amount of $100K direct funding, plus a small percentage for overhead, for one year.
4. No Scialog Fellow can be a member of more than two teams. If a Scialog Fellow is a member of two teams, other members of the two teams must be different. No team can submit more than one proposal.
5. No Scialog Fellow who previously has won a Scialog Collaborative Award can be a member of more than one team. The other team members must be different from the members of the previously awarded team.
6. Teams cannot include members who have previously collaborated with one another.
7. Teams are encouraged (but not required) to
   a) Include at least one theorist or computational scientist and one experimentalist.
   b) Include members from different disciplines.
8. Proposals must be submitted electronically by Sunday morning at 6:30 am. Instructions for electronic submission will be provided at the meeting.
9. Awards will be announced in 2018 or early 2019 and start early 2019.

Scialog Fellows

Fikile Brushett brushett@mit.edu
Massachusetts Institute of Technology,
Chemical Engineering

I'm interested in the science and engineering of electrochemical energy systems such as flow batteries and electrolyzers.

Hye Ryung Byon hrbyon@kaist.ac.kr
Korea Advanced Institute of Science and Technology,
Chemistry

Understanding and develompent of Next-Generation Batteries such as Lithium-Oxygen Batteries and Redox Flow Batteries.

Jordi Cabana jcabana@uic.edu
University of Illinois at Chicago, Chemistry

Physical and inorganic chemistry of materials, with a focus on electrochemical properties.

Candace Chan candace.chan@asu.edu
Arizona State University,
Materials Science and Engineering

Synthesis and characterization of nanostructured and novel anodes/cathodes and solid-state electrolytes for electrochemical energy storage.

Zheng Chen zhc199@ucsd.edu
University of California, San Diego, NanoEngineering

Materials and process design for sustainable energy storage and conversion.

Anne Co co.5@osu.edu
Ohio State University, Chemistry and Biochemistry

Probe electrochemical reaction mechanism on surfaces and in storage materials. Develop electrochemical and operando methods.

Jahan Dawlaty dawlaty@usc.edu
University of Southern California, Chemistry

We use spectroscopy to study fundamentals of chemical and physical processes at interfaces.

Daniel Esposito de2300@columbia.edu
Columbia University, Chemical Engineering

Electrochemistry at buried interfaces, in situ analytical tools, and membrane-free device architectures.

Zhenxing Feng zhenxing.feng@oregonstate.edu
Oregon State University, Chemical Engineering

Growth of oxide thin film as model systems, operando synchrotron X-ray characterizations, interfacial processes in energy devices.

Brett Fors brettfors@cornell.edu
Cornell University, Chemistry and Chemical Biology

We design and synthesize organic polymer materials for metal-ion batteries.

Nathaniel Gabor nathaniel.gabor@ucr.edu
University of California, Riverside,
Physics and Astronomy

Small is all: fundamental studies of photocells, circuits, batteries, and materials at the nanoscale.

Eleanor Gillette egillette@sandiego.edu
University of San Diego, Chemistry and Biochemistry

Analytical chemist exploring reactions at interfaces, with an interest in energy storage, catalysis and sensing.

Puja Goyal pgoyal@binghamton.edu
State University of New York at Binghamton, Chemistry

Computation modeling of proton-coupled electron transfer, light-driven biological processes, transition metal photochemistry.

Beth Guiton beth.guiton@uky.edu
University of Kentucky, Chemistry

Inorganic nanostructure synthesis and characterization, in situ transmission electron microscopy.

Anthony Shoji Hall shoji@jhu.edu
John Hopkins University,
Materials Science and Engineering

The Hall group focuses on novel methods of preparing heterogeneous electrocatalysts with atomically well-defined active sites.

Kelsey Hatzell kelsey.b.hatzell@vanderbilt.edu
Vanderbilt University,
Mechanical and Chemical Engineering

Understanding ion transport at solid|solid interfaces for solid state energy storage.

Scialog Fellows Continued

Aaron Holder aaron.holder@colorado.edu
University of Colorado, Boulder,
Chemical and Biological Engineering
Computationally driven design of novel mechanisms, chemistries, and materials for energy generation and storage.

Yan-Yan Hu hu@chem.fsu.edu
Florida State University, Chemistry and Biochemistry
NMR/MRI Studies of Energy Storage Materials.

Geoffrey Hutchison geoffh@pitt.edu
University of Pittsburgh, Chemistry
Rapid computational design of molecules with optimal redox and transport properties.

Kristie Koski koski@ucdavis.edu
University of California, Davis,
Chemistry and Biochemistry
2D and Layered Materials.

Kah Chun Lau kahchun.lau@csun.edu
California State University, Northridge, Chemistry
Atomistic simulation and data mining of energy related materials.

Tianbiao (Leo) Liu leo.liu@usu.edu
Utah State University, Physics and Astronomy
My research focuses on sustainable energy storage and green catalysis.

Lauren Marbella lem2221@columbia.edu
Columbia University, Chemical Engineering
I'm interested in reimaging the way we engineer battery electrodes and using NMR tools to characterize them.

Ellen Matson matson@chem.rochester.edu
University of Rochester, Chemistry
Design criteria for the synthesis of redox-active, multimetallic clusters for energy storage.

Bryan McCloskey bmcclosk@berkeley.edu
University of California, Berkeley, Chemical Engineering
Electrochemical energy storage.

Matthew McDowell mattmcdowell@gatech.edu
Georgia Tech, Materials Science and Engineering
We use in situ techniques to probe how materials and interfaces change and transform in batteries.

James McKone jmckone@pitt.edu
University of Pittsburgh,
Chemical and Petroleum Engineering
We do use-inspired basic research in electrochemistry and materials chemistry with a broad focus on energy conversion and storage.

Brent Melot melot@usc.edu
University of Southern California, Chemistry
Developing materials design principles for functional inorganic materials.

Rohan Mishra rmishra@wustl.edu
Washington University at St. Louis,
Mechanical Engineering and Materials Science
Rational design of materials for energy applications starting from the atomic scale.

Partha Mukherjee pmukherjee@purdue.edu
Purdue University, Mechanical Engineering
Mesoscale physics and stochastics in energy storage and conversion .

James Neilson james.neilson@colostate.edu
Colorado State University, Chemistry
Solid state chemistry. Kinetic control in synthesis and synthesis of metastable materials. Structure-dynamics-properties relationships.

Susan Odom susan.odom@uky.edu
University of Kentucky, Chemistry
Structure property relationships in redox-active organic materials for electrochemical energy storage systems.

Shyue Ping Ong ongsp@eng.ucsd.edu
University of California, San Diego, NanoEngineering
Integrating theory, computations, machine learning to design next generation materials for energy.

Scialog Fellows Continued

Julien Panetier panetier@binghamton.edu
Binghamton University, Chemistry
We use computational chemistry to study the electronic structure and reactivity of electrocatalysts for carbon dioxide and nitrate reduction.

Louis Piper lpiper@binghamton.edu
Binghamton University, Physics
X-ray spectroscopy to understand the optical, transport and electrochemical behavior of metal oxides.

Ekaterina Pomerantseva ep423@drexel.edu
Drexel University, Materials Science
My research is focused on creating new materials with advanced electrochemical properties for sustainable energy and clean environment.

Farshid Ramezanipour
farshid.ramezanipour@louisville.edu
University of Louisville, Chemistry
Synthesis of new multi-metal oxide materials for energy storage systems, and structural and electrochemical characterizations.

Chad Risko chad.risko@uky.edu
University of Kentucky, Chemistry
Our research is inspired by synthetic materials for electronics and power generation and storage and realizing in silico materials design.

Joaquín Rodríguez-López joaquinr@illinois.edu
University of Illinois Urbana-Champaign, Chemistry
We create interfaces, materials, and methods for exciting electrochemical applications in energy and for the love of analysis itself.

Emily Ryan ryanem@bu.edu
Boston University, Mechanical Engineering
Mesoscale and multi-scale computational modeling of interfacial chemical-physical phenomena.

Kimberly See ksee@caltech.edu
California Institution of Technology,
Chemistry and Chemical Engineering
Experimental inorganic/electrochemist interested in solid state materials, solution phase coordination chemistry, and interfaces.

Natalia Shustova shustova@sc.edu
University of South Carolina,
Chemistry and Biochemistry
Porous, crystalline, redox-active metal-organic materials for optoelectronic devices and porous electrodes.

Vladan Stevanovic vstevano@mines.edu
Colorado School of Mines,
Metallurgical and Materials Engineering
Computational Materials Science

Yogesh (Yogi) Surendranath yogi@mit.edu
Massachusetts Institute of Technology, Chemistry
The Surendranath group develops new methods for controlling interfacial reactivity at the molecular level.

Sara Thoi sarathoi@jhu.edu
John Hopkins University, Chemistry
We study chemical processes in Li-S and Li-ion batteries using supramolecular assemblies.

Fernando Uribe-Romo fernando@ucf.edu
Central Florida University, Chemistry
Composition-property relationships in solid state materials.

Jesús Velázquez jevelazquez@ucdavis.edu
University of California, Davis, Chemistry
Rational design and electronic structure characterization of well defined dimensionally reduced materials for energy conversion and storage.

Venkat Viswanathan venkvis@cmu.edu
Carnegie Mellon University, Mechanical Engineering
Next-generation batteries for electric vehicles, trucks and planes.

Scialog Fellows Continued

Aleksandra Vojvodic alevoj@seas.upenn.edu
University of Pennsylvania,
Chemical and Bimolecular Engineering
Computational-driven materials design focusing on interfaces of complex materials for chemical transformations and energy conversion.

Hailiang Wang hailiang.wang@yale.edu
Yale University, Chemistry
Surface chemistry and materials design for electrocatalytic chemical reactions and high-energy batteries.

Scott Warren sw@unc.edu
University of North Carolina at Chapel Hill,
Chemistry and Applied Physical Sciences
Advances in analytical techniques for probing ion transport.

Luisa Whittaker-Brooks lwhittaker@chem.utah.edu
University of Utah, Chemistry
Deep understanding of chemical processes and ion-migration in energy storage materials and devices via in situ and in operando techniques.

Adam Willard awillard@mit.edu
Massachusetts Institute of Technology, Chemistry
Modeling the nonequilibrium properties of driven electrochemical interfaces.

Christopher Wilmer wilmer@pitt.edu
University of Pittsburgh, Chemical Engineering
Computational materials discovery and modeling, with a focus on gas adsorption, thermal transport, and chemical sensing.

Hui (Claire) Xiong clairexiong@boisestate.edu
Boise State University, Materials Science and Engineering
Understand defects and disorders and interfacial chemistry in electrode materials.

Yang Yang Yang.Yang@ucf.edu
University of Central Florida,
NanoScience, Materials Science and Engineering
Nanostructured thin-film electrode for renewable energy applications.

Yuan Yang yy2664@columbia.edu
Columbia University,
Materials Science and Engineering
Battery Imaging and Characterization, Solid State Batteries, Battery Safety.

Iryna Zenyuk izenyuk@uci.edu
University of California, Irvine,
Chemical Engineering and Materials Science
Interested in novel characterization techniques and imaging for solid-state batteries.

Scialog: Advanced Energy Storage

Guests

Kate Lowry klowry@sciphil.org
Science Philanthropy Alliance
With a background in earth, ocean, and climate science, I am interested in philanthropic approaches for supporting basic science research.

Sue Merrilees smerrilees@sciphil.org
Science Philanthropy Alliance
Philanthropic advising, basic science, relationship management, higher ed (bio-med) fundraising.

Discussion Facilitators

Mu-Hyunk Baik mbaik2805@kaist.ac.kr
Korea Advanced Institute of Science and Technology, Chemistry
I am a computational chemist interested in redox reactions, electron transfer and rational design of molecules for energy storage.

Sarbajit Banerjee banerjee@chem.tamu.edu
Texas A&M University, Chemistry
Metastable intercalation hosts, mechanistic studies, anion batteries, interfaces.

George Crabtree crabtree@anl.gov
Argonne National Laboratory, Energy Storage Research
Materials and phenomena of energy storage, lithium-ion batteries and beyond, electricity grid of the future.

Prashant Kamat pkamat@nd.edu
University of Notre Dame, Chemistry and Biochemistry
With interest in designing nanostructured assemblies for energy conversion and storage.

Karl Mueller karl.mueller@pnnl.gov
Pacific Northwest National Laboratory, Physical and Computational Sciences
Predictive understanding of new chemistries that lead to self-adaptive mechanisms in heterogeneous, far-from-equilibrium environments.

Amy Prieto amy.prieto@colostate.edu
Colorado State University, Chemistry
3D architectures for rechargeable batteries, non-toxic materials for photovoltaics.

Stan Whittingham stanwhit@binghamton.edu
Binghamton University, Chemistry and Materials
Materials chemistry of energy storage materials.

Yiying Wu wu@chemistry.ohio-state.edu
Ohio State University, Chemistry and Biochemistry
I am interested in alkali metal electrodes, superoxide chemistry and their applications in metal-oxygen batteries.

Alfred P. Sloan Foundation

Evan Michelson michelson@sloan.org
Study the economic, environmental, and policy tradeoffs associated with deployment of low- and no-carbon resources and technologies.

Research Corporation

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