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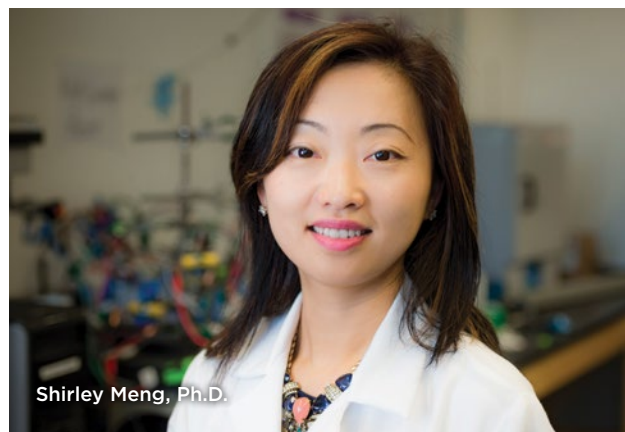
Batteries in the lab are charged and discharged at different current densities and cut-off voltages—to be evaluated on energy density and cycling efficiency. The information gained is critical for scientists in correlating the structures of the materials with the electrochemical performance of the batteries.



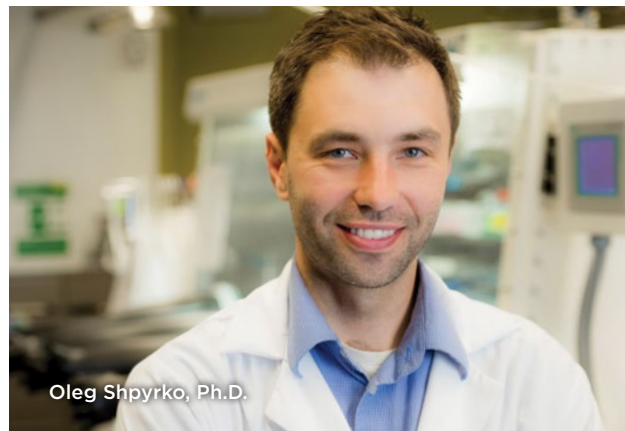
A Battery of Solutions

To help ensure a low-carbon future, batteries will need to do more than charge faster, last longer and cost less—they will need to perform at the high voltages electric cars require. Two UC San Diego researchers—nanoengineer **Shirley Meng, Ph.D.**, and physicist **Oleg Shpyrko, Ph.D.**—are collaborating to address the challenge. Their work in the new Sustainable Power and Energy Center combines Meng's expertise in battery research with Shpyrko's X-ray imaging techniques to provide insights—at the nanoscale—on what happens inside a battery while it operates in real time. Ultimately, their findings will shape how battery developers design high-voltage lithium-ion batteries to reduce greenhouse emissions and the carbon footprint of vehicle transportation.

The work at the Sustainable Power and Energy Center to better understand and protect the planet is also aligned with the sustainable operations on campus. UC San Diego's renowned microgrid serves as the real-world test bed for the researchers to explore their green and advanced energy solutions.



Shirley Meng, Ph.D.



Oleg Shpyrko, Ph.D.

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