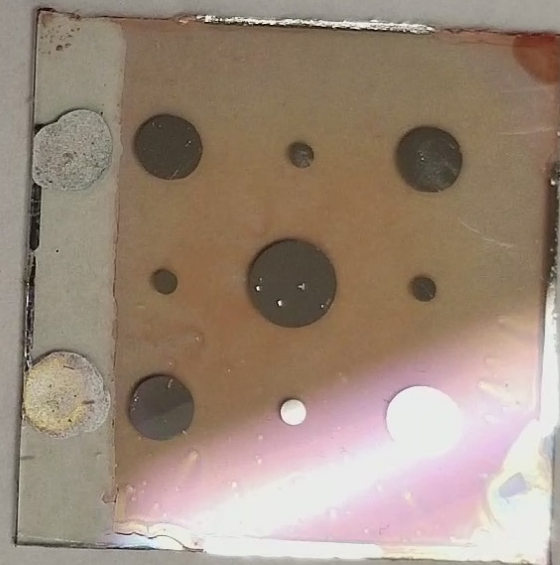


SOLAR ENERGY

The *Energize New Mexico* Solar Energy team formed to address challenges involved in making solar energy a sustainable and practical investment. The team focused on the efficiency and effectiveness of solar cells, and the feasibility of alternatives to fossil fuels by using solar power to convert carbon dioxide into methanol.

Polymer cells have the potential to change commercial solar panels in the future because they are more affordable, and can be made to fit any shape, but their efficiency and resiliency must be improved before they can become commercially viable. Equipment purchased through NM EPSCoR by the UNM team at the Center for High Tech Materials measures photoluminescence of polymer solar cells, and researchers in the Chemistry Department continue their work on improving the efficiency of polymer solar cells. In addition, researchers on the NMSU 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.

As the most abundant greenhouse gas, efforts at NM Tech and NMSU focused on conversion of CO₂ to value-added chemicals or automotive fuels such as formate or methanol. In Year 5 at NM Tech, silver nanoparticle-copper oxide nanocomposites (Ag/Cu₂O) were characterized for the first time as a useful catalyst for converting bicarbonate to formate.



TOP: Polymer solar cell crafted at the UNM Department of Chemistry; **BOTTOM:** Solar Energy team leads Michael Heagy (NM Tech), Hongmei Luo (NMSU), and Martin Kirk (UNM)