2019 WEEKLY BULLETIN
DEPARTMENT OF CHEMISTRY, NORTHWESTERN UNIVERSITY
EVANSTON, ILLINOIS
April 8, 2019

For full schedule, including Center events, please see the Department Calendar:
http://www.chemistry.northwestern.edu/events/calendar.html

Tuesday April 9th: *Faculty Lunch Seminar: Milan Mrksich*
Tech K140
12:00-1:00pm

Friday April 12th: *Department of Chemistry Colloquium:*
Nandini Ananth, Cornell University
Tech LR3
4:00-5:00pm

Arrivals

Wentuan Bi joined the Hupp Group
Baillie DeHaven joined the Stoddart Group
Vasu Dhananjayan joined the Silverman Group
Craig Fraser joined the Stoddart Group
Jingtian Hu joined the Odom Group
Tianjiao Hu joined the Hupp Group
Andres Fernando Lancheros Sanchez joined the Hupp Group
Stephen Laws joined the Scheidt Group
Qin Liu joined the Hupp Group
Rafael Eduardo Lopez Arteaga joined the Weiss Group
Kuniyuki Miwa joined the Schatz Group
Marvin Vega joined the Thomson Group
Jacob Weber joined the Stoddart Group

BIP

BIP every Friday at 10:00 am in Tech K140

Announcements

Industrial Associates: Grad students and postdocs who have submitted abstracts for Industrial Associates should be receiving invitations to the reception on May 1. If you did not receive an invitation by April 3, please email Sophie Tidd at sophie.tidd@northwestern.edu to follow up

BEST Symposium: The application window for the 13th annual Building Engineering and Science Talent (*BEST*) Symposium, hosted by The Dow Chemical Company, will be open March 1 - April 15, 2019.

The *BEST* symposium will be held in Midland, MI on **July 30 – August 1, 2019**. The *BEST* Symposium introduces doctoral students and post-doctoral scientists from U.S. ethnic minority groups (Hispanic, African American or Native American) to the wide range of rewarding careers in industrial research, particularly, the many opportunities available with Dow, where we create innovation at the intersection of

chemistry, engineering, and physics. This conference, developed jointly by Dow's minority scientists and Ph.D. recruiting team, supports the company's commitment to a diverse and inclusive work force.

Applicants must be pursuing degrees in:

- Chemistry
- Chemical Engineering
- Materials Science
- Physics
- Or other closely related fields and should be within 18 months of degree completion by the conference date.

For more information please visit the website. All applications are due by April 15th, 2019.

Opportunities

Oak Ridge National Laboratory, Coordination Chemist

Overview: We are seeking a research chemist with a strong background in coordination chemistry to investigate and apply principles of molecular-recognition and supramolecular chemistry to problems in separations for energy applications. The successful candidate will focus on fundamental questions related to thermodynamics and solution structure as also applied to the recovery and recycle of critical materials, desalination, carbon capture, environmental remediation, recycle of used nuclear fuel, treatment of waste, and sensing of trace contaminants. You'll also be deeply involved in developing new and exciting ideas for proposals and participating in the planning and execution of experimental chemistry within the context of a multidisciplinary ecosystem including specialists in theory and computations, organic synthesis, separations, thermodynamics, spectroscopy, X-ray and neutron scattering, and materials characterization. This position resides in the Chemical Separations Group in the Chemical Sciences Division, Physical Sciences Directorate at Oak Ridge National Laboratory (ORNL).

Major Duties/Responsibilities:

- Work with a diverse team of scientists seeking to advance the scientific understanding of coordination and supramolecular chemistry to achieve chemical recognition by design and to put this understanding to use in real-world applications
- Perform experiments to elucidate the thermodynamic and structural basis of molecular recognition manifested in crystallization, solvent extraction, ion exchange, membranes, and other methods to meet fundamental and applied project goals
- Take responsibility for operation of a separations laboratory and associated equilibration devices and analytical instrumentation
- Independently formulate research problems and design research strategies, working with computational chemists and experimentalists to guide the design of new receptors and characterize their separation properties
- Develop and lead new research directions and contribute to research proposals to compete for internal and external funding
- Train group postdocs, students, and visiting scholars in thermodynamic, solution-structure, and separations methodologies developed in the group
- Present and report research results and publish scientific results in peer-reviewed journals in a timely manner
- Ensure compliance with environment, safety, health and quality program requirements
- Maintain strong dedication to the implementation and perpetuation of values and ethics

Basic Qualifications:

A PhD in Chemistry or a closely related science discipline

Preferred Qualifications:

- A solid foundation in inorganic, physical, and analytical chemistry and in the principles of thermodynamics, solution structure, kinetics, and mechanism
- Expertise in coordination chemistry
- Experience in using at least one of the following techniques: solvent extraction, ion exchange, adsorption, membranes, or crystallization
- Working knowledge of basic instrumental techniques such as ICP-AES, ion chromatography, potentiometric titrimetry, and radiometric methods, as well as NMR, FTIR, and UV-vis spectroscopies
- Experience in X-ray spectroscopy (EXAFS), small-angle X-ray scattering (SAXS), or neutron scattering (SANS)
- Expertise in the chemistry of actinides, lanthanides, and fission products
- Excellent record of productive and creative research as demonstrated by publications in peer-reviewed journals
- Experience in proposal development and leading research projects
- Excellent written and oral communication skills and the ability to communicate to an international, scientific audience
- Motivated self-starter with the ability to work independently and to participate creatively in collaborative teams across the laboratory
- Ability to set priorities to accomplish multiple tasks within deadlines, and adapt to changing project needs

Special Requirement:
Please provide a list of publications when applying for this position. Three letters of reference are required and can be uploaded to your profile or emailed directly to PSDrecruit@ornl.gov. Please include the title of the position in the subject line.
Benefits at ORNL: UT-Battelle offers a quality benefits package, including a matching 401(k), contributory pension plan, paid vacation, and medical/dental plan options. Onsite amenities include a credit union, medical clinic, cafeteria, coffee stands, and fitness facilities.
Relocation: Moving can be overwhelming and expensive. UT-Battelle offers a generous relocation package to ease the transition process. Domestic and international relocation assistance is available for certain positions. If invited to interview, be sure to ask your Recruiter (Talent Acquisition Partner) for details.
For more information about our benefits, working here, and living here, visit the "About" tab at www.jobs.ornl.gov
This position will remain open for a minimum of 5 days after which it will close when a qualified candidate is identified and/or hired.
We accept Word (.doc, .docx), Adobe (unsecured .pdf), Rich Text Format (.rtf), and HTML (.htm, .html) up to 5MB in size. Resumes from third party vendors will not be accepted; these resumes will be deleted and the candidates submitted will not be considered for employment.
If you have trouble applying for a position, please email ORNLRecruiting@ornl.gov.
ORNL is an equal opportunity employer. All qualified applicants, including individuals with disabilities and protected veterans, are encouraged to apply. UT-Battelle is an E-Verify employer.
https://career4.successfactors.com/sfcareer/jobreqcareer?jobId=883&company=utbattelleP&username=

Lewis University invites applications for a full-time, tenure-track position at the Assistant or Associate professor level starting in August 2019. We seek candidates with expertise in Bio-inorganic Chemistry, with preference given to those with experience teaching at the undergraduate level. Minimum qualifications include a Ph.D. in Biochemistry or Chemistry with emphasis in bioinorganic chemistry by the time of the appointment.

Candidates for the position will be expected to teach at least 12 credit hours per semester while also pursuing and maintaining scholarly interests in the biochemical field within the undergraduate and masters level research focus of the department. Specific teaching assignments may include teaching general chemistry lecture/laboratory, inorganic chemistry sequence, biochemistry lecture and lab courses, and research area specific graduate courses as the department sees fit. The successful candidate must be committed to excellence and innovation in undergraduate and graduate teaching as well as active to department recruitment and community outreach initiatives. It is also expected that the candidate will develop a thriving research program with MS level and undergraduate students.

Lewis University
Located in the greater Chicago region, Lewis University is a comprehensive, Catholic university, where the traditions of liberal learning, values and preparation for professional work come together with a synergy that gives the university its educational identity and focus. Founded in 1932, Lewis is a dynamic, coeducational university offering more than 80 undergraduate majors and programs of study, 35 graduate programs, and two doctoral programs. Lewis is one of many schools sponsored by the De La Salle Christian Brothers, an international Roman Catholic teaching order.

Salary is negotiable and commensurate with skills and experience. Your total compensation goes beyond the number on your paycheck. Lewis University provides tuition benefits, health plans and retirement benefits that add to your bottom line. For additional information on Lewis as an institution, please see our website at http://www.lewisu.edu.

Minimum Qualifications PhD in Biochemistry or Chemistry with an emphasis in bio-inorganic chemistry by the time of appointment. The successful candidate must be committed to excellence and innovation in undergraduate and graduate teaching as well as active to department recruitment and community outreach initiatives.

Application Process To apply, please submit a cover letter, curriculum vitae, statement of teaching philosophy, proposed research plan, and three letters of reference (sent directly by your referees). The proposed research plan may be submitted under the "Other Documents" category. All materials should be submitted electronically via the application site. Review of applications will begin immediately and continue until the position is filled. For full consideration, interested applicants can view a full description of this position and apply online at http://jobs.lewisu.edu/postings/4192

Inspired by the University's Mission values of Wisdom, Knowledge, Justice, Fidelity and Association, the Lewis Community declares that we are a Sanctified Zone where people are committed to working to end racism, bias and prejudice by valuing diversity in a safe and nurturing environment. Lewis University, sponsored by the De La Salle Christian Brothers, serves a diverse community and is committed to promoting diversity and inclusion on our campus as an equal opportunity employer.

We invite applications from individuals that embody a commitment to diversity. All qualified applicants will receive consideration for employment without regard to race, color, religion, gender, gender identity or expression, sexual orientation, national origin, genetics, disability, age, or veteran status and other protected status as required by applicable law. We are fully dedicated to providing opportunities for development of the whole person. To demonstrate this commitment, Lewis University wishes to build a culturally diverse workforce which strongly encourages applications from women, minorities, individuals with disabilities and veterans

Loyola University Chicago, Lecturer in Organic and Biological Chemistry (Department of Chemistry and Biochemistry) Loyola University Chicago (LUC), College of Arts and Sciences, Department of Chemistry and Biochemistry invites applications for a non-tenure-track position at the Lecturer rank in organic chemistry, beginning in Fall 2019. The Department offers Ph.D., M.S., and ACS-approved BS degrees. For more details about the department, visit http://www.luc.edu/chemistry.

The position involves instructing laboratory sections of Organic Chemistry in both semesters of the academic year, and Biochemistry in one semester. Candidates also will be required to supervise graduate student teaching assistants. Candidates for the position must demonstrate the potential for distinguished teaching and student mentorship or possess a record of such accomplishments.
Qualifications

Candidates holding a M.S. degree or higher in chemistry or in a closely related field are highly preferred. Candidates should have experience teaching undergraduate chemistry laboratories for students majoring in Chemistry, Biochemistry and Biology, and others who aspire to careers in the health sciences, and the ability to teach lecture courses in General Chemistry. The successful candidate will have a strong commitment to excellence in teaching. In addition, candidates also must be willing to support the mission of LUC and the goals of a Jesuit Catholic Education.

Candidates should submit a current Curriculum Vitae, a teaching statement, and a cover letter to www.careers.luc.edu. They also must provide the names and email addresses of three individuals prepared to speak to their professional qualifications for this position. Referees will not be contacted immediately but might be at subsequent points in the review process. Candidates may forward samples of materials related to teaching excellence to:

Chair of the Search Committee
Department of Chemistry and Biochemistry
Loyola University Chicago
1068 W. Sheridan Road
Chicago, Illinois 60660

Review of applications will begin in early spring 2019 and continue until the position is filled.
https://www.careers.luc.edu/postings/10295

The Science Team at the Illinois Mathematics and Science Academy® (IMSA) is seeking a full-time Chemistry instructor. The Science team delivers a program through which students develop collaborative inquiry skills, apply integrative critical thinking and engage in active research. We encourage individuals who enjoy making a difference in the lives of talented students to apply.

Successful candidates will have a master's or doctorate degree in Chemistry or realated field and a record of demonstrated successful teaching. Preference will be given to those candidates with broad experience in Chemistry with a focus in Material Science.

This position fulfills the requirement for DFI (Diversifying Higher Education Faculty in Illinois) Fellows following completion of their academic program.

The internationally recognized Illinois Mathematics and Science Academy (IMSA) develops creative, ethical leaders in science, technology, engineering, and mathematics. As a teaching and learning laboratory created by the State of Illinois, IMSA enrolls academically talented Illinois students (grades 10-12) in its advanced, residential college preparatory program. It also serves thousands of educators and

students in Illinois and beyond through innovative instructional programs that foster imagination and inquiry.

The successful candidate will be responsible for, but not limited to:
• Teaching a range of Chemistry and other science courses
• Guiding and tutoring students outside of class
• Participating in the department's curriculum and assessment development work
• Close collaboration with colleagues when teaching the same course and when working on departmental priorities
• Participating in all department and faculty meetings, faculty development programs, and community development days
• Participating in non-teaching activities that support the department's and Academy's programs
• Participating in external professional organizations
The Required Qualifications For This Position Include
• A minimum of a Master's degree in Chemistry, or a related field
• Effective communication with students, staff, and parents
• Active participation in a collaborative team environment
• Engagement in reflective professional practice
• Excellent interpersonal skills for working in a team environment with the ability to function diplomatically and communicate effectively with colleagues, administrators, students, parents, and the public
• An appreciation and understanding of working with diverse populations
Preferred Qualifications
• Demonstrated application of engineering principles in teaching
• Experience in curriculum design
• Demonstrated application of computational analysis, modeling or problem solving in teaching
• High school equivalent teaching experience

Salary And Benefits
Salary and benefits are commensurate with training and experience expected at this level of employment. The Illinois Mathematics and Science Academy offers an excellent comprehensive benefits package including health and retirement benefits. The State Universities Retirement System (SURS) is reciprocal with other Illinois public retirement systems such as the Teachers' Retirement Systems of Illinois (TRS) and the Illinois Municipal Retirement Fund (IMRF).
Application Process Applicants must submit a letter of interest, complete and current resume/CV, a statement of teaching philosophy, salary history, and three current professional references. Applications will be accepted and reviewed as received until the position is filled. We are seeking a diverse applicant pool. The Illinois Mathematics and Science Academy is an Equal Employment Opportunity Employer providing equal employment opportunities without regard to race, color, sex, age, religion or national origin. This policy also includes the handicapped and all disabled Vietnam era veterans. IMSA utilizes only job-related criteria in making decisions concerning applicants and employees
More information can be found at www.imsa.edu

At Novartis, we are committed to training the next generation of scientific leaders. The Novartis Innovation Postdoctoral Fellowship offers aspiring drug hunters a unique opportunity to join our teams at the Novartis Institutes for BioMedical Research (NIBR), the innovation engine of Novartis. Mentored by NIBR scientific leaders, Innovation Fellows will gain first-hand experience in the design and development of breakthrough therapies and innovative technologies. We are looking for Innovation Fellows who will bring their scientific creativity and natural curiosity to tackle important therapeutic challenges. Join us as we reimagine medicine together.

Program highlights

- Program duration: 2-3 years
- Boot camp: Innovation Fellows will attend a fully immersive boot camp covering the fundamentals of drug discovery and development
- Mentorship & access to technology: Innovation Fellows will have access to NIBR state-of-the-art technology platforms and be mentored by selected NIBR scientific leaders
- Rotations: Innovation Fellows will benefit from a tailored rotation schedule in both scientific and business-related disciplines
- Fireside chats with local leaders in academia and industry
- Community: Innovation Fellows will join Discovery Fellows in our vibrant postdoctoral community with dedicated events, including our annual Research Day Symposium

Who are the Innovation Fellows?

- Early-career scientists, within 3 years of receiving their MD and/or PhD (students in their last 4 months of graduation are eligible to apply)
- All scientific and technical disciplines welcome (e.g. biology, biophysics, chemical biology, chemistry, computational and data sciences, engineering, and more)
- Strong publication track record or other scientific achievements
- Entrepreneurial mindset and boundless curiosity
- Dedicated to translating scientific discoveries into medicines that improve human health

How to Apply

- Please submit your CV and cover letter by May 1, 2019 for consideration. Include a potential area of unmet medical need where you believe you could make an impact.
- All applications will be evaluated by a review team comprised of discipline experts and drug hunters from NIBR.
- Candidates selected as finalists will be invited to our Cambridge, MA campus for an all-day interview in June 2019. New Innovation Fellows will start in September 2019 at our Cambridge site.

Apply (https://www.novartis.com/careers/career-search/job-details/262871BR)

If you have any questions, please contact us at nibr.postdoc@novartis.com.

Earli is currently seeking high-caliber non-viral nucleic acid Delivery Scientist / Bioengineer candidates.

Earli Inc. has a large mission: to detect and then cure cancer at its earliest stages, effortlessly and painlessly. In other words, we aim to make cancer a benign experience. Our science is based on a new method of detecting, localizing and then treating cancer, developed by Dr. Sam Gambhir, who runs Stanford's Canary Center for Early Cancer Detection. Earli is starting what we believe will be a new era of "synthetic biomarkers." Rather than relying on hard-to-detect natural biomarkers in blood samples, Earli's technology *forces* cancer cells, if they exist, to produce non-human molecules they otherwise would not naturally make. As a result, such synthetic biomarkers are readily detectable and are easily quantified. The same platform can be used to localization and treatment. Other diseases beyond cancer, are potentially also diagnosable and treatable with this novel approach. Earli is financed by some of the best venture capital firms in Silicon Valley and China. We are currently based in the West Coast's prime biotech hub in South San Francisco at Johnson & Johnson's JLABS. More information can be found at www.earli.com

Who You Are

• You share our same sense of dedication, scientific passion and entrepreneurial spirit.
• You are technically gifted, with great hands on experience.

• You work well in a fast-paced and extremely focused startup environment.
• You are not only smart, but clever and constantly think outside the box.
• You are able to make logical decisions in an instant when there is little time to evaluate.
• You are a natural communicator and relationship builder.
• You stay calm under high pressure and stress.
• You have the ability to multi-task in a serious way, with an extreme attention to detail.
• You become a representative of the core DNA of the company through who you are.

Your Primary Responsibilities
The overarching mission of the Delivery Bioengineer is to solve one of the fundamental roadblocks to non-viral gene delivery: the development of novel synthetic materials that can deliver DNA to a broad range of human cells *in vivo* in a safe and efficacious manner. This is a challenging goal and requires a unique individual with an exceptionally strong and broad skillset in Biomaterials and Drug Delivery.
• Be a core contributor to Earli's internal efforts in developing multiple strategies for non-viral DNA delivery.
• Systematically design and use synthetic organic and polymer chemistry to create large, diverse libraries of polymer, dendrimer, and/or lipid materials with precise control over structure, molecular weight distributions, biodegradability, and biocompatibility.
• Perform purification and characterization of these synthetic components by GPC, HPLC, ESI-MS, MALDITOF MS, NMR as necessary.
• Develop strategies to surface-engineer nanoparticles\
• Formulate DNA nanoparticles and characterize complexation efficiency, particle size, surface charge, and ionization potential.
• With other Earli personnel, test the nanoparticles *in vitro* for cellular uptake, intra-cellular localization, and transfection efficiency across many disease-relevant cell types, including cancer cells, normal primary cells, and immune cells such as macrophages; and *in vivo* across a range of relevant mouse models.

Your Required Experience, Knowledge and Skills
• PhD Degree in Chemical Engineering, Bioengineering, Materials Science, or a closely related field, with at least 2 years of post-doctoral research experience
• 4-6 years or more of relevant experience in developing non-viral gene delivery materials, as evidenced by a strong publication record in high-impact journals.
• Development of polymeric and/or lipid-based drug delivery systems. A candidate with a strong background in synthetic chemistry is preferred.
• Physical characterization of formulated complexes including charge, size, encapsulation efficiency, stability etc.
• Must have experience with formulation of nucleic acids (either DNA, mRNA, or structured RNA).
• Ability to assess efficacy of formulated complexes in *in vitro* tissue culture models and/or *in vivo* tissues is essential.
• Strong verbal and written communication skills with the ability to present your results succinctly but precisely in team meetings and formal reports
• Managerial experience a plus but not required.

The LinkedIn post can be found here https://www.linkedin.com/jobs/cap/view/1180098463/. Candidates also email Dr. David Suhy, Chief Science Officer at Earli, here: david@earli.com.

The National Renewable Energy Laboratory (NREL) is a leader in the U.S. Department of Energy's effort to secure an energy future that is both environmentally and economically sustainable. With locations in Golden, Boulder and Washington D.C., NREL is the primary laboratory for research, development and deployment of renewable energy technologies in the United States. The NREL mission

is to develop renewable energy and energy efficient technologies and practices, advance related science and engineering, and transfer knowledge and innovation to address the nation's energy and environmental goals.
NREL's Chemistry and Nanoscience Department has an opening for a Postdoctoral Researcher specializing in quantum dot film fabrication and characterization. The successful applicant will have expertise in synthesizing semiconductor nanocrystals and fabricating conductive QD arrays. The successful candidate should be familiar with standard characterization such as ultrafast spectroscopy, conductivity measurements and solar cell characterization. Additionally the successful applicant should have expertise in data analysis, simulation of experimental results and writing of manuscripts. The successful applicant will have the ability to work with material scientist to probe and understand surfaces and interfaces of newly developed chemistries and heteroarchitectures.

Basic Qualifications
Must be a recent PhD graduate within the last three years.

Additional Qualifications
Preferred Qualifications
Our ideal candidate will have just received a Ph.D in physics, chemistry, optics, or the equivalent, as well as having experience working with quantum dots and methods, data collection, and simulating experimental results. Experience fabricating conductive quantum dot arrays, new quantum dot systems, core/shell and synthesizing other shapes is also desired. Direct experience with QD systems.

Submission Guidelines
Please note that in order to be considered an applicant for any position at NREL you must submit an application form for each position for which you believe you are qualified. Applications are not kept on file for future positions. Please include a cover letter and resume with each position application.

https://nrel.wd5.myworkdayjobs.com/en-US/NREL/job/Golden-CO/Postdoctoral-Researcher---Quantum-Dot-Film-Fabrication-and-Characterization_R4037

The National Renewable Energy Laboratory (NREL), located at the foothills of the Rocky Mountains in Golden, Colorado, is the nation's primary laboratory for research and development of renewable energy and energy efficiency technologies. A postdoc position is available in the Materials Science Center, in the area of thin film synthesis and characterization of novel materials for application in next-generation Li-ion battery technologies
The position would support a collaborative project on solid-electrolyte interphases (SEI) of Si-based anode materials in Li-ion batteries. Specific duties would involve physical vapor deposition (e.g., magnetron sputtering, pulsed laser deposition) of thin films that can be used as model systems for such studies. The work would also include studying solid state components of the SEI, such as lithium silicate, lithium silicide, and other constituents, as well as developing artificial layers that can help understanding the SEIs. The job duties would also include maintaining existing experimental synthesis equipment and protocols, as well as setting up new characterization tools compatible with thin film sample studies.

Basic Qualifications
Must be a recent PhD graduate within the last three years.
Additional Qualifications
Preferred Qualifications
Successful candidates should have prior experience in materials research for battery applications, solid understanding of the underlying electrochemical processes, and proven track record with electrochemical and spectroscopic characterization instruments. Other preferred skills include hands-on experience with thin film synthesis (sputtering, pulsed laser deposition, molecular beam epitaxy) and thin film

characterization (chemical, structural, microscopic). Prior experience with automation of instruments and development of software would be a plus.
Required Knowledge Skills and Attributes

Submission Guidelines
Please note that in order to be considered an applicant for any position at NREL you must submit an application form for each position for which you believe you are qualified. Applications are not kept on file for future positions. Please include a cover letter and resume with each position application.

https://nrel.wd5.myworkdayjobs.com/en-US/NREL/job/Golden-CO/Postdoctoral-Researcher--Thin-Film-Materials-for-Li-ion-Battery-Research_R3673

NREL's Transportation and Hydrogen Systems Center has a research position available in battery life testing and life-predictive modeling. The selected candidate will be responsible for conducting aging tests on Li-ion batteries and developing aging models of batteries capturing electrochemical degradation mechanisms, validating and integrating those models within NREL's computational battery modeling frameworks. The selected candidate will develop new and apply existing battery simulation software to investigate and optimize performance and lifetime of lithium-ion batteries for electric-drive vehicles and renewable energy applications. The selected candidate will further be responsible for developing new experimental techniques to isolate aging mechanisms. This position will support R&D conducted in-house and externally by NREL researchers and university and industry participants.
Job Duties
Job duties include, but not limited to:

- Design and carry out life-cycle experiments to measure Li-ion battery capacity fade and resistance growth under different storage and charge/discharge aging conditions.
- Use existing in-house software to perform parameter identification and develop life models of multiple Li-ion battery technologies. Integrate those life models into other technoeconomic/systems analysis models. Support vehicle and grid energy storage lifetime and control studies.
- Work with team to formulate physics models of electrochemical/mechanical degradation mechanisms and integrate those models into NREL's multi-scale multi-domain (MSMD) battery modeling software.
- Develop new experiments, test fixtures and test procedures to isolate and quantify individual degradation mechanisms. Use data to validate degradation physics models.
- Tear down aged cells. Work with team and external partners to carry out supporting chemical analysis and microscopy studies of aging behavior.
- Improve performance and lifetime of Li-ion battery units through simulation-based analysis.
- Document work in detailed technical memos, laboratory notebooks, milestone reports, and journal articles and present at technical conferences.

Required Education, Experience, and Skills
Must be a recent Ph.D. graduate within the last three years.

Preferred Qualifications
Demonstrated research capability to solve challenging problems. Experience with battery galvanostatic/potentiostatic and electrochemical impedance spectroscopy tests and equipment. Familiarity with cell tear-down and fabrication procedures, chemical, structural, tomography and microscopy analysis techniques. Programming experience in C, C++, MATLAB, Python, LabView, and/or dSPACE. Knowledge of Modbus, CAN, J1939 and other communication protocols. Familiarity with commercial finite element analysis (FEA) software packages such as COMSOL and ANSYS, and/or computational fluid dynamics (CFD) software such as FLUENT and STAR-CCM+. Understanding of numerical

solution of partial differential equations. Previous research or practical experience proposing, formulating and solving physics-based models of multi-scale reaction-transport systems such as lithium-ion batteries. Prior experience developing tests to validate those models. Experience designing laboratory experiments and analyzing data. Excellent interpersonal, communication, writing and documentation skills. Demonstrated team work, creativity, innovation, and adaptability.

Desired Education, Experience, and Skills

- PhD. in relevant chemistry, electrochemistry, mechanical, chemical engineering or related discipline with 3.0 GPA or higher.
- Experience conducting aging test campaigns on Li-ion cells, including custom fixture design, setting up tests, programming battery cyclers and monitoring, reducing, interpreting and presenting data.
- Experience in modeling and simulation of thermal, chemical, and electrochemical energy storage devices or systems.
- Experience in modeling degradation and lifetime of Li-ion batteries.
- Programming experience in Matlab.

Submission Guidelines
Please note that in order to be considered an applicant for any position at NREL you must submit an application form for each position for which you believe you are qualified. Applications are not kept on file for future positions. Please include a cover letter and resume with each position application.

https://nrel.wd5.myworkdayjobs.com/en-US/NREL/job/Golden-CO/PostDoc-Position--Battery-Life-Testing-and-Modeling_R4172

How to apply: Applications will be accepted immediately and candidates will be considered until the position is filled. To be considered, all applicants must submit a cover letter, CV, a one-page "Research Statement" describing research experience and how this aligns with the focus of the Lapinsky group, and the names/phone numbers of three references. A single PDF document should be sent to Dr. David Lapinsky (lapinskyd@duq.edu). Salary will be commensurate with accomplishment, fit, and experience. The environment: Located in Pittsburgh, Duquesne University provides a rich intellectual environment and cutting-edge facilities for its researchers, who conduct studies at the forefront of basic biomedical science, drug discovery, and technology development.