Negative Emissions Science

The Third Annual Scialog Conference
November 9–12, 2022

scialog2022®

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 advance fundamental understanding of negative emissions science 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 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 No 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.

Read RCSA's Code of Conduct

From the President

Welcome to the *2022 Scialog: Negative Emissions Science* meeting, cosponsored by Research Corporation and the Alfred P. Sloan Foundation, with additional support provided by Climate Pathfinders Foundation and ClimateWorks Foundation. This is the third annual Scialog meeting on this theme and the first in person. We hope the face-to-face exchanges, including informal times, will offer an even richer experience than last year's virtual meeting. We hope you find the experience of writing team proposals "on the spot" exciting and rewarding.

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 understanding the underlying science that will allow negative emissions technologies to become efficient, affordable, and scalable.

Scialog's overarching purpose is to advance cutting-edge science of great significance to humanity 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 scientists that will prove adept at identifying exciting areas for research advances for decades to come.

To that end, under the guidance of Program Directors **Richard Wiener**, **Andrew Feig**, and **Silvia Ronco** of RCSA, and **Evan Michelson** and **Isabella Gee** of the Sloan Foundation, 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 third 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

Research Corporation's highly interactive Scialog meetings aim to catalyze new collaborations, based on blue-sky ideas, among a highly select group of exemplary early career U.S. and Canadian scientists. For Scialog Fellows, the emphasis is on dialogue, networking, and building new teams to pursue novel, high-risk discovery research.

Cosponsors Research Corporation and the Alfred P. Sloan Foundation, with additional support from Climate Pathfinders Foundation and ClimateWorks Foundation, chose to focus on Negative Emissions Science because we believe this critical area of science requires major breakthroughs in fundamental understanding of capturing and utilizing or sequestering carbon and other greenhouse gases in the atmosphere and oceans that will lead to a sustainable future. Just as firmly, we believe these breakthroughs can be accelerated by chemists and engineers and those in related fields working collaboratively on novel, high-risk projects, particularly combining multiple research approaches, such as modeling, data science, and experiments.

We have an outstanding keynote speaker to set the stage for breakout discussions: **Jeffrey Long**, University of California, Berkeley.

We have a team of terrific discussion facilitators: **Roger Aines**, Lawrence Livermore National Laboratory; **Sarbajit Banerjee**, Texas A&M University; **Jordi Cabana**, University of Illinois at Chicago; **Jeffrey Long**, University of California, Berkeley; **Joaquin Rodriguez-Lopez**, University of Illinois Urbana-Champaign; **George Shields**, Furman University; and **Ellen Stechel**, Arizona State University.

Program representatives **Evan Michelson** and **Isabella Gee** of the Alfred P. Sloan Foundation, **Victoria Gonzalez** of the ClimateWorks Foundation, and **Scott Siegel** of the Dreyfus Foundation are looking forward to interacting with Fellows and Facilitators.

Scialog meetings focus on dialogue and team building with the goal of creating novel strategies and collaborative approaches. An important feature 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 primary 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 help participants gain new insights and connections that significantly advance fundamental science.

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 RCSA Program Directors, Andrew Feig and Silvia Ronco, the RCSA staff, and I are here to help make the meeting a great experience!

Richard Wiener
Senior Program Director
Research Corporation for Science Advancement

Conference Agenda
November 9–12, 2022

Wednesday, November 9

2:00 pm	**Registration Opens**	Sonoran Foyer
2:00 – 5:00 pm	**Snacks and Informal Discussions**	Sonoran Foyer
5:00 – 6:30 pm	**Poster Session and Reception**	Murphey
6:00 – 6:30 pm	**Meeting for Discussion Facilitators**	Sonoran
6:30 – 7:30 pm	**Dinner**	Murphey Patio
7:30 – 8:30 pm	**Welcome** Dan Linzer, President, RCSA Evan Michelson, Program Director, Sloan Foundation **Conference Overview, Outcomes and Proposal Guidelines** Richard Wiener, Senior Program Director, RCSA **Introductions/Ice Breakers**	Sonoran
8:30 – 11:00 pm	**Starlight Cafe**	Murphey/Murphey Patio

Thursday, November 10

7:00 – 8:00 am	**Breakfast**	Murphey/Murphey Patio
8:00 – 8:45 am	**Keynote Presentation** *Critical Needs for Atmospheric Carbon Removal* Jeffrey Long, University of California, Berkeley Lawrence Berkeley National Laboratory	Sonoran
8:45 – 9:00 am	**Breakout Session Overview and Instructions**	Sonoran
9:00– 10:15 am	**Breakout Session I**	Sonoran, Sunsations, Finger Rock I, II and III
10:15 – 10:35 am	**Report Out**	Sonoran
10:35 – 11:15 am	**Morning Break**	Sonoran Foyer
11:15 – 11:45 am	**Mini Breakout Session I** (Fellows)	All Spaces
	Facilitator Meeting (Facilitators)	Sunsations
11:45 am – 1:00 pm	**Lunch**	Murphey/Murphey Patio
1:00 – 1:45 am	**2021 Team Award Panel Discussion**	Sonoran
1:45 – 3:00 pm	**Breakout Session II**	Sonoran, Sunsations, Finger Rock I, II and III
3:00 – 3:20 pm	**Report Out**	Sonoran
3:20 – 3:30 pm	**Conference Photo**	Murphey Patio
3:30 – 4:00 pm	**Mini Breakout Session II** (Fellows)	All Spaces
4:00 – 5:15 pm	**Afternoon Break**	Sonoran Foyer
5:15 – 6:45 pm	**Poster Session and Reception**	Murphey
6:45 – 7:45 pm	**Dinner**	Murphey/Murphey Patio
7:45 – 11:00 pm	**Starlight Cafe**	Murphey/Murphey Patio

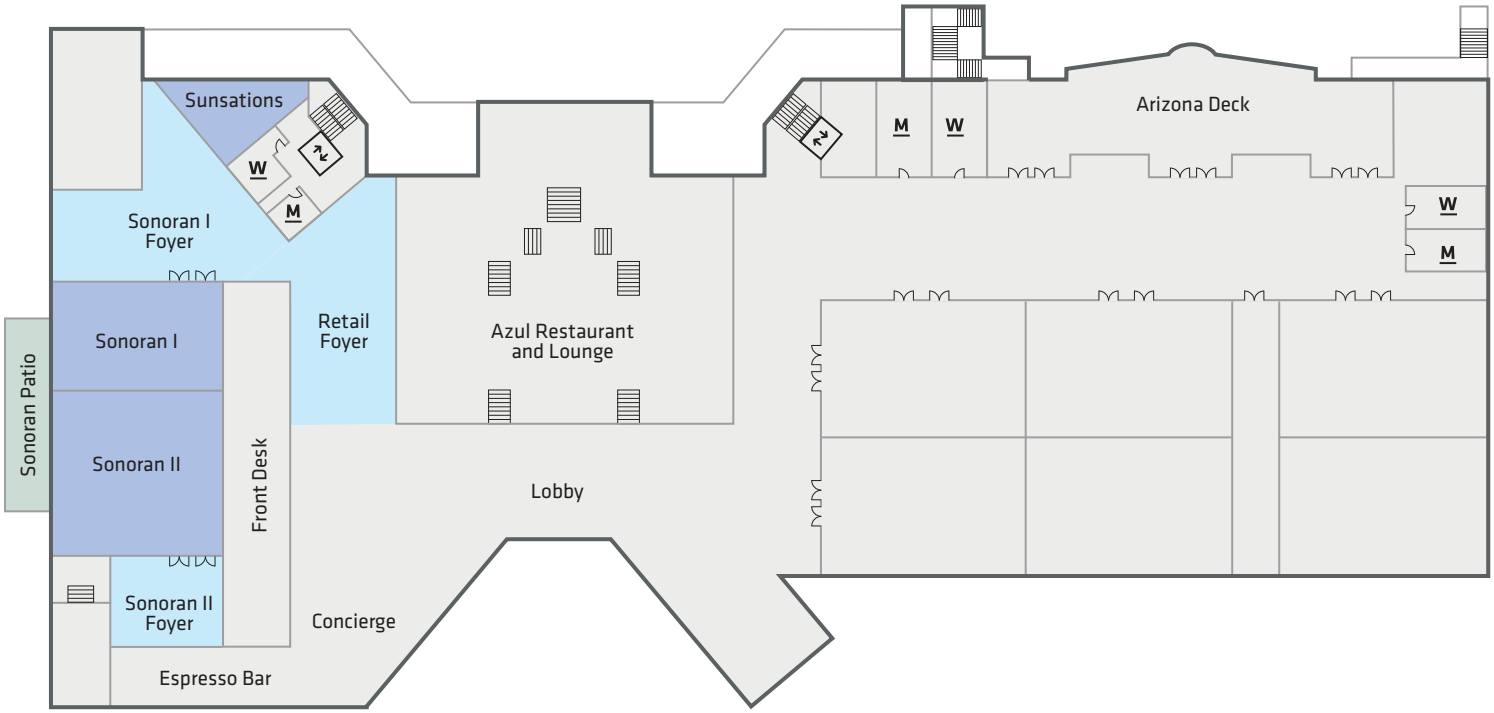
Friday, November 11

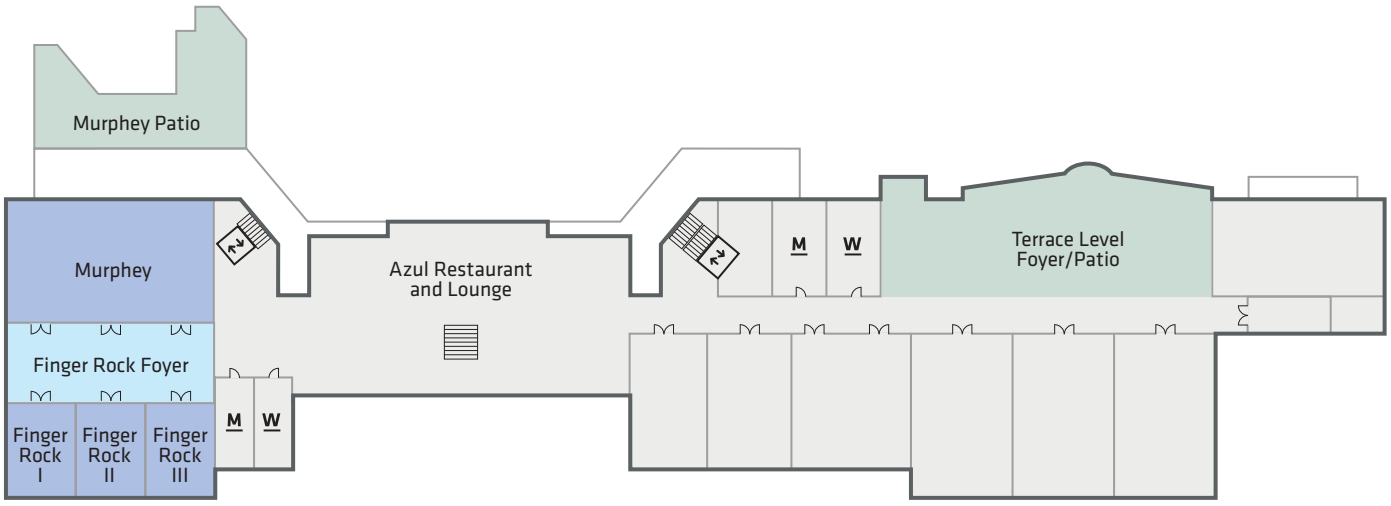
7:00 – 8:00 am	**Breakfast**	Murphey/Murphey Patio
8:00 – 8:45 am	**2021 Team Award Panel Discussion**	Sonoran
8:45 – 9:15 am	**Mini Breakout Session III** (Fellows)	All spaces
9:15 – 9:45 am	**Morning Break**	Sonoran Foyer
9:45 – 11:00 am	**Breakout Session III**	Sonoran, Sunsations, Finger Rock I, II and III
11:00 – 11:20 am	**Report Out**	Sonoran
11:20 – 11:50 am	**Mini Breakout Session IV** (Fellows)	All spaces
	Facilitator Debrief (Facilitators and Guests)	Sunsations
11:50 am – 1:00 pm	**Lunch**	Mesa Verde (lawn inside pool area)
1:00 – 5:45 pm	**Team Formation, Informal Discussions and Proposal Writing**	All spaces
5:45 – 6:30 pm	**Reception**	Terrace Level Foyer/Patio
6:30 – 7:30 pm	**Dinner**	Terrace Level Foyer/Patio
7:30 – 11:00 pm	**Starlight Cafe**	Terrace Level Foyer/Patio

Saturday, November 12

6:30 – 7:30 am	**Breakfast**	Mesa Verde (lawn inside pool area)
7:30 – 11:00 am	**Presentation of Proposals**	Sonoran
	Assessment Survey and Wrap-up	
11:00 am – 12:00 pm	**Lunch** (available to go)	Sonoran Foyer

The Westin La Paloma Resort





Keynote Speaker

Critical Needs for Atmospheric Carbon Removal

Jeffrey Long
University of California, Berkeley
Lawrence Berkeley National Laboratory

Abstract: Efficient methods for extracting CO_2 from air are urgently needed to address global warming and keep the average planetary surface temperature within 2 °C of pre-industrial levels. Its dilute concentration of 414 ppm, however, entails a steep entropy penalty of unmixing, leading to a large minimum work requirement of ~20 kJ/mol – approximately three or four times greater than required for capture from power plant flue gases. Here, together with a strong affinity for CO_2, a high interfacial surface area is essential for ensuring its rapid and high-capacity uptake from an incoming air stream. In particular, the tunability and high surface areas of metal–organic frameworks (MOFs) make them attractive for the design of effective adsorbents. Further, new mechanisms of uptake, such as the cooperative adsorption realized within diamine-appended MOFs, can help minimize the energy required for regeneration of the adsorbent and release of pure $CO_2$for utilization or sequestration. Current materials and strategies for implementing direct air capture of CO_2 generally suffer from adsorbent degradation upon repeated cycling and gross inefficiencies, leading to enormous energy consumption when deployed at scale. This talk will highlight some of the critical research needs for overcoming such deficiencies. In addition, the possibility of integrating direct air capture with flue gas capture will be explored, as will the potential advantages of simultaneously capturing CO_2 and harvesting water from air.

2021 Team Awards

Electrocatalytic Activation and Cycling of Moisture-Swing Direct Air Capture Materials
Matthew Green, Chemical Engineering, Arizona State University
Gary Moore, School of Molecular Sciences, Arizona State University
Emily Ryan, Mechanical Engineering, Boston University

Carbon Dioxide-Methane Coupling with Electric-Field-Polarized Microelectrodes
Zhou Lin, Chemistry, University of Massachusetts Amherst
Yayuan Liu, Chemical and Biomolecular Engineering, Johns Hopkins University
Sen Zhang, Chemistry, University of Virginia

Photochemical Amine Production from N_2 and CO_2
Marta Hatzell, Mechanical Engineering, Georgia Institute of Technology
Katie Knowles, Chemistry, University of Rochester
Jose Mendoza, Chemical Engineering and Materials Science, Michigan State University

Carbon Dioxide Removal from Seawater Driven by a Visible Light-Induced pH Gradient
David Kwabi, Mechanical Engineering, University of Michigan
Michael Nippe, Chemistry, Texas A&M University, College Station

Novel Membrane Design for Hybrid Ocean Capture and Desalination
Matthew Green, Chemical Engineering, Arizona State University
Katherine Hornbostel, Mechanical Engineering & Materials Science, University of Pittsburgh
Jenny Yang, Chemistry, University of California Irvine

Electrified Low-Temperature Process for CO_2 Capture and Conversion (e-LT-C3)
Charles McCrory, Chemistry, University of Michigan
Carlos Morales-Guio, Chemical and Biomolecular Engineering, University of California, Los Angeles

CO_2 Conversion to Bioplastics via Electrochemical-Bio Synthesis
Andrea Hicks, Civil and Environmental Engineering, University of Wisconsin - Madison
Chong Liu, Chemistry and Biochemistry, University of California, Los Angeles
Haotian Wang, Chemical and Biomolecular Engineering, Rice University

Electric-Swing Solid State Sorbents for Direct Air Capture of CO_2
Adam Holewinski, Chemical & Biological Engineering, University of Colorado Boulder
Katherine Hornbostel, Mechanical Engineering & Materials Science, University of Pittsburgh
Yuanyue Liu, Mechanical Engineering, University of Texas at Austin

2022 Proposal Guidelines

Scialog: Negative Emissions Science

1. Awards are intended to provide seed funding for teams of two to three Scialog Fellows formed at this conference for high-risk, high-impact projects.
2. The application package should be submitted as a single PDF file. Pages one and two should describe the project and role of each team member. A third page may be used for references. No budget is necessary.
3. Awards will be in the amount of $50K direct funding per team member, plus a small percentage for overhead. Grant duration will be one year.
4. No Scialog Fellow may be a member of more than two teams. If a Scialog Fellow is a member of two teams, other members of the teams must be different. No team may submit more than one proposal.
5. No Scialog Fellow who previously has won a Scialog NES 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. If you are unsure of your status (e.g., prospective team members were part of a large collaboration but did not significantly interact), please check for clarification with an RCSA program director.
7. Teams are encouraged (but not required) to:
   a. Include members with different research approaches and methods.
   b. Include members from different disciplines.
8. Proposals must be submitted electronically by **6:30 a.m. PST Saturday, November 12, 2022**. Instructions for submission will be provided at the meeting.
9. Awards are anticipated to start around **February 1, 2023**.

Conference Evaluation Survey

An online conference survey will be available on **Saturday, November 12, 2022**.
To access and complete the survey, please go to:

Scialog Fellows

Chibueze Amanchukwu chibueze@uchicago.edu
Pritzker School of Molecular Engineering,
University of Chicago
Research in the Amanchukwu Lab involves the design of novel electrolytes, development of characterization tools to probe solvation influence on electrochemical transformations to enable next generation batteries and efficient CO_2 capture and electrochemical conversion devices.

Ahmed Badran ahbadran@scripps.edu
Chemistry/Integrative Structural and Computational Biology, The Scripps Research Institute
The Badran Lab develops molecular technologies that create nucleic acids and proteins with new-to-Nature activities, and applies them to explore shortcomings in our understanding of biological systems and addressing global issues affecting humanity.

Will Bowman will.bowman@uci.edu
Materials Science and Engineering,
University of California, Irvine
Inorganic oxide CO_2 sorbents, and their characterization down to the atomic scale

Nanette Boyle nboyle@mines.edu
Chemical & Biological Engineering,
Colorado School of Mines
Metabolic engineering for the design of cell factories with an emphasis on photosynthetic cells

Rebecca Ciez rciez@purdue.edu
Mechanical Engineering/Environmental and Ecological Engineering, Purdue University
How the technical performance of decarbonization and negative emissions technologies interacts with economic considerations and decision-making processes to drive adoption

Anindita Das aninditad@smu.edu
Chemistry, Southern Methodist University
Our lab's research focuses on developing multifunctional nanomaterials with atomic precision to address fundamental global challenges in clean energy generation and environmental sustainability.

Mita Dasog mita.dasog@dal.ca
Chemistry, Dalhousie University
We develop engineered nanomaterials via solid-state synthesis for sustainable fuel production, water treatment, and environmental remediation.

Luis De Jesús Báez ldjesus@buffalo.edu
Chemistry, University at Buffalo
The overarching theme of my lab pertains the use of entropy and stress/strain as a method to 1) discover novel, metastable structures of transition-metal oxides, transition-metal chalcogenides and 2) as a knob to tune the electronic structure of materials.

Pratik Dholabhai pratik.dholabhai@rit.edu
School of Physics and Astronomy,
Rochester Institute of Technology
Computational materials scientist and condensed matter physicist with expertise in application and development of atomistic simulation methods to design novel materials and technologies

Greeshma Gadikota gg464@cornell.edu
Civil and Environmental Engineering, Cornell University
Sustainable Energy and Resource Recovery: Advancing fundamental science and transformative technologies for carbon management

Kandis Leslie Gilliard Abdul-Aziz
klabdulaziz@engr.ucr.edu
Chemical and Environmental Engineering,
University of California, Riverside
The Sustainable lab at the University of California, Riverside, develops processes and materials for the full realization of a circular economy. Current primary focus includes materials for the capture and conversion of CO_2 and heterogeneous catalyst development.

Kelsey Hatzell kelsey.hatzell@princeton.edu
Mechanical and Aerospace Engineering/Andlinger Center for Energy and the Environment, Princeton University
Solid state ionics, advanced characterization and separations

Marta Hatzell marta.hatzell@me.gatech.edu
Mechanical Engineering/Chemical & Biomolecular Engineering, Georgia Institute of Technology
Electrified technologies for carbon capture and conversion.

Andrea L. Hicks hicks5@wisc.edu
Civil and Environmental Engineering,
University of Wisconsin-Madison
I study the environmental impacts and sustainability implications of emerging technologies. I use tools such as life cycle assessment, techno economic assessment, and agent based modeling.

Adam Holewinski adam.holewinski@colorado.edu
Chemical & Biological Engineering,
University of Colorado Boulder
Electrochemistry, catalysis, kinetics, spectroscopy, materials synthesis

Scialog Fellows Continued

Katherine Hornbostel hornbostel@pitt.edu
Mechanical Engineering, University of Pittsburgh
Modeling novel carbon capture systems and devices; direct air and ocean capture; microencapsulated sorbents; hollow fiber membranes

Jimmy Jiang jianbing.jiang@uc.edu
Chemistry, University of Cincinnati
Our research group makes use of synthetic, mechanistic and spectroscopic techniques to elucidate catalytic mechanism for small molecule conversion, including CO_2 reduction.

Katie Knowles kknowles@ur.rochester.edu
Chemistry, University of Rochester
Synthesis, Electrochemistry, and Photophysics of Transition Metal Oxide Nanomaterials

Yuzhang Li yuzhangli@ucla.edu
Chemical and Biomolecular Engineering, University of California, Los Angeles
The Li Group at UCLA pursues innovations in energy and environmental technologies, which require advancements in both (1) fundamental characterization and (2) materials design.

Simona Liguori sliguori@clarkson.edu
Chemical and Biomolecular Engineering, Clarkson University
My research is related to the synthesis and development of inorganic membranes and novel multiphase reactors to produce carbon-neutral energy, focusing on the interaction of heterogeneous catalysis, gas separation, transport phenomena, and fluid mechanics.

Chong Liu chongliu@chem.ucla.edu
Chemistry and Biochemistry, University of California, Los Angeles
Electrochemistry, connecting inorganic nanomaterials with microorganisms,CO_2/N_2/CH_4 activation.

Yayuan Liu yayuanliu@jhu.edu
Chemical and Biomolecular Engineering, Johns Hopkins University
My group develops electrochemically mediated mechanisms for carbon capture from point sources and air.

Yuanyue Liu yuanyue.liu@austin.utexas.edu
Mechanical Engineering, University of Texas at Austin
My research focuses on developing and applying advanced atomistic simulation methods to study electrochemistry, charge transport, and 2D materials for energy and electronics applications.

Oana R. Luca oana.luca@colorado.edu
Chemistry, University of Colorado Boulder
Electrochemical capture and conversion of CO_2 and nitrogen; Electrochemical methods for polymer recycling; Organic Electrosynthesis

Shaama Mallikarjun Sharada ssharada@usc.edu
Chemical Engineering and Materials Science, University of Southern California
Develop and utilize quantum chemistry methods to develop accurate, transferable design rules for catalytic materials.

Charles C.L. McCrory cmccrory@umich.edu
Chemistry, University of Michigan
Design and implementation of molecular and heterogeneous catalysts for the electrochemical conversion of CO_2 and other small-molecule environmental contaminants.

Mike McGuirk cmmcguirk@mines.edu
Chemistry, Colorado School of Mines
Interdisciplinary research at the interface of synthetic chemistry and materials science, addressing fundamental scientific challenges related to organic and hybrid materials, supramolecular assembly, and environmental sustainability.

Jose Mendoza jmendoza@msu.edu
Chemical Engineering and Materials Science, Michigan State University
My research focus is on the development of theoretical and computational techniques for Quantum Simulations, Machine Learning and Multiscale simulations to study energy, processes and materials, especially structural, electronic, transport and optical properties.

Phillip Milner pjm347@cornell.edu
Chemistry and Chemical Biology, Cornell University
Porous organic materials for catalysis and separations

Gary F. Moore gary.f.moore@asu.edu
School of Molecular Sciences, Arizona State University
Our research group has interests in chemistry to build materials that are fundamentally interesting, use-inspired, and address societal challenges.

Carlos G. Morales-Guio moralesguio@ucla.edu
Chemical and Biomolecular Engineering, University of California, Los Angeles
My research interests are in the convergence of experimental electrochemistry, reactor and process design, and machine-learning tools for accelerated scale-up of electrified chemicals and fuels manufacturing technologies.

Scialog Fellows Continued

Eva Nichols enichols@chem.ubc.ca
Chemistry, University of British Columbia
We study the local environment's role in homo/heterogeneous electrocatalytic CO_2 reduction and use IR spectroscopy to probe reaction mechanisms.

Michael Nippe nippe@chem.tamu.edu
Chemistry, Texas A&M University
Molecular science with focus areas in electro- and photocatalytic small molecule conversion, quantum materials, and recycling and upconversion.

Bin Ouyang bouyang@fsu.edu
Chemistry and Biochemistry, Florida State University
I focus on developing high throughput computation, and data science tools to understand the structural-property-synthesis relationship of disordered energy materials. Particularly, I am interested in developing low-cost disordered catalysis.

Shima Parsa shima.parsa@rit.edu
School of Physics and Astronomy,
Rochester Institute of Technology
I am an experimental physicist with an interest in multi-scale environmental phenomena. My research focuses on how small-scale dynamics determine large-scale transport in these systems with applications in contaminant transport in terrestrial systems and CO_2 storage.

Marc Porosoff marc.porosoff@rochester.edu
Chemical Engineering, University of Rochester
The Porosoff Group studies earth abundant, heterogenous catalysts synthesized via scalable synthesis methods. Important considerations are how heat and mass transfer can be exploited to kinetically couple reverse water-gas shift with Fischer-Tropsch synthesis.

Douglas Reed dreed4@uw.edu
Chemistry, University of Washington
The Reed lab synthesizes new porous and hybrid materials using underexplored building blocks or methods of construction. An overarching theme in the lab will be to use noncovalent interactions to make dynamic, redox-switchable, self-healing, and processable systems.

Hang Ren hren@utexas.edu
Chemistry, University of Texas at Austin
We develop and use nanoelectrochemical tools to reveal and understand the role of surface heterogeneity and the chemical and structural insight of active sites in electrochemical reactions, including electrocatalysis.

Rafael M. Santos santosr@uoguelph.ca
School of Engineering, University of Guelph
The GeoRewind group at the University of Guelph has been demonstrating that enhanced rock weathering in agriculture is a reliable and deployable technique that can be part of multipronged approaches to combat climate change and improve the sustainability of farming practices.

Caroline Saouma caroline.saouma@utah.edu
Chemistry, University of Utah
We are interested in developing catalysts for future energy schemes, with emphasis on how the catalyst and reaction conditions impact overall performance.

Kristen Schell kristenschell@cunet.carleton.ca
Mechanical and Aerospace Engineering,
Carleton University
Using data driven machine learning and optimization methods to parameterize new process models, and integrate these into the larger energy system. The goal is to minimize the energy requirements of negative emissions technologies, to ensure net-negative outcomes for the climate.

Marcel Schreier mschreier2@wisc.edu
Chemical and Biological Engineering,
University of Wisconsin-Madison
I am interested in understanding the molecular-level mechanisms of electrocatalytic and electrochemical processes that allow us to store renewable energy, capture greenhouse gases and sustainably synthesize chemicals.

Xiao Su x2su@illinois.edu
Chemical and Biomolecular Engineering,
University of Illinois Urbana-Champaign
Our interest lies in developing novel technologies for advanced separations and process intensification, by leveraging stimuli-responsive materials and molecular engineering tools for decarbonization.

Will Tarpeh wtarpeh@stanford.edu
Chemical Engineering, Stanford University
The Tarpeh Lab studies electrocatalysis and electrochemical separations to valorize wastewaters. Designing selective reactive separations can improve the sustainability of chemical manufacturing and reduce environmental pollution.

Jesús M. Velázquez jevelazquez@ucdavis.edu
Chemistry, University of California, Davis
Design of multidimensional solid-state materials for energy and environmental science

Haotian Wang htwang@rice.edu
Chemical and Biomolecular Engineering, Rice University
Our group's research interests are focused on electrochemical strategies to decarbonizing fuels and chemicals, including CO_2 capture and conversion as well as electrochemical synthesis of fuels and chemicals.

Anna Wuttig awuttig@uchicago.edu
Chemistry, University of Chicago
We develop electricity-driven reactions that span the chemical value chain by drawing on physical and synthetic inorganic and organic tools to advance the underlying science gating chemical reactivity at electrified interfaces.

Sen Zhang sz3t@virginia.edu
Chemistry, University of Virginia
Developing catalysts for clean energy applications by studying how atomic structure affects their catalytic performance. Water electrolysis, CO_2 conversion, C-H activation.

Houlong Zhuang zhuanghl@asu.edu
School for Engineering of Matter, Transport and Energy, Arizona State University
My group is using computational tools to remediate climate change for sustainable future.

Discussion Facilitators

Roger Aines aines1@llnl.gov
Global Security, Lawrence Livermore National Laboratory
Responsible for managing and leading the Carbon Initiative, which aims to understand, develop, and implement technologies for the removal of carbon dioxide from the atmosphere, so-called negative emissions technologies

Sarbajit Banerjee banerjee@chem.tamu.edu
Chemistry, Texas A&M University
Materials and mechanisms for the energy transition, metastable compounds, energy conversion and storage, energy efficient computation, extraction and handling of liquid fuels, and the development of synchrotron spectroscopy tools

Jordi Cabana jcabana@uic.edu
Chemistry, University of Illinois at Chicago/
Materials Science Division, Argonne National Laboratory
We conduct research in inorganic solid state chemistry @thisisuic. Currently interested in materials in electrochemical environments and for applications in energy technology

Jeffrey Long jrlong@berkeley.edu
Chemistry/Chemical and Biomolecular Engineering, University of California, Berkeley/Materials Sciences Division, Lawrence Berkeley National Laboratory
Our laboratory focuses on the synthesis and characterization of new porous materials that can help address problems in energy and sustainability.

Joaquin Rodriguez-Lopez joaquinr@illinois.edu
Chemistry, University of Illinois Urbana-Champaign
My group designs electroanalytical platforms for energy storage and conversion, focusing on nanoelectrochemistry, electrochemical imaging, low dimensional materials, and chemical sensing.

George Shields george.shields@furman.edu
Chemistry, Furman University
Computational chemistry applied to problems in global warming

Ellen Stechel ellen.stechel@asu.edu
ASU LightWorks, Arizona State University
Solar fuels, clean hydrogen and clean ammonia, long duration energy storage, the energy transition

Guests

Gene Flood eugene.flood@acappellapartners.com
Board of Directors, RCSA
Research interests include global macroeconomics, international finance, and economic mobility.

Isabella Gee gee@sloan.org
Energy and Environment, Alfred P. Sloan Foundation
Energy system transformation and deep decarbonization

Victoria Gonzalez victoria.gonzalez@climateworks.org
Carbon Dioxide Removal, ClimateWorks Foundation
Interested in supporting the holistic advancement of responsible, innovative, and scalable carbon removal approaches. I have a particular interest in ocean-based solutions.

Evan Michelson michelson@sloan.org
Energy and Environment, Alfred P. Sloan Foundation
Our program informs the societal transition toward low-carbon energy systems in the United States by investigating economic, environmental, technological, and distributional issues.

Lyman Page page@princeton.edu
Board of Directors, RCSA
Experimental Cosmology with a focus on the CMB

Scott Siegel ssiegel@dreyfus.org
Camille & Henry Dreyfus Foundation
Dedicated to the advancement of the chemical sciences.

Alfred P. Sloan Foundation

Adam Falk falk@sloan.org
President

Evan Michelson michelson@sloan.org
Program Director

Isabella Gee gee@sloan.org
Program Associate

ClimateWorks Foundation

Victoria Gonzalez
victoria.gonzalez@climateworks.org
Program Associate

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Thomas Kennedy Goodenow tommy@rescorp.org
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Angela Hagen ahagen@rescorp.org
Communications Director

Kimberly Huynh khuynh@rescorp.org
Data Analytics Specialist

Lisa Jo Kastigar ljkastigar@rescorp.org
Executive Assistant to the President

Dan Linzer dlinzer@rescorp.org
President

Meg Martin mmartin@rescorp.org
Pre & Post Award Manager

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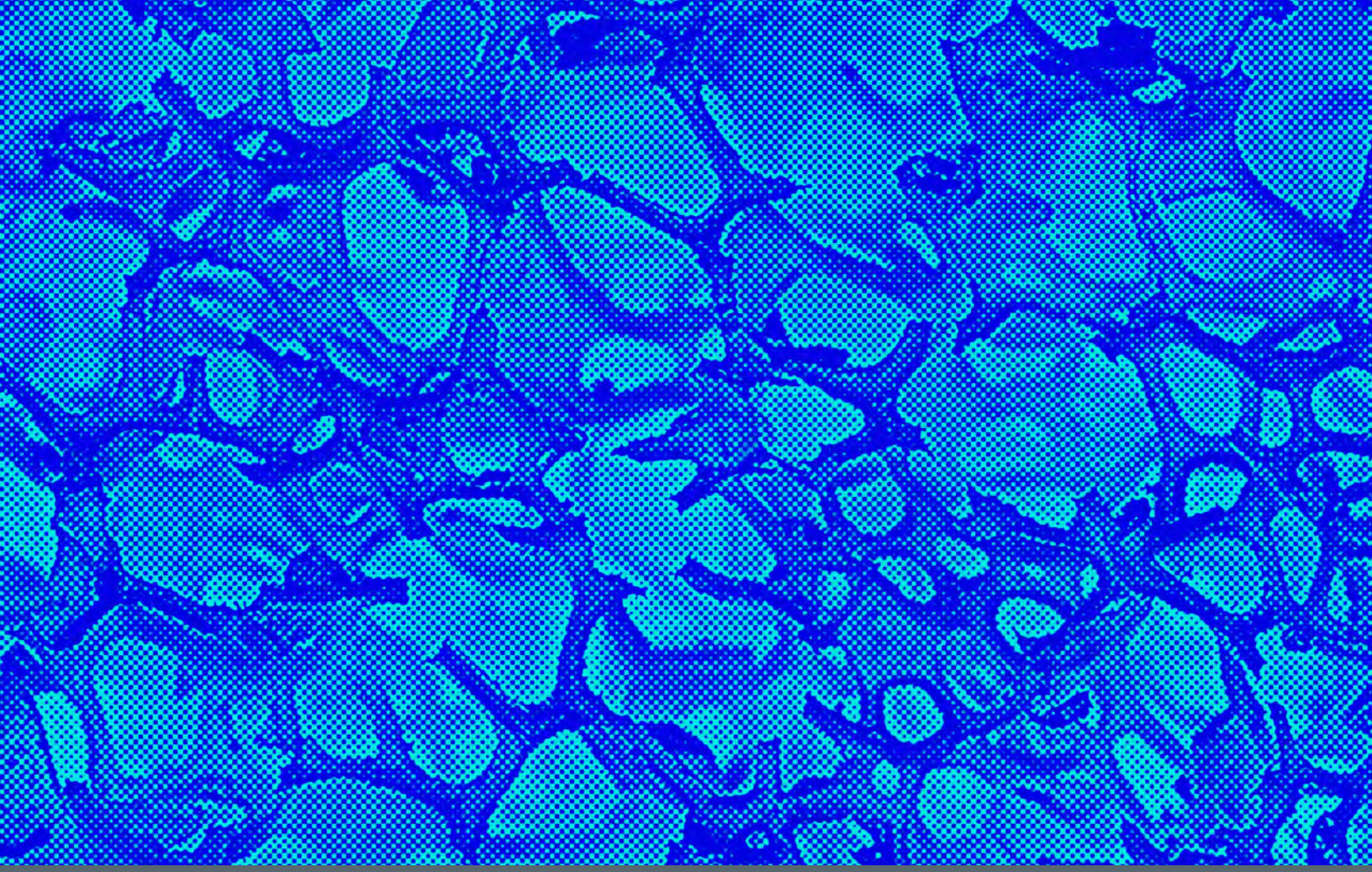

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