

## From the Director:

Welcome to the first edition of the TN-SCORE Times. The TN-SCORE program team will use this Newsletter, our new website [www.tnepscor.org](http://www.tnepscor.org), and social media links via Twitter, Facebook, and LinkedIn, to share updates on the program, announce meetings and calls for proposals, and highlight TN-SCORE participants and their research.

**Tennessee Solar Conversion and Storage using Outreach, Research, and Education (TN-SCORE)** is the state's NSF EPSCoR Track I infrastructure program. Announced in Fall 2010 with PI Dr. David Millhorn (UT), the objective of the program is to make Tennessee more competitive through improvements in research and workforce development infrastructure. Faculty and students from 16 partnering universities are currently participating, with Research Thrusts in (1) Advanced Solar Conversion led by Dr. Barry Bruce (UTK), (2) Energy Storage and Conversion Devices led by Dr. Thomas Zawodzinski (UTK), and (3) Nanomaterials that Enhance Energy Efficiency led by Dr. Sandra Rosenthal (Vanderbilt).

Our first year has been productive. Many of you have met the TN-SCORE staff, Program Administrator Samantha Brown and Outreach Director Joshua Francois. As new hires, they hit the ground running and are working with faculty, staff, and student participants to implement a range of TN-SCORE programs. In this issue we highlight program firsts, scientific highlights from Thrust 1, summer programs for students and faculty, industry internships, and several workshops. We are here to help participants benefit from the program and look forward to working with you, celebrating successes, and sharing opportunities for engagement as we build a culture of collaboration for research within the state. Please do not hesitate to call on us if you have any questions.



— John A. Hopkins

### In this issue:

From the Director P.1  
2011 REU Program and Workshop P.2  
Internship and Thrust I Highlights P.3  
K-12 Outreach Thrust II & III P.4

### First TN-SCORE Published Article

"Single-Nanocrystal Spectroscopy of White-Light Emitting CdSe Nanocrystals", Albert Dukes, Philip Samson, Joseph D. Keene, Lloyd M. Davis, John P. Wikswo, and Sandra J. Rosenthal, *Journal of Physical Chemistry A, Graham Fleming Festschrift, ACS*

### First Faculty Hire for TN-SCORE

Congratulations to Janet Macdonald who has accepted a new faculty position at Vanderbilt University. She is the first faculty hire as part of the TN-SCORE program. She comes into VU as Assistant Professor in the Department of Chemistry and VINSE and will pursue research in novel inorganic nanostructures for photocatalysis of water and sensitizing solar cells. Her unique experience, a combination of chemistry, nanoscience, and energy, is a direct match for that specifically described in the TN-SCORE proposal. Thrust 3 Leader Sandra Rosenthal and her Vanderbilt colleagues are to be congratulated on this important milestone for both VU and TN-SCORE.



### Research Opportunity Awards

The Research Opportunity Award (ROA) program for faculty is designed for faculty at 2-year and 4-year institutions to establish long-term collaboration with a researcher in one of the TN-SCORE Research Thrusts. The knowledge and experience gained will be shared with the faculty award winner's campus, students and colleagues. All universities involved in the EPSCoR thrust areas are eligible to host faculty under this program. The summer experience may involve specific research or focus on developing educational work-force development programs.

### Congratulations to the 2011 ROA Faculty Winners

- **Bert Lampson**  
Health Sciences Dept. at East Tennessee State University
- **Robert Magruder**  
Physics and Chemistry Dept. at Belmont University
- **Justin Oelgoetz**  
Physics and Astronomy Dept. at Austin Peay State University



## RESEARCH EXPERIENCE FOR UNDERGRADS

As part of Tennessee EPSCoR TN-SCORE workforce development, there are competitive opportunities for undergraduates to work in research groups during the summer. The summer research experience is an 8-10 week program depending on the host institution. Students receive competitive stipend, housing, and supplies, as well as a travel stipend for the TN-SCORE annual conference. Starting dates for the program are tentatively set for late May- early June but are determined by the availability of dormitories and may vary by campus.

Please check the TN-SCORE website for updates. <http://tnpsc.org/programs/reu.aspx>

## 2011 REU Participants

<u>Name</u>	<u>Attending Institution</u>	<u>Host Institution</u>
Adeleye Ademola	University of Tennessee	University of Tennessee
Michael Bright	University of Memphis	University of Tennessee
Jeremy Brooksbank	University of Tennessee	University of Tennessee
Jonathon Clinger	Tennessee Tech University	Tennessee Tech University
Chad Crawford	Lipscomb University	Tennessee Tech University
Mary Denman	University of Tennessee	University of Tennessee
Leah Douglas	University of Tennessee	University of Tennessee
William Henson	University of Tennessee	University of Tennessee
Steven Jones	Lipscomb University	Vanderbilt University
Stephanie Jorgensen	Tennessee Tech University	Tennessee Tech University
Brian Moran	Vanderbilt University	University of Tennessee
Geoffrey Musick	Lipscomb University	Vanderbilt University
Danna Sharp	University of Tennessee	Vanderbilt University
Taylor Richardson	Maryville College	University of Tennessee
David Wilson	University of Tennessee	University of Tennessee

## Electrochemical Workshop

Thrust 2 hosted an Electrochemical Workshop Day on June 16, 2011.

Dr. Thomas Zawodzinski, a Governor's Chair Professor at the University of Tennessee and TN-SCORE Thrust 2 Leader, opened the day with a two-hour lecture on electrochemistry.

The idea of the Electrochemistry Lecture arose when it was discovered through discussions with various Thrust 2 participants that Electrochemistry courses were virtually non-existent at most of the universities in Tennessee. Dr. Zawodzinski promptly invited all of the Thrust 2 members from across the state to come, bringing any students who would benefit, and attend this "electrochemistry in-a-day" workshop.

The Workshop hosted on June 16<sup>th</sup> was used to test the waters. With an attendance of over 50 people, some coming from as far as Memphis, the event proved to be a great success.



## Industry and Internship Outreach

TN-SCORE industry partners include Eastman Chemical Company, Tennessee Valley Authority, Genera Energy and Hemlock Semiconductor. Eastman is providing a summer internship specializing in sustainability at their corporate headquarters in Kingston, Tennessee.

Eastman hired Lauren Johnson, an undergraduate from the University of Tennessee, Knoxville. TN-SCORE acted as a clearing house for the 40 applications received, and recommended three candidates who were then interviewed by the human resources department at Eastman before hiring Lauren.

Tennessee Valley Authority (TVA) is providing a summer internship specializing in renewable energy technology at their corporate headquarters in Chattanooga, Tennessee. TN-SCORE received over 60 applications, and recommended three candidates to TVA, who hired Morgan Strozak, an undergraduate from UT Chattanooga.

Hemlock Semiconductor hired four engineering students from Tennessee colleges for work related to their new \$1.2B plant in Clarksville. There will be additional opportunities spring and summer 2012. Please check [www.tnepscor.org](http://www.tnepscor.org) for updates.




### Intern Placed at Eastman

A recent UTK graduate, Lauren Johnson, was hired as an intern at Eastman through the TN-SCORE program. Lauren received her bachelor's degree Spring 2011 in Chemical & Biomolecular Engineering and Chemistry. In 2009, while completing her undergraduate course work, she joined the Bruce lab working on a project that involved engineering the photosynthetic reaction center proteins Photosystem I (PSI) and Photosystem II (PSII) in order to anneal the two. This PSI-PSII complex is to be used to increase the electron transport rate in an *in vitro* photobiological hydrogen production system.



## Scientific Highlights for Thrust I Advanced Solar Conversion

- Kane Jennings gave an invited Senior Lecture entitled "Solar Energy Conversion through Nature's Engineering" on May 12 at Vanderbilt University.
- Gabriel LeBlanc has completed a final draft of a manuscript entitled, "Photoreduction of Catalytic Platinum Particles using Immobilized Multilayers of Photosystem I" for submission to *Langmuir* as a letter.
- Paul Frymier and Barry Bruce attended the Solar Exchange Workshop at the Oak Ridge National Laboratory on April 13th, 2011. The workshop was sponsored by the Tennessee Solar Institute
- Dr. Bruce has given many international talks including Keynote Talk at the China/U.S. Joint Research Center for Ecosystem, Energy, and Environmental Change Workshop (Beijing), a Plenary Speaker, Chemistry and Sustainability Week, University of Mauritius, Plenary Talk at Photosynthesis for Sustainability, in Baku Azerbaijan.

## Workforce Development Thrust 2

The Tennessee EPSCoR TN-SCORE Thrust 2 program collaborated with the Millard Oakley STEM Center at Tennessee Tech University (TTU) in Cookeville to host the first of a series of workshops aimed at providing Tennessee K-12 students and teachers the opportunity to learn more about alternative energy.

Using the STEM center was a natural fit since Dr. Cynthia Rice-York is Thrust 2's co-leader and is a faculty member at TTU. The STEM Center studies and develop new and better ways to engage and educate K-12 students in various science, technology, engineering, and mathematics (STEM) areas.

The lessons provided an overview of alternative energy, and Dr. Thomas Zawodzinski, Governor's Chair Professor at UT Knoxville and Thrust 2 Leader, and Dr. Gabriel Goenaga presented materials on energy and energy storage devices. A number of graduate students and summer REU (Research Experience for Undergraduates) students working in Thrust 2 were on hand to show the attendees demonstrations and answer questions.

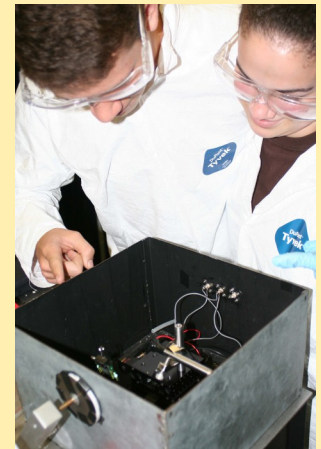


## Workforce Development - Thrust 3

Thrust 3 engaged in a variety of programs to introduce K-12 students to science and facilitate their participation in hands-on experience in a laboratory setting.

Through a student-led program, 41 visits to schools in counties around Nashville were made, reaching ~990 students. The schools visited included a diverse mix: rural, math/science magnet, and IB World schools, among others. Other programs included on-site science days at Nashville Library and the Adventure Science Center, each site including ~ 50 students.

At Vanderbilt facilities, a working field trip with 13 students was developed and conducted to provide full immersion into a research activity with direct use of scientific instruments housed in VINSE. Other ongoing activities at Vanderbilt were also leveraged, with all Vanderbilt TN-SCORE students, for example, engaged in demonstrations and/or lectures for the Vanderbilt Summer Academy.



## Upcoming Event

22nd National NSF EPSCoR Conference

Coeur d'Alene, Idaho October 24-27, 2011

## TN-SCORE Staff

John A. Hopkins, PhD., PE, Program Director

Joshua Francois, Outreach Director

Samantha Brown, Program Administrator

### Thrust Outreach Coordinators:

Thrust One Outreach Coordinator-Angela Gilley

Thrust Two Outreach: Administrative Coordinator- Kat Forst  
Technical Coordinator- Dr. Gabriel Goenaga

Thrust Three Outreach Coordinator-Sarah Satterwhite



2450 EJ Chapman SW  
Suite 2061  
Knoxville, TN 37996  
865-974-8045

Email: [tnepscor@tennessee.edu](mailto:tnepscor@tennessee.edu)

Visit us at [www.tnepscor.org](http://www.tnepscor.org)

