Professor Shane Ardo helping head NSF center for ion chemistry

Ion chemistry research, Ardo explained, is playing a central role in the development of better batteries for electric vehicles.

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Professor Shane Ardo's lab is also helping lead cutting-edge carbon capture research at UCI.

Picture Credit:
Steve Zylius

Professor Shane Ardo of the UC Irvine Department of Chemistry is part of a new NSF-funded initiative called the Center for Interfacial Ionics (CI^2), which aims to bolster

research into the chemistry of ions – atoms or molecules that carry an electric charge due to lost or gained electrons. The center, led by the University of Oregon and augmented by collaborating institutions like UC Irvine, is emphasizing ion chemistry because, according to Ardo, it's a field that stands to be at the forefront of breakthroughs for things like better batteries for electric cars. "One great example would be the battery," said Ardo. "Lithium ion batteries in our cars are rechargeable, and something that happens when you charge and discharge a battery is ion movement in the battery." Until now, Ardo explained, the main focus of the vast majority of research into better batteries has focused on electrons flowing through the solid components of a battery, and not on the ions, and that's a focus that needs to change. "I kind of blame the word 'electrochemistry,'" said Ardo. "Electrochemical devices are ionic devices, and the electrons are even secondary in some cases." CI^2 is focusing its efforts not only on understanding and controlling the rate that ions move through layers, or interfaces, in things like batteries, but to also work to redesign university chemistry curricula to place a proper emphasis on electrochemistry so that students emerge from their training with what they need to work and succeed in the field.

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