

SOLAR ENERGY

In order to create more efficient solar panels, one must first understand processes and materials that contribute to the absorption of light and maintaining energy levels. Researchers on the Solar Energy team have turned to materials science and have increased their understanding of these processes at the molecular level, called excited state lifetimes. This has the potential to provide long-lasting, high-energy processes that boost the efficiency of solar cells for consumers.

The team also continued to refine their work on enhancement of solar fuels by using Zinc sulfide to stimulate the conversion of carbon dioxide (CO_2) to methanol.



Impacts

- Using earth-abundant metals such as ZnS as catalysts helps scientists understand the process of photosynthesis—the process through which plants convert CO_2 into oxygen—and how we can replicate the process to create new types of fuels through solar-driven processes
- Chemical recycling of CO_2 to fuel contributes to reduction of fossil fuel use, which has implications for energy independence and climate change mitigation, both national security issues
- Cost-effectively converting CO_2 into formate is a key intermediate step toward a methanol economy; the difficulty of formate production has hindered scientific progress in the past, but can now be mitigated using materials that are easily found, low in toxins, and relatively inexpensive

TOP: Victoria Valdez Risley in the solar lab at New Mexico Tech

BOTTOM: Solar Team co-leads Michael Heagy (left) and Marty Kirk (right) converse with Solar Team member Hongmei Luo