

UWO professor leads Solar Army to harness the sun's energy

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A University of Wisconsin Oshkosh scientist captains a “Solar Army” of young researchers from across the nation as they help to solve the “holy grail” of 21st century chemistry—how best to convert solar energy into a stored chemical fuel.

UWO assistant professor Jennifer Schuttlefield Christus serves as a principal investigator for one of the National Science Foundation’s (NSF) Centers of Chemical Innovation.

The Center for Chemical Innovation: Solar Fuels (CCI Solar Fuels), which involves more than 20 investigators in a collaboration based at the California Institute of Technology, recently was renewed for five years at \$20 million, making it one of the largest grants awarded in NSF history.

While the collaboration involves scientists from universities like UW-Madison, Harvard and Stanford, student researchers truly are crucial to the project.

“This is a rare opportunity for undergraduate students and high school students to do real research on a critical chemistry problem,” Christus said.

“As the need for clean, renewable and sustainable fuel grows with each generation, today’s students have a vested interest in solving this problem of how best to harvest the sun’s energy by turning water into hydrogen gas.”

The focus of CCI Solar Fuels is to explore the science underpinning the solar-driven decomposition of water into hydrogen and oxygen. Enough sunlight falls on the earth in one hour to power all the energy needs of the planet for a year, but finding the best way to capture that sunlight has been elusive.

The goal of the outreach portion of the grant, which Christus heads, is to find an inexpensive, abundant combination of elements to serve as catalysts for splitting water using only sunlight to produce hydrogen that can be used as chemical fuel.

The outreach component provides research kits to be used by the Solar Army’s student scientists in their quest to find the best catalysts. Christus works to distribute the kits to classrooms across the nation and in Canada, Europe, northern Africa and Puerto Rico.

“The students are testing some crazy combinations of catalysts. As scientists, we have preconceived notions of what might or might not work. These students don’t, and we could see the best combination come from their creativity,” she said. “It’s a tough chemistry problem but we are hopeful that we’ll find a solution.”

Christus said the Solar Army work recently gained attention when her scholarly article was published in

the *Journal of Chemical Education* and the project was recognized by the American Chemical Society during the 2013 National Chemistry Week. Additionally, the outreach project was voted as one of the top 12 Citizen Science Projects of 2012 and was featured in the publication *Chemical & Engineering News* as well as by *Science Magazine*.

Learn more about joining the [Solar Army](#).