



FROM ATOMS TO SYSTEMS, WE INNOVATE.

YOUR RESEARCH PARTNER

We collaborate to solve key technical challenges that will unleash better distributed-energy storage and generation, and accompanying power-management systems.

We research and develop higher-performance and lower-cost materials and devices for energy generation, storage and conversion.

We partner with innovators on electric vehicles, microgrids, photovoltaic panels, wind turbines, wearable power devices and more.

Visiting Industrial Fellows are welcomed.

Come collaborate with us.

FACILITIES AND CAPABILITIES

Battery fabrication

2 Ah pouch cell by MTI-UCSD Battery Fabrication Lab

Battery testing

High precision testing at Arbin-UCSD Battery Testing Lab

Materials synthesis

ALD, PLD, E-Beam, Sputtering, sol-gel, electrodeposition

Materials characterization

XPS, XRD, SEM, UV, IR, GC-MS, AFM

Microgrid testing

Theory and computation

Data analytics and machine learning



YOUR ENERGY WORKFORCE

We train and mentor our students to become tomorrow's workforce for sustainable energy.

Engage and recruit students working at the cutting edge of materials genome computation and design, real-time monitoring of energy devices, scalable nanomaterials manufacturing methods, recycling and reuse of materials, and economic analysis of new and disruptive energy technologies.

CHEMICAL AND NANO ENGINEERING

Zheng Chen

Nanostructured and polymeric materials for electrochemical energy storage and conversion

David Fenning

Defect engineering for high efficiency solar cells and solar-to-fuels

Ping Liu

Materials and architectures for energy conversion and storage systems

Jian Luo

Novel materials processing methods and interfacial engineering of materials for energy-related applications

Shirley Meng

Advanced nanoscale imaging and analysis of high-performance battery materials

Tod Pascal

Theory, simulations, materials physics, spectroscopy, characterization, thermodynamics

Andrea Tao

Colloidal synthesis, low dimensional materials for energy storage, plasmonic nanoparticles for photovoltaics and photocatalysis

Joseph Wang

Wearable energy harvesting devices, porous electrodes and electrocatalysis

PHYSICS

Oleg Shpyrko

Advanced X-ray microscopy of ionic, magnetic and electronic materials

CHEMISTRY AND BIOCHEMISTRY

Kent Griffith

Synthesis–structure–function relationships in complex energy-related materials

Michael Sailor

Silicon nanotechnology, surface chemistry and coatings, silicon-lithium anodes, photonic crystals

Akif Tezcan

Bioinorganic and biophysical chemistry; metalloprotein structure, function and biosynthesis; biomaterials

COMPUTER SCIENCE AND ENGINEERING

Tajana Rosing

Modeling and control of distributed energy resources, Internet of Things infrastructure

ELECTRICAL AND COMPUTER ENGINEERING

Eric Fullerton

Ultra-low-energy memory, processing elements and architectures

Hanh-Phuc Le

Efficient power electronics

Tse Nga 'Tina' Ng

Solution processing and printing methods, flexible electronic devices

Yuanyuan Shi

Algorithms and mechanisms for optimizing the efficiency, intelligence and sustainability of the energy system

MECHANICAL AND AEROSPACE ENGINEERING

Renkun Chen

Materials and devices for thermal energy transport and conversion

Sonia Martinez

Networked system control, distributed optimization algorithms, decision making for autonomous systems

STRUCTURAL ENGINEERING

Alicia Kim

Multiscale and multiphysics optimization of materials

Yu Qiao

Low-grade heat, energy harvesting, green cement, energy efficiency, thermal runaway in batteries

ECONOMICS

Graham Elliott

Market specific algorithms to construct realistic estimates of the direct economic value of the energy storage device

Richard Carson

Forecasting greenhouse gas emissions; role of economic incentives, regulation and technical change on energy systems; valuation of non-market impacts

UC SAN DIEGO MICROGRID

Minh Nguyen

Solid oxide fuel cells, reversible fuel cells, hydrogen

Antonio Tong

Senior Development Engineer

PARTNER BENEFITS

- » A seat on the Sustainable Power and Energy Center's Board of Advisers for discussion of Center priorities
- » Opportunities to engage Center faculty through research-oriented meetings
- » Opportunities to engage graduate students affiliated with the Center regarding jobs, internships, and co-ops
- » Invitations to annual research reviews, workshops, and seminars

Director

Ping Liu

Department of Chemical and Nano Engineering

piliu@eng.ucsd.edu

Associate-Director

Zheng Chen

Department of Chemical and Nano Engineering

zhc199@ucsd.edu

Industry Partnerships

Cindy Hanson

Director
Corporate Research Partnerships

cahanson@ucsd.edu

+1 (858) 822-1033