UC San Diego
JACOBS SCHOOL OF ENGINEERING

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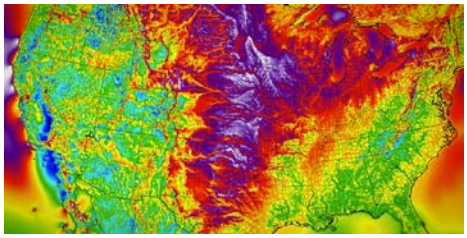
PNAS Paper Corrects a 2015 Roadmap for Energy Transition in USA



Can the continental United States make a rapid, reliable and low-cost transition to an energy system that relies almost exclusively on wind, solar and hydroelectric power? While there is growing excitement for this vision, a new study in PNAS by 21 of the nation's leading energy experts, including David Victor and George Tynan from UC San Diego, argue that achieving net-zero carbon emissions requires incorporating a much broader suite of energy sources and approaches. The paper provides a rigorous analysis that corrects a 2015 research roadmap indicating that the continental United States could be reliably powered at low cost, in as little as 35 to 40 years, by relying on just solar, wind, and hydroelectric power. Paper co-author George Tynan is associate dean of the Jacobs School of Engineering. He and energy expert David Victor from the School of Global Policy and Strategy launched the Deep Decarbonization Initiative at UC San Diego in 2016 to tackle the interrelated policy and technology challenges that must be addressed to get to zero global carbon emissions. Read coverage in the New York Times. Learn more: http://bit.ly/2rNmjja

Earthquake Safe: 30 Years of Innovation

When you drive across a highway bridge in California, there is a good chance that your safety depends on a piece of technology that has been developed and tested at UC San Diego. More specifically, many of the advances making California roads, bridges and buildings safer during earthquakes were tested at the Charles Lee Powell Structural Engineering Laboratories at the Jacobs School of Engineering. "The Powell Labs helped bring an entire generation of bridges here in California up to code," said Tom Ostrom, the State Bridge Engineer at the California Department of Transportation and a structural engineering alumnus. Research data collected in the Powell Labs have also helped advance theoretical and computational models that can be used to predict the behavior of these structures.
Learn more: http://bit.ly/2sJP3GQ

Electrolytes Made from Liquefied Gas Enable Batteries to Run at Ultra-low Temperatures

Nanoengineers at UC San Diego have developed a breakthrough in electrolyte chemistry that enables lithium batteries to run at temperatures as low as minus 60 C with excellent performance. The new electrolytes enable electrochemical capacitors to run as low as minus 80 C. For both lithium batteries and electrochemical capacitors, high performance at room temperature is maintained. In addition, the new electrolyte chemistry from the lab of nanoengineer Shirley Meng could also increase the energy density and improve the safety of lithium batteries and electrochemical capacitors. The work, published in Science on June 15, 2017, could allow electric vehicles in cold climates to travel farther on a single charge. The technology could also be used to power craft in the extreme cold, such as high atmosphere WiFi drones and weather balloons, satellites, and interplanetary rovers.

Learn more: http://bit.ly/2tWG6cr

UC San Diego Partners with Baja California Universities and High Schools

UC San Diego and 13 institutions in Baja California recently launched the CaliBaja Education Consortium to help researchers and students in the entire CaliBaja region work together across borders. Students from high school to graduate school, for example, will be able to do research and take classes both at UC San Diego and at various Baja California institutions. "This is a great experiment that is going to define the educational opportunities for students in our region," said Olivia Graeve, a materials science and engineering professor at the Jacobs School and the driving force behind the CaliBaja Education Consortium. Graeve grew up in Tijuana, earned her undergraduate degree from UC San Diego and returned to the Jacobs School in 2012 as an Associate Professor. Learn more: http://bit.ly/2sZgyvH

Printed, Flexible and Rechargeable Battery can Power Wearable Sensors

Nanoengineers at UC San Diego have developed the first printed battery that is flexible, stretchable and rechargeable. The zinc batteries could be used to power everything from wearable sensors to solar cells and other kinds of electronics. The work appears in Advanced Energy Materials. The researchers made the printed batteries flexible and stretchable by incorporating a hyper-elastic polymer material made from isoprene, one of the main ingredients in rubber, and polystyrene, a resin-like component. The substance, known as SIS, allows the batteries to stretch to twice their size, in any direction, without suffering damage.

Learn more: http://bit.ly/2ripdMo

Materials Science Alumnus Chosen for New Class of NASA Astronauts

Materials science alumnus Robb Kulin is part of the new class of NASA astronauts. Kulin earned his master's and Ph.D. degrees in materials science at UC San Diego. Kulin is currently a senior manager for flight reliability at SpaceX, where he has worked for the past six years. After their training, Kulin and his fellow astronauts could be assigned to missions on the International Space Station; launch from American soil on spacecraft built by commercial companies, including Space X; or launch on a deep space mission on NASA's new Orion spacecraft. Incidentally, a company founded by UC San Diego engineering alumnus Robert Kolozs – San Diego Composites – manufactures and tests more than 1,000 parts for Orion.

Learn more: http://bit.ly/2syupLg

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