

# Energy Innovation: From Theory to Microgrid

**Sustainable  
Power  
and Energy  
Center**

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## CURRENT RESEARCH

UCSD's Agile Center addresses bottleneck issues facing industry partners in energy technology

As energy technology advances on all fronts, it also faces bottleneck issues that await solutions for further breakthrough. Currently, solar panels are based on silicon technology, rendering the panels rigid and expensive. Energy storage technology for large-scale solar and wind renewable sources is premature, and the techniques for designing batteries to best optimize the value of batteries in the microgrid remain unknown. Such key technical challenges, along with many others, are being evaluated and addressed at the Sustainable Power and Energy Center (SPEC), one of the Agile Centers initiated by the Jacobs School of Engineering at the University of California, San Diego in 2015. Collaborating to solve critical problems that are holding back distributed-energy storage and generation and to accompany power-management systems, scientists at SPEC research and develop higher-performance and lower-cost materials and devices for energy generation, storage and conversion.

At UC San Diego, home to one of the world's most advanced microgrids, researchers are able to conduct tests on experimental devices in both laboratory and grid-connected conditions, partnering with innovators on electric vehicles, microgrids, photovoltaic panels, wind turbines, wearable power devices, and more. Perhaps the most unique feature of the Center is its interdisciplinary nature, bringing together a broad spectrum of faculty from physical sciences, economics, utility microgrid, engineering, and material sciences to address the complex, ever-changing energy landscape that requires a pool of great talents. Directed by Professor Shirley Meng, the Center's vision to expand the field not only by making crucial discoveries, but also by...

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## AFFILIATION

 University of California, San Diego

## AWARDS

- [Shirley Meng](#)
- [Darren J. Lipomi](#)
- [Shaochen Chen](#)
- [Michael J. Sailor](#)
- [Shyue Ping Ong](#)
- and 3 more...

## RESEARCH AREAS

Clean Energy, Technology, Materials Science / Physics, Nanotechnology

## FUNDING REQUEST

Your contributions will support the Sustainable Power and Energy Center, at the University of California, San Diego, to resolve bottleneck issues facing energy technology. Donations will help strengthen and catalyze collaborations within the Center, for researchers to expand, channel, and execute novel ideas. Besides the projects currently in full motion, the Center hopes to venture out into helping addressing California's water challenges in the near future - the energy and water nexus. Join in their efforts to create a sustainable future by funding.

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