

From atoms to systems, we innovate.

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.

Collaborate with us.

BATTERY
RECYCLING

DATA ANALYTICS AND
MACHINE LEARNING

THEORY AND
COMPUTATION

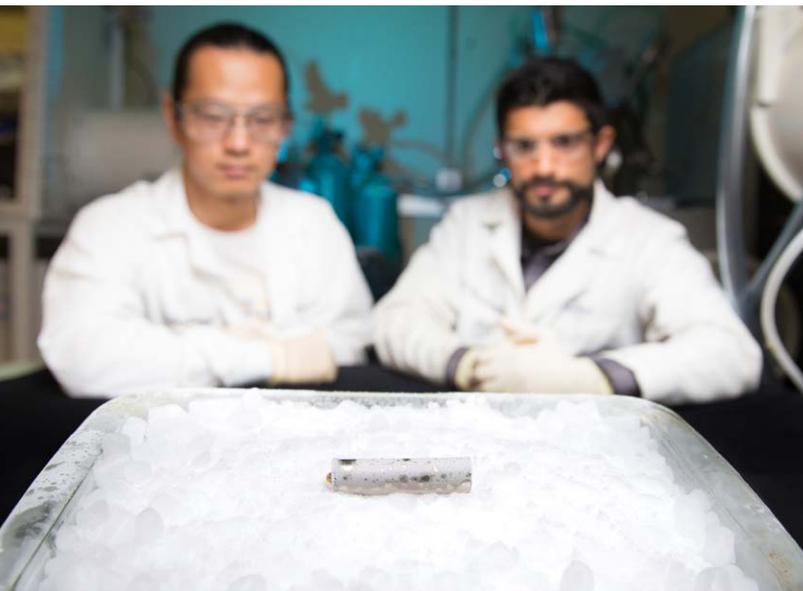
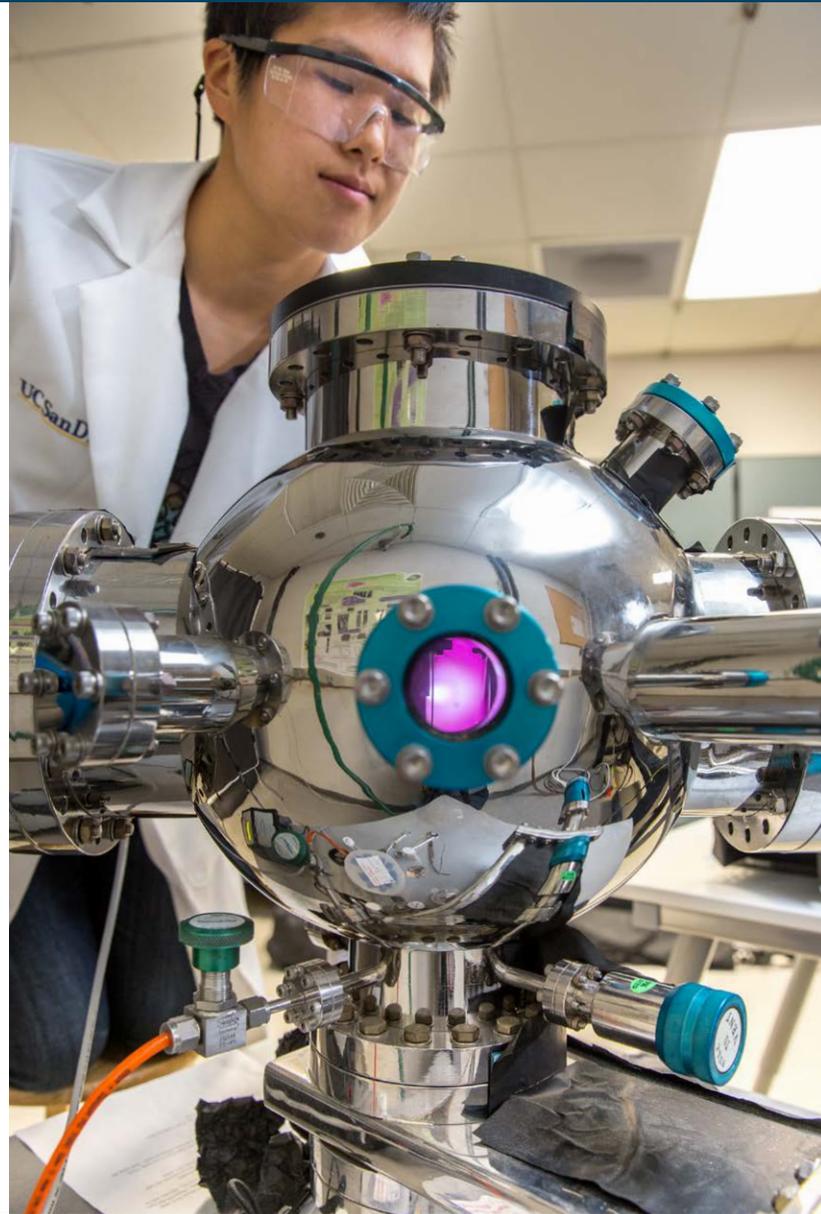
SYNTHESIS AND
FABRICATION

CHARACTERIZATION
AND DIAGNOSIS

PROTOTYPING AND
INTEGRATION

MICROGRID
TESTING

ECONOMIC
EVALUATION



Your Energy Workforce

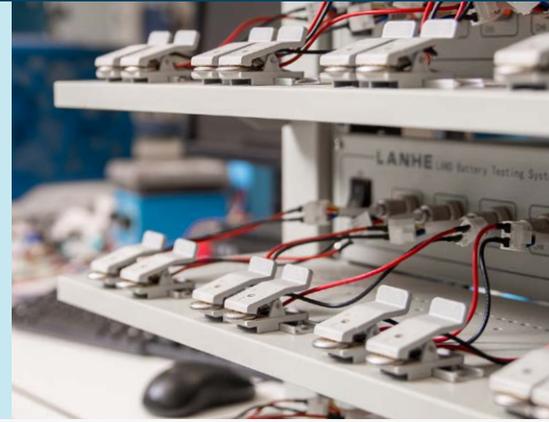
We train and mentor our students to become tomorrow's workforce for sustainable energy.

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.

"As most of the world continues to transition from an industrial to an information-driven society, the technological, sociological, and environmental requirements placed upon our energy infrastructure have become increasingly demanding.

Renewable energy, distributed energy, portable power, and smart energy systems are reshaping a future that will be more complex and potentially more volatile than the fossil fuel-based systems currently in place. Nonetheless, this future may bring with it far lower energy prices and improved sustainability."

— Y. Shirley Meng, Ph.D. Sustainable Power and Energy Center Director



NANOENGINEERING

Jinhye Bae

Polymeric materials for energy harvesting/storage systems, flexible and printable materials and devices

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

Darren Lipomi

Ultra-flexible and stretchable solar cells and inexpensive, large-area graphene

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

Shyue Ping Ong

Data-driven computational design of 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

Sheng Xu

Soft inorganic materials for energy harvesting and storage devices

PHYSICS

Oleg Shpyrko

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

CHEMISTRY AND BIOCHEMISTRY

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

Tse Nga 'Tina' Ng

Solution processing and printing methods, flexible electronic devices

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

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

Antoni Tong

Senior Development Engineer

JOIN US

We welcome industry partners, faculty members and researchers to join the Sustainable Power and Energy Center.

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