

## **Introduction to Cost-shared Research**

A portion of the GCEP portfolio development and maintenance goes towards cost-shared research. Participation in cost-shared research serves as an extension of GCEP-related work and leverages funds from third parties including government agencies and companies outside of the Sponsor organizations. Currently GCEP contributes to two consortia: the Bay Area Photovoltaic Consortium (BAPVC) and the Stanford Center for Carbon Storage (SCCS).

The mission of BAPVC is industry-relevant research and development for PV manufacturing, workforce training and technology commercialization. Led by Professors Yi Cui at Stanford University and Ali Javey at the University of California, Berkeley, the BAPVC is funded by academia, industry affiliates and the U.S. Department of Energy (DOE). The DOE has committed \$25million over five years through its Sunshot PV Manufacturing Initiative and recently extended the award to the end of 2017 with an additional \$2million in funding. In addition to GCEP, the member companies are First Solar, Alta Devices, BASF, EpiSolar, Total American Services, SunPower and ENEL Green Power. Currently BAPVC has funded 34 projects in the categories of 1) high performance and multijunction cells, 2) silicon absorbers and cells, 3) thin film absorbers and cells, 4) photon management and transparent conductors and, 5) encapsulation and reliability. The vision for the next phase of BAPVC is to examine ways to reduce the capital intensity of PV module production and system installation. Using the added resources provided by DOE and industry members, BAPVC launched a Request for Proposals (RFP) to solicit new projects addressing the vision of the Industry Board. Part of this guidance encouraged a shift in operations from research teams loosely coordinated in thrust area structure to increased cohesiveness delivered in jointly funded, multi-investigator research teams. Through this competition, BAPVC selected six new teams for projects. These will support 23 investigators from 13 universities and 2 national laboratories.

SCCS was established in 2011 to address a multitude of scientific questions for large-scale CO<sub>2</sub> storage. The center is supported by industrial affiliates and led by Professor Anthony Kovscek, a professor of energy resources engineering in the School of Earth Sciences and is comprised of 13 faculty plus their associated graduate students. The research is broken into the four categories of 1) geochemical processes and permanent storage, 2) monitoring, 3) improved process modeling for design, operation and risk assessment, 4) co-optimized enhanced oil and gas recovery with CO<sub>2</sub> sequestration. ExxonMobil and Schlumberger represent GCEP at SCCS meetings. Among other activities, SCCS offers annual review meetings, workshops, short courses and a sabbatical program for visiting researchers. Their report summarizes four projects supported by GCEP and SCCS.