

2nd Annual Energy & Innovation Conference Joins Industry and Researchers

Held November 28-29, 2012 at the Southpointe Hilton Garden Inn in Canonsburg, Pennsylvania, the second Annual Energy & Innovation Conference brought together business and industry leaders from Pennsylvania, West Virginia, Ohio, and Virginia as well as members of the National Energy Technology Laboratory Regional University Alliance (NETL-RUA, or the Alliance). The Alliance hosted the event in collaboration with Catalyst Connection to highlight, demonstrate, and exhibit NETL-RUA research capabilities to the region's manufacturing sector and facilitate the development of new partnerships which will be instrumental in future collaborative research and economic development. Alliance researchers met with manufacturers and business leaders to identify opportunities to enhance the regional economy with new technologies and research ideas. As an outcome of this conference, industry representatives are identifying pressing technical challenges and innovative results that can be reached through collaboration with NETL-RUA.

With attendance reaching nearly 200, the two-day conference featured keynote addresses by area business and industry leaders, informational tracks, and networking, matchmaking, and poster sessions featuring NETL-RUA researchers. The informational tracks focused on capabilities that can be applied to solve industrial problems, accelerate technology development, and quickly bring products to market. The conference provided a significant

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Happy Holidays!

E News is your monthly source for the latest information about NETL-RUA's research, activities, and other important news. If you have information that you would like to feature in future newsletters, send that information to

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NETL-RUA METRICS SNAPSHOT

PRODUCTS		
	FY2011	FY2012
Publications	194	195
Patents	11	12
Licenses	9	4
Students Graduated	20 PhD	23 PhD
	8 MS	19 MS

Product data is updated quarterly.

RESEARCH PERSONNEL



Total = 465

- Graduate Students - 58
- Undergraduate Students - 5
- University Researchers - 173
- URS Researchers - 80
- NETL Researchers - 149

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opportunity for researchers to underscore the collective capabilities of the NETL-RUA to the region, thus improving the visibility of the NETL-RUA as a powerful vehicle to drive innovation in energy and environmental research.

Keynote speakers (Keith Crane, C. Alan Walker, Mark E. Schweitzer and Bill Flanagan) covered wide ranging topics from the impact of natural gas production on Pennsylvania and the surrounding region through the development of the Marcellus Shale resource; to insight into predicted U.S. economic growth over the next three-years; to an entertaining historical perspective on the impact Pennsylvania, West Virginia, Ohio, and Virginia have had on our nation’s development, with the availability of natural resources such as coal and the region’s major waterways providing the impetus for westward expansion.

Catalyst Connection is an economic development organization dedicated to helping small manufacturers improve their competitive performance. Catalyst Connection’s Technology Acceleration Regional Innovation Cluster (T-RIC) Consortium brings together the Pittsburgh region’s business leaders, experts, and consultants to increase the connections between technology needs and solutions.

Video of all speakers, posters, technical presentations, and innovation success story videos are available under News & Events (<http://www.netl.doe.gov/rua/events.html>) on the NETL-RUA Website. Conference photos taken by Scott Dietz of Catalyst Connection.



Keith Crane – Director of the RAND Environment, Energy and Economic Development Program



C. Alan Walker – Secretary, Pennsylvania Department of Community & Economic Development



Bill Flanagan – Executive Vice-President – Corporate Relations for the Allegheny Conference on Community Development



Mark E. Schweitzer – Senior Vice-President and Director of Research at the Federal Reserve Bank of Cleveland



Conference Highlights

NETL-RUA Partner Launches Wilton E. Scott Institute for Energy Innovation

In September, Carnegie Mellon University (CMU) launched the [Wilton E. Scott Institute for Energy Innovation](#), an initiative bringing together CMU engineers, scientists, economists, architects, policy specialists and others to solve some of our country's toughest energy challenges. The Institute, made possible by a lead gift from CMU Alumni Sherman Scott and Joyce Bowie Scott, will support teams tackling a wide range of energy issues. In a press release issued by CMU, Sherman Scott was quoted as saying, "By bringing together experts from a range of disciplines, Carnegie Mellon is the perfect place to help meet the energy challenges of the future. Energy is a precious resource, and Carnegie Mellon's systems approach can create solutions that ensure we produce and use energy more efficiently."

Granger Morgan, Thomas Lord Professor of Engineering and head of CMU's Department of Engineering and Public Policy, will serve as director of the institute. Andrew Gellman, head of CMU's Department of Chemical Engineering and NETL-RUA Consortium Area Lead, will serve as associate director.

Billed as a major education and research initiative, the Institute comes at a time when the Pittsburgh region is poised to see significant increase in the number of energy-related careers.

NETL Director, Anthony Cugini; NETL Deputy Director, Scott Klara; and NETL-RUA Manager, Juli Klara attended the groundbreaking ceremony on September 22 for the Sherman and Joyce Bowie Scott Hall, which will house the Institute along with CMU's Biomedical Engineering Department.



NETL Forming Collaboration with Canadian Counterpart

In October, NETL researchers met with their peers at the Canadian government's Centre for Mineral and Energy Technology (CANMET) facilities in Ottawa, Canada as part of the U.S.-Canada Clean Energy Dialogue (CED). Their goal was to identify the unique contributions each organization can provide for accelerating technology development through experimentation and simulation. NETL's George Richards, Peter Strakey, Dirk Van Essendelft, and Rigel Woodside gave technical talks on their respective areas of expertise, and listened to related talks presented by their peers at CANMET. The complementary capabilities of the two labs could result in significant reduction of effort and a formal collaboration would preclude both the U.S. Department of Energy (DOE) and CANMET from independently developing costly simulations or experimental capabilities.

U.S. President Barack Obama and Canadian Prime Minister Stephen Harper launched the CED in February 2009 to encourage the development of clean energy technologies to reduce greenhouse gases and combat climate change in both countries. The CED is charged with expanding clean energy research and development, developing and deploying clean energy technologies, and building a more efficient electric grid based on clean and renewable generation. The U.S. CED effort is led by DOE, and Canada's effort is led by Environment Canada, with participation by Natural Resources Canada (NRCan).

Public-domain papers on gasification models and validation are being written, model validation data/approaches for several processes are being exchanged, and diagnostic approaches are being developed at unique facilities at both labs as a result of the October meeting. Additionally, NETL researchers are working with NETL senior leaders to formalize a Cooperative Research and Development Agreement (CRADA) with CANMET, and to define the management of intellectual property under the CED.



Technology Spotlight

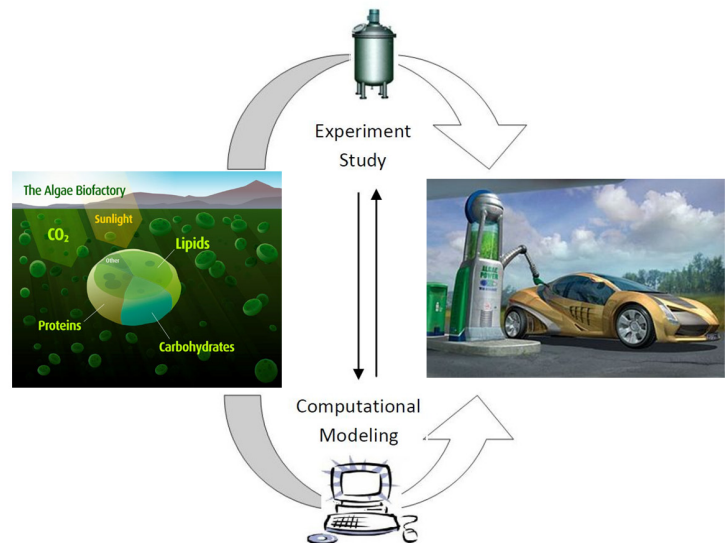
Renewable Microalgae-based Transportation Fuels Produced via Catalytic Conversion: A Review

A rapidly expanding world economy, concern for national energy security, and the environmental impact from burning fossil fuels have accelerated the need to develop renewable energy resources. A number of unique qualities make microalgae a top contender as a feasible solution for addressing these issues, including fast growth rates, high oil content, and the ability to grow under unconventional conditions. Additionally, microalgae pose no threat to food crop production and can be grown with minimal impact on freshwater resources.

Researchers Fan Shi of URS and Ping Wang, Yuhua Duan, Dirk Link, and Bryan Morreale of NETL reviewed recent research progress on the production of renewable, microalgae-based transportation fuels through both homogenous and heterogeneous conversions. The review discusses the possible reaction pathways based on both experimental and theoretical approaches, and identifies significant areas where it is believed computational modeling should be directed to clarify key information that will make the process as effective as possible. The potential of different thermocatalytic pathways to produce alternative transportation fuels from microalgae is also projected in this work. The authors hope these compelling research results will encourage scientists and engineers to concentrate their research on producing greener, more efficient transportation fuels.

The review, entitled "Recent Developments in the Production of Liquid Fuels via Catalytic Conversion of Microalgae: Experiments and Simulations," was published in a recent issue of the Royal Society of Chemistry journal *RSC Advances*, volume 2, issue 26, pp.9727-9747, 2012.

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