SOLAR ENERGY

In 2014, the U.S. installed solar photovoltaic (PV) capacity for the year reached a record 6,201 megawatts, making last year the largest for solar energy installations. However, several challenge remain before widespread adoption of solar energy is possible. *Energize New Mexico* is addressing three challenges: energy storage during dark periods, more effective and efficient solar energy processes and devices, and transportable solar fuel alternatives (such as methanol) to fossil fuels.

In Year 2, Solar team members addressing solar fuel alternatives developed an approach to converting CO_2 in the atmosphere to methanol and hydrogen fuel (formic acid) through solar-driven water oxidation. The team investigated the nanoparticle Zinc sulfide (ZnS) as a promising catalyst for this process due to its abundance, low cost, low toxicity, and other properties that enable the photoreduction of CO_2 to formic acid. This study is the first to experimentally examine the photocatalytic differences between two ZnS minerals, wurtzite and sphalerite.

Spectroscopic lab equipment, including lasers at UNM's Center for High Technology Materials (*pictured below*) were purchased using NM EPSCoR funds. Collaboration between NMT and UNM is further strengthening inter-institutional relationships and enhancing our capacity to employ time-resolved spectroscopy to achieve research goals.



Component co-lead Martin Kirk (far right) talks about the equipment purchased through EPSCoR funding at the Center for High Tech Materials