

University of Minnesota Morris Digital Well

University of Minnesota Morris Digital Well

Campus News Archive

Campus News, Newsletters, and Events

5-11-2010

Chemistry professors awarded IREE grant for solar cell research

University Relations

Follow this and additional works at: https://digitalcommons.morris.umn.edu/urel_news

Recommended Citation

University Relations, "Chemistry professors awarded IREE grant for solar cell research" (2010). *Campus News Archive*. 1491.

https://digitalcommons.morris.umn.edu/urel_news/1491

This News Article is brought to you for free and open access by the Campus News, Newsletters, and Events at University of Minnesota Morris Digital Well. It has been accepted for inclusion in Campus News Archive by an authorized administrator of University of Minnesota Morris Digital Well. For more information, please contact skulann@morris.umn.edu.

Contact

Melissa Weber, Director of Communications
Phone: 320-589-6414, weberm@morris.umn.edu

Jenna Ray, Editor/Writer
Phone: 320-589-6068, jrray@morris.umn.edu

Chemistry professors awarded IREE grant for solar cell research

Summary: Pappenfus and Alia will investigate polymers for use in efficient and economical solar cells.

(May 11, 2010)-The University of Minnesota Institute on the Environment awarded University of Minnesota, Morris chemistry professors Ted Pappenfus and Joe Alia a \$59,546 grant through the Initiative for Renewable Energy and the Environment (IREE). The grant will support “Experimental and Theoretical Investigations of Conducting Polymers for Solar Cells.”

Photovoltaics

Pappenfus’s area of research is photovoltaics, a field of technology and research related to the application of solar cells for energy by converting sunlight directly into electricity. Pappenfus and Alia’s project includes the design, preparation, and characterization of new polymers, or plastics, for use in efficient and economical photovoltaic devices.

“More energy from the sun hits the earth in an hour than all of the energy consumed on this planet in one year,” shares Pappenfus. “In order to solve our current energy crisis, the exploitation of solar energy must play a more prominent role. Technology must improve to find better ways to capture the sun’s energy, store it, and do so in an economically feasible manner.”

Currently, silicon-based solar cells dominate the market. Conducting polymers represent an attractive alternative to conventional solar cells due to their ease of fabrication and flexible nature. But even the world’s best plastic solar cells are only about eight percent efficient.

“That’s the challenge, to increase the efficiency to more than 10 percent,” says Pappenfus. “The ultimate goal is to create cheap, renewable energy.”

Computational chemistry

Alia’s area of expertise is theoretical or computational chemistry. The team’s investigation begins with preliminary work using calculations to describe and understand the properties of new and existing polymers. That knowledge will be applied in the experimental phase in the laboratory and communicated with others in the field.

Solar cells are already on the market, but as efficiency increases and cost decreases, the technology will have broad implications in daily life. “That’s the beauty of photovoltaics,” says Pappenfus, “you can put the devices anywhere, from our homes to our backpacks fueling personal iPods and laptops.”

Pappenfus and Alia’s solar research complements campus renewable energy efforts in the areas of wind and biomass. The project also reflects Morris’s emphasis on undergraduate student research. Students Ryan Koehn, Willmar, Matthew Lovander, Willmar, and Jennifer Schmidt, St. Cloud, will work with the professors this summer on the project. The team’s preliminary findings will be reported at the E3 Conference on the University of Minnesota, Twin Cities campus in November 2010.

Through personal and academic discovery, the University of Minnesota, Morris provides opportunities for students to grow intellectually, engage in community, experience environmental stewardship and celebrate diversity. A renewable and sustainable educational experience, Morris prepares graduates for careers, for advanced degrees, for lifelong learning, for work world flexibility in the future, and for global citizenship. Learn more about Morris at morris.umn.edu or call 888-866-3382.