KANSAS EPSCoR

Partners in Science & Technology

Background: Since its inception in 1992, **Kansas NSF EPSCoR** has supported collaborative initiatives in Kansas to improve research infrastructure. As a result Kansas scientists have become more competitive in acquiring federal funds from NSF and other federal funding programs, especially in areas critical to the state's long-term science and technology priorities.

Just considering the last five funded initiatives since 2006, Kansas has received almost $36.5 million from NSF EPSCoR to conduct research in the areas of climate, energy, and cyberinfrastructure enhancement in the state. These funds were matched with $6 million from the state and participating universities. Together these investments have leveraged more than $76.5 million in additional non-EPSCoR funding for Kansas research institutions. NSF EPSCoR funds also provided for major investments in people, thus significantly impacting the creation of a well-educated, diverse workforce. Throughout this time-frame more than 370 graduate and undergraduate students were trained and 33 early-career faculty were supported. Two of the most recent funded initiatives are described below.

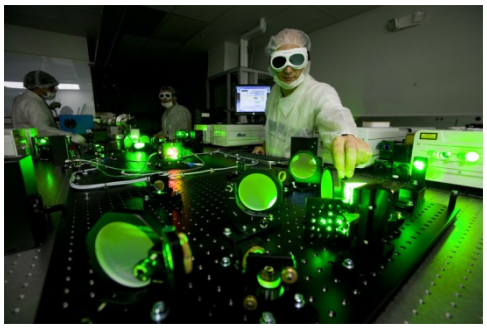
TRACK 1: CLIMATE CHANGE & ENERGY: Basic Science, Impacts, & Mitigation

To address global climate change and renewable energy challenges by targeting basic science, impacts, and mitigation with a fresh perspective that bridges natural sciences, social sciences, and engineering.

Four major areas of focus target key global challenges in climate change and renewable energy. In **NANOTECHNOLOGY FOR RENEWABLE ENERGY**, scientists and engineers are using nanotechnology for harnessing solar power. Complex molecular frameworks are being designed to replicate photosynthesis and ultimately to provide more efficient photovoltaic cells. The **BIOFUELS & CLIMATE CHANGE** project consists of a diverse group of multidisciplinary researchers ranging from economists to engineers. They are exploring how farmers' values and attitudes toward climate change determine the factors they use to make land-use decisions, as illustrated pictorially by Larry Schwarm, Distinguished Professor of Photography at Wichita State University (shown at left and right). This initiative has also generated a comprehensive land-use/land cover data set for Kansas. In **CLIMATE CHANGE & MITIGATION** scientists and engineers are focusing on improving climate change modeling specific to Kansas and the central Great Plains so they can more readily assess adaptation strategies that are critical for developing new irrigation technologies for Kansas farmlands. **CLIMATE CHANGE IN INDIGENOUS COMMUNITIES,** a partnership with Haskell Environmental Research Studies (HERS) Institute, is training Native American undergraduates during a summer program in research methods on climate assessment that can be applied to their home communities. Each year the interns gain hands-on data collecting experience, as in a research trip to the National Center for Atmospheric Research in Boulder, Colorado (shown on the right).

TRACK 2: Collaborative Research: Imaging and Controlling Ultrafast Dynamics of Atoms, Molecules, and Nanostructures (Kansas and Nebraska)

To advance the foundational understanding of a variety of physical and chemical processes that will underpin future applications, such as optogenetics, the dynamic imaging of molecules, electron and molecular switches, and even in solar energy capture and conversion into chemical fuel.



This research project is a collaboration between physicists, chemists and electrical engineers at **Kansas State University**, the **University of Kansas** and the **University of Nebraska** that will advance existing laser technology and imaging capabilities in atomic, molecular, optical (AMO) physics with the potential for development of new or spinoff products. This newly funded project will not only impact the scientific community interested in ultrafast laser science and technology but also the development of the science, technology, engineering, and mathematics (STEM) workforce through a number of initiatives targeting audiences from K-12 as well as PUI and community college faculty.

Kansas NSF EPSCoR Funding Summary

	NSF EPSCoR RII funding	NSF EPSCoR Cofunding	NSF EPSCoR Total Funding
2014	5,000,000	tba	5,000,000
2013	4,000,000	810,000	4,810,000
2012	4,000,000	2,150,000	6,150,000
2011	5,000,000	1,000,000	6,000,000
2010	6,176,470	2,073,730	8,250,200
2009	5,562,500	594,845	6,157,345
2008	2,250,000	2,744,071	4,994,071
2007	2,250,000	1,229,806	3,479,806
2006	2,250,000	2,730,000	4,980,000
Total	36,488,970	13,332,452	49,821,422