OSA Fellow

Professor Rui Q. Yang (Electrical & Computer Engineering) was recently elected a fellow of The Optical Society (OSA). He is being recognized for the invention and development of the mid-infrared interband cascade laser and related optoelectronic devices.

Natural Products Discovery Group Asks for Public’s Help

OU’s Natural Products Discovery Group has taken an unconventional approach to finding new compounds with therapeutic relevance by launching a crowdsourcing initiative with citizen scientists from around the country. With this approach, OU researchers team with the public to sample soils from across the United States for the purpose of identifying new microorganisms that produce drug-like compounds. This effort recently led to the discovery of maximiscin, a unique bioactive compound obtained from a soil sample submitted by an Alaskan citizen, which has shown early promising results by stopping the growth of melanoma cells in vivo.

“The exciting part of this discovery is that a citizen scientist participated in our program and sent us this sample,” says Robert H. Cichewicz, associate professor in the OU College of Arts and Sciences and director of the National Products Institute. “We probably would not have discovered this compound without the Citizen Science Program.” Cichewicz is collaborating on the project with S.L. Mooberry, University of Texas Health Science Center at San Antonio; A.N. Miller, University of Illinois; and L. Du, J.B. King and E.R. Powell, OU Natural Products Discovery Group.

During the last several years, the OU Natural Products Group has collected several thousand fungi from soil samples primarily obtained from three environmentally disparate regions: Alaska (artic/sub-arctic), Hawaii (tropical), and Oklahoma (subtropical/semi-arid). Despite these efforts, the team can only access a relatively slim portion of the available microbial diversity. This group predicts that a significant number of compounds with therapeutic potential await discovery from the untapped majority of the soils’ microbial inhabitants. For this reason, the Citizen Science Program is an important part of the discovery process. By teaming with citizen scientists, the public becomes an active participant in the search for new drugs.

An article on this study was published in a recent issue of Angewandte Chemie. The project was supported by the National Institutes of Health. For more information about the OU Institutes for Natural Products Applications and Research Technologies, OU Natural Products Discovery Group or the Citizen Science Program, contact Robert H. Cichewicz at rhcichewicz@ou.edu or visit the websites at http://www.inpart.ou.edu or http://npdg.ou.ou.edu/citizenscience.
**President’s Monthly Research and Development Highlights**

**Hall of Fame Award**

Dr. Nancy Mergler (Senior Vice President and Provost) and Professor Donna Nelson (Chemistry & Biochemistry) were recently awarded the Oklahoma Higher Education Hall of Fame award.

**OU ITS Lab Aids in Moore Tornado Recovery**

Equipment purchased as part of an Oklahoma Transportation Center equipment grant (OTCES10.2-02, “A Mobile ITS Platform”) is making an impact across the state. In the aftermath of the tornado in Moore, OU Intelligent Transportation Systems Lab lent mobile equipment and technical support to assist in traffic management and distributing information to drivers. Near Mannford, OK, Mobile ITS Observation Trailers were deployed to monitor the Accelerated Bridge Construction technique used to replace the Cottonwood Creek Bridge on SH-51. Video of this innovative technique in which prefabricated bridge elements and systems are built next to the existing bridge and then slid into place will be used to evaluate this technique, train transportation workers and inform the public of what U.S. Department of Transportation Secretary Anthony Foxx used as an example of how “Oklahoma is a hotbed of highway high-tech.”

**OU Team to Develop a Novel Biomass Conversion Process**

A three million dollar grant from the U.S. Department of Energy will allow a University of Oklahoma multi-disciplinary research team to develop a novel biomass conversion process to obtain a bio-oil compatible with refinery operations. The OU-led team was one of four teams in the nation selected by DOE to move forward in the competition. Professor Daniel Resasco (Chemical, Biological & Materials Engineering) and OU Chemical, Biological & Materials Engineering team members Professor Richard Mallinson, Professor Lance Lobban and Assistant Professor Steven Crossley will collaborate on the project with researchers at the Idaho National Laboratory, the University of Wisconsin and the University of Pittsburgh.

The approach proposed by OU provides significant improvement over existing commercial and previously proposed technologies. Existing processes have limitations that result in low-carbon yield or high-hydrogen consumption. A fundamental problem with these technologies is that the complex bio-oil presents different problems that cannot be solved with a single solution.

Resasco and his team have gained invaluable experience in this area through previous research and a grant from the DOE EPSCoR program, but the research focused mainly on the chemistry required to produce bio-oil. In the current grant, the chemistry will be applied in the development of a marketable product.

The project was funded by the DOE Energy Efficiency and Renewable Energy Bioenergy Technology Office through its Carbon, Hydrogen and Separation Efficiencies in Bio-Oil Conversion Pathways program.
President’s Monthly Research and Development Highlights

New Books


♦ University of New Mexico Press published *Global West, American Frontier: Travel, Empire, and Exceptionalism from Manifest Destiny to the Great Depression* by David Wrobel (History) (October 15, 2013).

♦ Brepols Publishers published *The Social Life of Illumination: Manuscripts, Images, and Communities in the Late Middle Ages* by Joyce Coleman (English), Kathryn A. Smith and Mark Cruse (November 6, 2013).

♦ Columbia University Press published *Decision Cases for Advanced Social Work Practice: Confronting Complexity* by Lori Franklin (Social Work), Karen Gray (Social Work) and Terry Wolfer (University of South Carolina) (November 19, 2013).

Best Paper Award

Chris Ramseyer (Fears Structural Engineering Lab/Civil Engineering & Environmental Science) and Thomas Kang (Seoul National University) have received the Best Paper Award of the International Journal of Concrete Structures and Materials for their paper titled “Post-Damage Repair of Prestressed Concrete Girders.” This paper has contributed to the development of concrete engineering significantly.

Semi-Analytical Spin-up (SASU) Workshop

Dr. Yiqi Luo's Ecolab held a training workshop at the Stephenson Research & Technology Center during the week of October 28-November 1, 2013 on “Semi-Analytical Spin-up (SASU) and Its Enabled Analysis of Global Land Models.” Participants were from UK Met Office, China Climate Research Center, Chinese Academy of Sciences, Japan, Sweden and Canada. The SASU method has been incorporated into several global models, such as NCAR CLM, UK JULES, Sweden LPJ-GUESS, Japan VISIT, China BCC and CoLM, Australia CABLE, and some regional models. SASU accelerates spin-up of global land models up to 500 times in comparison to the traditional method.
President’s Monthly Research and Development Highlights

ARRC News

- Weathernews Inc. and the University of Oklahoma held the third workshop on WNI/OU Collaboration through Innovative & Applicable “TORIKUMI” on October 11, 2013 at the National Weather Center. This workshop shared results from the Oklahoma Innovation Center and WNI discussing future collaborations between WNI and OU.

- The International Symposium on Earth-Science Challenges (ISEC) held its third summit between the University of Oklahoma and Kyoto University in Uji, Kyoto, Japan October 3-5, 2013. ISEC successfully brought together scientists and engineers from around the world to share recent advances in the study of the Earth. Administrators, advisors, professors and students from several colleges within OU attended the conference to help encourage related research and educational activities, contributing to the increase of young researchers and students from previous summits. Areas of interests at the symposium were: Earth Science: Atmosphere, Oceans and Biosphere; Radar and Satellite Remote Sensing of the Atmosphere; Hydrometeorology and the Water Cycle; Modeling and Data Assimilation; Weather and Climate Variability.

- Electrical & Computer Engineering student C. Justin Smith was awarded the Undergraduate/Pre-Graduate Scholarship from the IEEE Microwave Theory and Techniques Society (MTT-S). The purpose of this scholarship is to attract B.S. and M.S. students to the microwave and RF discipline, and to encourage them to pursue a job in the field or a Ph.D. degree in this field. Smith is currently working on high-efficiency power amplifier design for C-Band airborne telemetry supervised by Professor Hjalti H. Sigmarsson.

Frontiers in Education Conference

The College of Engineering recently hosted the Frontiers in Education conference in Oklahoma City, OK. Jim Sluss (Electrical & Computer Engineering), Deborah Tryptten (Computer Science) and Randa Shehab (Industrial & Systems Engineering) served as general co-chairs for the conference. The conference welcomed about 480 engineering educators from the U.S. and abroad for a three day conference to talk about the latest advances in engineering education. There were several special events at the conference including a trip to Norman to see the National Weather Center and the Rawl Engineering Practice Facility (sponsored by the Vice President for Research, Kelv-in Droegemeier) and an interesting panel with Kyle Harper (Provost), Mark Morvant (Chemistry & Biochemistry), Adam Croom (Center for Teaching Excellence) and Ken Parker of NextThought (Janux). The CoE had about 30 participants – faculty and graduate students in attendance.
October New Awards

- Ian Sellers, Physics & Astronomy
  “A Nanostructured Energy Harvesting and Storage System for Space and Terrestrial Applications”
  University of Tulsa
  $109,200

- Yang Hong, Civil Engineering & Environmental Science
  “Hydrological Model Training for NASA Goddard Applied Science Team”
  NASA - Goddard Space Flight Center
  $4,500

- Daniel Resasco, Chemical, Biological & Materials Engineering
  Richard Mallinson, Chemical, Biological & Materials Engineering
  Lance Lobban, Chemical, Biological & Materials Engineering
  Steven Crossley, Chemical, Biological & Materials Engineering
  “Fractionation and Catalytic Upgrading of Bio-Oil”
  U.S. Department of Energy
  $1,209,764

- Jeffery Volz, Civil Engineering & Environmental Science
  “NUTC/Extending the Usage of High Volume Fly Ash in Concrete”
  Missouri University of Science and Technology
  $67,336

- Joao Cruz, Electrical & Computer Engineering
  “FY14 Conference Administration Support”
  Institute of Electrical and Electronics Engineers, Inc.
  $110,000

- John Dyer, Electrical & Computer Engineering
  “Bulk Testing of ECG Analysis Algorithms”
  AliveCor
  $10,000

- Jessica Blanchard, Anthropology
  “Longitudinal Evaluation of the Governor's Executive Order - A Qualitative Study of Process Implementation and Impact”
  Health Sciences Center
  $24,334

- Randy Peppler, CIMMS
  Peter Lamb, CIMMS
  “Warning Decision-Making Research and Training”
  U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration
  $170,000

- Peter Lamb, CIMMS
  Randy Peppler, CIMMS
  “Implementation of Multi-Radar Multi-Sensor (MRMS) Software into National Weather Service Operations at the National Centers for Environmental Prediction”
  U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration
  $552,000

- Peter Lamb, CIMMS
  Randy Peppler, CIMMS
  “Advancements in Weather Radar”
  U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration
  $704,518

- Yang Hong, Civil Engineering & Environmental Science
  Jonathan Gourley, CIMMS
  Qing Cao, Advanced Radar Research Center
  Pierre-emmanuel Kirstetter, Civil Engineering & Environmental Science
  “Using NMQ Ground-Based Radar to Improve Passive-Only Precipitation Profile Retrievals for PATH”
  NASA - Headquarters
  $72,789
October New Awards

- Zhisheng Shi, Electrical & Computer Engineering
  “Development and Commercialization of IV-VI Semiconductor Midinfrared Detectors”
  State of Oklahoma, Center for the Advancement of Science and Technology
  $100,000

- Alisa Fryar, Political Science
  Deven Carlson, Political Science
  “Affordability in Higher Education: State Policy Design and Implementation”
  Lumina Foundation
  $87,500

- Richard Henry, Physics & Astronomy
  “The Evolution of C/O in Low Metallicity Dwarf Galaxies”
  Space Telescope Science Institute
  $26,788

- Georgia Kosmopoulou, Economics
  “Understanding Bidding Patterns and Policy Implications in ODOT Procurement Auctions”
  State of Oklahoma, Department of Transportation
  $60,046

- Kianoosh Hatami, Civil Engineering & Environmental Science
  Gerald Miller, Civil Engineering & Environmental Science
  “Feasibility Study of GRS Systems for Bridge Abutments in Oklahoma”
  State of Oklahoma, Department of Transportation
  $85,088

- Dominique Pittenger, Engineering Dean's Office
  Md Zaman, Engineering Dean's Office
  Md Zaman, Petroleum & Geological Engineering
  Dominique Pittenger, Construction Science
  “Evaluate Densifier Treatment-Over-Shotblasting (DOS) Treatment Performance for Pavements and Bridge Decks”
  State of Oklahoma, Department of Transportation
  $117,932

- Kanthasamy Muraleetharan, Civil Engineering & Environmental Science
  Gerald Miller, Civil Engineering & Environmental Science
  Royce Floyd, Civil Engineering & Environmental Science
  “Overtwining Forces at Bridge Abutments and the Interaction of Horizontal Forces from Adjacent Roadways: Supplement for Pre- and Post-Repair Monitoring of SH3 North Bridge Over BNSF Railroad”
  State of Oklahoma, Department of Transportation
  $80,263

- Hazem Refai, Tulsa, Electrical & Computer Engineering
  “Development of Inexpensive Portable Vehicle Sensor Node System”
  State of Oklahoma, Department of Transportation
  $102,021

- Hazem Refai, Tulsa, Electrical & Computer Engineering
  “The Study of Vehicle Classification Equipment with Solutions to Improve Accuracy in Oklahoma-Phase II”
  State of Oklahoma, Department of Transportation
  $88,875

- Gerald Miller, Civil Engineering & Environmental Science
  Kanthasamy Muraleetharan, Civil Engineering & Environmental Science
  Amy Cerato, Civil Engineering & Environmental Science
  “Interpretation of In Situ Tests as Affected by Soil Suction”
  State of Oklahoma, Department of Transportation
  $85,303

- Royce Floyd, Civil Engineering & Environmental Science
  Jinsong Pei, Civil Engineering & Environmental Science
  “Understanding the Behavior of Prestressed Concrete Girders After Years of Service”
  State of Oklahoma, Department of Transportation
  $127,339
October New Awards

- Kianoosh Hatami, Civil Engineering & Environmental Science
  Gerald Miller, Civil Engineering & Environmental Science
  “Prototype Reinforced Soil Embankment for Reconstruction of US 62 Slope Failure in Chickasha, OK”
  State of Oklahoma, Department of Transportation
  $112,781

- Gerald Miller, Civil Engineering & Environmental Science
  Amy Cerato, Civil Engineering & Environmental Science
  “The Effects of Soil Suction on Shallow Slope Stability”
  State of Oklahoma, Department of Transportation
  $104,388

- Denise Beesley, Educational Psychology
  “Practicum Placement Program”
  Muscogee (Creek) Nation
  $18,169

- Mohammed Atiquzzaman, Computer Science
  Joseph Havlicek, Electrical & Computer Engineering
  Ronald Barnes, Electrical & Computer Engineering
  “University of Oklahoma SAFE-T Project”
  State of Oklahoma, Highway Safety Office
  $66,000

- Ronald Barnes, Electrical & Computer Engineering
  Mohammed Atiquzzaman, Computer Science
  Joseph Havlicek, Electrical & Computer Engineering
  “OU TraCS/PARIS Project”
  State of Oklahoma, Highway Safety Office
  $100,000

- Ronald Barnes, Electrical & Computer Engineering
  James Sluss, Electrical & Computer Engineering
  Mohammed Atiquzzaman, Computer Science
  Joseph Havlicek, Electrical & Computer Engineering
  “ITS System Engineering and Integration”
  State of Oklahoma, Department of Transportation
  $344,000

- Amy Goodin, OU Public Opinion Learning Lab
  “Public Attitudes & Preferences for TV”
  Oklahoma Educational Television Authority
  $15,500

- Bruce Hoagland, Oklahoma Biological Survey/Geography & Environmental Sustainability
  “Highway Biological Studies Program”
  State of Oklahoma, Department of Transportation
  $332,273

- Robert Cichewicz, Chemistry & Biochemistry
  “Fixed Price Service Agreement Research Plan for Elysium Health to Develop a Viniferin-Containing Product”
  Elysium Health
  $15,689