

Building Systems Researchers Monitoring Wind Universities Conservation
 Technology Innovation Energy
 Gas Industry Extraction Product Development Research Nuclear Universities Financing Formation Infrastructure Intelligent New Service Chain
 Provider Information Commercialization Refining Supply Delivery Solar Materials Integrator
 Coal Manufacturing Laboratories Water Business Federal

NOVEMBER 28 - 29, 2012

2ND ANNUAL
ENERGY & INNOVATION
CONFERENCE



CATALYST CONNECTION™
 Your Strategic Partner for Manufacturing Growth



WELCOME

Dear Participant:

Welcome to the 2nd Annual Energy & Innovation Conference. As the co-sponsors of this event, Catalyst Connection and the National Energy Technology Laboratory (NETL) are very excited to bring you this unique opportunity to connect with regional stakeholders from a range of disciplines on the various approaches and strategies that are needed for moving technological innovations into the commercial arena.

This event promises an extensive showcase of the broad energy research expertise available right in our own backyard. NETL, the nation's premier fossil energy laboratory, has partnered with five prestigious regional universities (Pitt, Penn State, Carnegie Mellon, West Virginia University and Virginia Tech), and one of the nation's largest industrial engineering and construction firms, URS Corporation, to perform collaborative, use-inspired research. Researchers from this partnership, known as the NETL-Regional University Alliance (NETL-RUA), are on hand to meet with the region's energy manufacturing sector to identify opportunities to enhance the regional economy with new technologies and jobs, produce an experienced workforce to work in and lead these new business ventures, and solve pressing technical challenges.

Catalyst Connection, an economic development organization dedicated to helping small manufacturers improve their competitive performance, will feature informative sessions on the latest industry best practices for innovation acceleration and new product development, including strategies for collaboration and tips on available funding resources. Catalyst Connection's Technology Acceleration Regional Innovation Cluster (T-RIC) Consortium brings together this region's business leaders, experts and consultants to increase the connections between technology needs and solutions. As the leading partner of this Consortium, Catalyst Connection is here to provide manufacturers with the necessary knowledge and tools to improve their competitive performance, through innovation.

To help facilitate these connections, plenty of networking time has been built into this two day agenda. In addition to the Poster Session on Day 1, we urge you to take advantage of the Energy Innovation Matchmaking Session on Day 2, brought to you by the Energy Alliance of Greater Pittsburgh. We believe you will find their unique process for fostering networking and tracking matches to be very valuable and exciting.

Our goal is to provide an informative conference for building valuable and productive relationships. Your success is our success; please keep us informed of technology development and commercialization successes that grow out of this networking opportunity!

The E&I Conference Team

AGENDA

Wednesday, November 28, 2012

8:00 a.m. – 9:00 a.m.	Registration – Breakfast and Networking		
9:00 a.m. – 9:20 a.m.	Welcome and Opening Remarks Brad Tomer , Acting Deputy Director – U.S. Department of Energy/National Energy Technology Laboratory (U.S. DOE/NETL) Petra Mitchell , President and CEO – Catalyst Connection		
9:20 a.m. – 10:00 a.m.	Morning Keynote: “Emerging Energy and Energy Policy Trends” Keith Crane , Director of Environment, Energy, and Economic Development Program – RAND Corporation		
10:00 a.m. – 10:30 a.m.	SESSION 1 Preview “NETL-RUA: Combining Capability and Expertise to Serve as an Engine for Innovation” Cindy Powell , Director – U.S. DOE/NETL Office of Research and Development		
10:30 a.m. – 10:45 a.m.	Break and Networking		
10:45 a.m. – 12:30 p.m.	SESSION 1: NETL-RUA Research & Development <i>Overview of capabilities and cutting-edge research from U.S. DOE/NETL and its Regional University Alliance</i>		
	<u>TRACK 1A:</u> Oil & Gas Production & Utilization <ul style="list-style-type: none"> Monitoring Natural Systems Well Bores & Drilling Advanced Simulation Tools for Reservoir Performance Partnering for Innovation: Shale Gas Initiative 	<u>TRACK 1B:</u> Materials Design & Development <ul style="list-style-type: none"> Advanced Alloy Fabrication Soft Materials Catalyst Development & Commercialization Combinatorial Approaches to Material Optimization Partnering for Innovation: Critical Materials 	<u>TRACK 1C:</u> Process Design, Integration & Optimization <ul style="list-style-type: none"> Simulation-based Engineering Application of Optimization to Industrial Problems Partnering for Innovation: Air Emissions Partnering for Innovation: Power Electronics for Smart Grid
12:30 p.m. – 2:00 p.m.	Lunch Lunch Address: “Encouraging Growth in the Region’s Manufacturing Sector: Results of the Governor’s Manufacturing Advisory Council (GMAC) 2012 Report” C. Alan Walker , Co-Chair, Secretary – PA Department of Community & Economic Development		
2:00 p.m. – 3:30 p.m.	SESSION 2: Business Processes & Best Practices <i>‘How-to’ informative presentations from the experts on innovation and technology commercialization best practices and processes</i>		
	<u>TRACK 2A:</u> Open Innovation <i>Learn the how to’s and benefits of big and small companies partnering through Open Innovation</i>	<u>TRACK 2B:</u> Product Development & Intellectual Property <i>Learn about protecting your intellectual property and the latest best practices in new product development</i>	
3:30 p.m. – 5:00 p.m.	Networking Reception <i>A showcase of current NETL-RUA research and technology; as well as overviews of business resources around innovation commercialization</i>		

AGENDA

Thursday, November 29, 2012			
8:00 a.m. – 8:30 a.m.	Registration – Breakfast and Networking		
8:30 a.m. – 9:00 a.m.	Opening Remarks: “Economic Outlook and Monetary Policy” <i>Mark Schweitzer, Senior Vice President and Director of Research – Federal Reserve Bank of Cleveland</i>		
9:00 a.m. – 10:00 a.m.	Morning Keynote: “From Western Virginia to the Forks of the Ohio: Following the trail that gave the world an energy industry” <i>Bill Flanagan, Executive Vice President – Corporate Relations at Allegheny Conference on Community Development and Host of “Our Region’s Business” on WPXI-TV</i>		
10:00 a.m. – 10:30 a.m.	Break and Networking		
10:30 a.m. – 12:15 p.m.	SESSION 3: Industry Research & Development <i>Overview and discussion of industry needs, industry research, development and demonstration efforts for technology innovation and commercialization</i>		
	<u>TRACK 3A:</u> Oil & Gas Production & Utilization <i>Planned topics include: shale gas drilling, natural gas processing, petrochemicals, CO2 sequestration, water and environmental monitoring</i>	<u>TRACK 3B:</u> Materials Design & Development <i>Planned topics include: specialty metals, defense applications, power generation, specialty materials and coatings, catalysis, separation systems</i>	<u>TRACK 3C:</u> Process Design, Integration & Optimization <i>The topics of Design, Integration & Optimization will be covered as part of both Tracks 3A & 3B</i>
12:15 p.m. – 1:30 p.m.	Lunch and Networking: Innovation Success Stories <i>Learn about successful development and commercialization of innovative technologies as a result of collaboration among businesses, universities and federal laboratories</i>		
1:30 p.m. – 2:45 p.m.	SESSION 4: Business Processes & Best Practices <i>‘How-to’ informative presentations from the experts on innovation and technology commercialization best practices and processes</i>		
	<u>TRACK 4A:</u> Partnering with the NETL-RUA, Federal Laboratories and Universities	<u>TRACK 4B:</u> Funding Resources for Technology Innovation and Commercialization	
2:45 p.m. – 4:00 p.m.	Innovation Matchmaking Session <i>Bringing together manufacturers, business leaders, scientists and engineers, and venture capitalists from the region to accelerate technology development</i>		

SPEAKER LIST

Wednesday, November 28, 2012

SESSION 1: U.S. DOE/NETL-RUA Research & Development

Overview of capabilities and cutting-edge research from NETL and its Regional University Alliance

TRACK 1A

Oil & Gas Production & Utilization

- **Overview:** George Guthrie, U.S. DOE/NETL
- **Monitoring Natural Systems:** Alexandra Hakala, U.S. DOE/NETL
- **Well Bores & Drilling:** Brian Strazisar, U.S. DOE/NETL
- **Advanced Simulation Tools for Reservoir Performance:** Grant Bromhal, U.S. DOE/NETL
- **Partnering for Innovation: Shale Gas Initiative:** George Darakos, U.S. DOE/NETL

TRACK 1B

Materials Design & Development

- **Overview:** Bryan Morreale, U.S. DOE/NETL
- **Advanced Alloy Fabrication:** Jeffrey Hawk, U.S. DOE/NETL
- **Soft Materials:** David Luebke, U.S. DOE/NETL
- **Catalyst Development & Commercialization:** Dave Berry, U.S. DOE/NETL
- **Combinatorial Approaches to Material Optimization:** Andrew Gellman, CMU
- **Partnering for Innovation: Critical Materials:** Roe-Hoan Yoon, Virginia Tech

TRACK 1C

Process Design, Integration & Optimization

- **Overview:** Geo Richards, U.S. DOE/NETL
- **Simulation-based Engineering:** David Miller, U.S. DOE/NETL
- **Application of Optimization to Industrial Problems:** Nicholas Sahindis, CMU
- **Partnering for Innovation: Reducing Engine Air Emissions:** Dan Carder, WVU
- **Partnering for Innovation: Power Electronics for Smart Grid:** Gregory Reed, Pitt

SESSION 2: Business Processes & Best Practices

'How-to' informative presentations on innovation and technology commercialization best practices and processes

TRACK 2A

Open Innovation

Chair: Lou Musante, Echo Strategies
Truman Wilt, PPG Industries
Razi Imam, 113 Industries
Bill Gaussa, Philips Respironics
Irene Spitsberg, Kennametal

TRACK 2B

Product Development & Intellectual Property

Chair: Connie Palucka, Catalyst Connection
Connie Palucka, Catalyst Connection
Duane Stewart, Buchanan Ingersoll & Rooney

NETWORKING RECEPTION

A showcase of current NETL-RUA research & technology; as well as business resources around innovation commercialization

- **Fracture Flow:** Dustin Crandall, URS
- **Geomechanics Related to Shale Gas and/or CO₂:** Hema Siriwardane, WVU
- **Surrogate (AI) Models:** Amirmasoud Kalantari, WVU
- **Reservoir Fluid Behavior in Deep Formations: Equations of State:** Athanasios Karamalidis, CMU
- **Foam Cement Stability:** Barbara Kutchko, U.S. DOE/NETL
- **Cement Fracture Flow:** Julie Vandenbossche, Pitt
- **Air Monitoring:** Mike McCawley, WVU
- **Reservoir Structure Visualization and Fracture Characterization:** Dengliang Gao, WVU
- **New Turbo-machinery Material – Computational Approaches for Alloy Design:** Zi-Kui Liu, Penn State
- **Structured Nano-materials (MOFs):** Chris Matranga, U.S. DOE/NETL
- **Electroceramics & Fuel Cells:** Kirk Gerdes, U.S. DOE/NETL
- **Gas Separation Membranes:** David Luebke, U.S. DOE/NETL
- **Functionalized Gas Separation Sorbents:** Jim Fisher, URS
- **High Entropy Alloys:** Michael Gao, URS
- **Energy Storage Materials & Devices for Smart Grid:** Partha Saha, Pitt
- **Modern Refractory Ceramics:** James Bennett, U.S. DOE/NETL
- **Reactive Transport Modeling for Cement Property Alteration:** Leopold Brunet, PSU
- **Real-time Gas Composition Analyzer:** Ben Chorpening, U.S. DOE/NETL
- **Measurement and Characterization of Solid and Granular Flow:** David Greve, CMU
- **CO₂ Storage Potential and Enhanced Natural Gas Recovery in Depleted Shale:** Bob Dilmore, U.S. DOE/NETL
- **Microscopy Capabilities of NETL-RUA:** Mitsuhiro Murayama, Virginia Tech
- **Chemical Looping for Industrial CO₂**
- **Management:** Steve Carpenter, URS
- **Process Synthesis and Optimization:** Alison Cozad, CMU
- **Carbonaceous Chemistry Module:** Dirk VanEssendelft, U.S. DOE/NETL
- **Computational Fluid Dynamic Modeling:** Danesh Tafti, Virginia Tech
- **AVESTAR Real-time Simulation System:** Steve Zitney, U.S. DOE/NETL
- **Innovation & Commercialization Posters**
 - Creating & Maintaining a Clear Strategy
 - Design Thinking
 - Resourcing Innovation Services Supply Chain
 - Additive Manufacturing (3-D Printing)
 - Idea Management
 - Breakthrough Innovation

SPEAKER LIST

Thursday, November 29, 2012

SESSION 3: Industry Research & Development

Discuss industry needs, industry R&D and demonstration efforts for technology innovation and commercialization

TRACK 3A

Oil & Gas Production & Utilization

Chair: George Darakos, U.S. DOE/NETL

*Paul Ziemkiewicz, WV Water Research Inst.
John Cramer, Nabors Well Services
Josh Hickman, EdgeMarc Energy
Richard Winschel, CONSOL Energy
Rick Hammack, U.S. DOE/NETL*

TRACK 3B

Materials Design & Development

Chair: Terri Marts, URS

*Pete Moore, U.S. Steel Tubular Products, Inc.
Charles Stinner, ATI Allegheny Ludlum
Paul Prichard, Kennametal, Inc.*

TRACK 3C

Process Design, Integration & Optimization

*The topics of Design, Integration & Optimization
will be covered as part of both Tracks 3A & 3B*

SESSION 4: Business Processes & Best Practices

'How-to' informative presentations on innovation and technology commercialization best practices and processes

TRACK 4A

Partnering with the NETL-RUA, Federal Laboratories and Universities

Chair: Chris Gabriel, UEP

*Charles Taylor, U.S. DOE/NETL
Marlin Mickle, University of Pittsburgh
Brittany McCracken, AMTV
Carl Irwin, West Virginia University*

TRACK 4B

Funding Resources for Technology Innovation and Commercialization

Chair: Art Tintori, Catalyst Connection

*Angel Marschik, First Niagara Bank
Jeffrey McDaniel, Innovation Works
Steve Adelkoff, Renewable Manufacturing Gateway*

INNOVATION MATCHMAKING SESSION*

Bringing together manufacturers, business leaders, scientists and engineers, and venture capitalists from the region to accelerate technology development

Based on your profile, you will be matched with potential collaborators.

***Brought to you by the Energy Alliance of Greater Pittsburgh and hosted by Catalyst Connection and NETL**

FEATURED SPEAKERS

Brad Tomer | Acting Deputy Director, National Energy Technology Laboratory



Brad Tomer is the Acting Deputy Director for the National Energy Technology Laboratory responsible for managing the day-to-day operations for the Lab. Mr. Tomer oversees institutional operations including Information Technology, Environmental, Safety and Health, Human Resources, and Site Operations for five sites across the United States including significant research laboratories in Morgantown, WV, Pittsburgh, PA and Albany, OR. In addition, Mr. Tomer manages all business operations including Site Support Contracting, Acquisition and Assistance, and, Budget, Finance and Accounting. Mr. Tomer serves as a member of NETL's Executive Board which oversees the implementation of major science and technology development programs in Fossil Energy, Office of Electricity, and Energy Efficiency and Renewable Energy. Previously at NETL, he served as Director of the Office of Major Demonstrations (OMD), Deputy Director for the Strategic Center for Coal, Director for the Strategic Center for Natural Gas and Oil, Technology Manager and project manager. Prior to NETL, he worked at the Belvoir Research, Development & Engineering Center as a petroleum engineer. Mr. Tomer has 28 years experience in successfully moving technologies from concept to field deployment. He has a B.S. degree in petroleum and natural gas engineering from The Pennsylvania State University, an M.B.A. from George Mason University, and a Masters degree in economics from West Virginia University.

Petra Mitchell | President and CEO, Catalyst Connection



Ms. Petra Mitchell joined Catalyst Connection (previously known as the Southwestern Pennsylvania Industrial Resource Center, SPIRC) in 1994. Catalyst Connection is a private, nonprofit corporation dedicated to helping manufacturers compete in a global economy, grow their business and create jobs. In her role as President and CEO of Catalyst Connection, Ms. Mitchell leads the development and execution of outreach, education, service delivery and measurement strategies. Personal and business affiliations enable her to be an advocate for small manufacturers. She is a member of the Regional Investors Council of the Allegheny Conference of Community and Economic Development and SMC Business Council. She is also a member of the Board of the Pennsylvania Industrial Resource Center Network, the Board of the American Small Manufacturers Coalition, the Product Development and Management Association, and the Pittsburgh Branch of the Federal Reserve Bank of Cleveland.

Ms. Mitchell's experience in manufacturing operations, technology development, and business development stretches back to 1988. Before joining Catalyst Connection, she was employed by GE Aircraft Engines, now GE Aviation, where she was a selected participant in the Manufacturing Development program, completed comprehensive Advanced Course in Manufacturing, and held positions in manufacturing engineering. She joined Catalyst Connection as a senior operations consultant, focusing on improvements in material flow, production planning and scheduling, facility layout, energy usage, and setup reduction. She moved from a managing director's role, in which she focused on developing Catalyst Connection's business growth services, to a vice president's position, where she forged critical partnerships that advanced our business objectives. She was named President and CEO of Catalyst Connection in 2007. She holds a B.S. in mechanical engineering from the University of Dayton, and an M.S. in engineering with a concentration in manufacturing management from the University of Cincinnati.

FEATURED SPEAKERS

Keith Crane | Director of Environment, Energy, and Economic Development Program, RAND Corporation



Keith Crane is director of the RAND Environment, Energy, and Economic Development Program as well as a professor at the Pardee RAND Graduate School. His primary interest is developing and evaluating policy options for addressing climate change. Crane is also engaged in issues pertaining to U.S. energy production and consumption, China, the Middle East, Afghanistan, the transition economies of Eastern Europe and the Commonwealth of Independent States, and post-conflict nation building. In Fall 2003, he served as an economic policy advisor to the Coalition Provisional Authority in Baghdad. Prior to rejoining RAND in February 2002, he was chief operating officer and director of research at PlanEcon, Inc., a Washington, D.C.-based research and consulting firm focusing on Central and Eastern Europe and the former Soviet republics. During his tenure at PlanEcon, Crane provided analysis and economic forecasts used in over 100 major investments in the region. He writes extensively on transition issues in policy and academic journals and briefs high-level decision makers. Crane received his Ph.D. in economics from Indiana University.

Cynthia Powell | Director, Office of Research & Development, National Energy Technology Laboratory



Dr. Cynthia A. Powell is the Director of the National Energy Technology Laboratory's Office of Research & Development, where she leads a comprehensive research effort to discover and develop the solutions that will make sustainable fossil energy utilization a reality. With research facilities in Albany, OR, Morgantown, WV, and Pittsburgh, PA, a research staff of more than 400 scientists and engineers, and a large portfolio of successful collaborations with partners from industry and academia, NETL ORD has had a strong track record of research success under Dr. Powell's leadership that includes numerous publications in high-impact journals, multiple R&D 100 awards, and patents and licenses of NETL-developed intellectual property. A materials scientist by education, Dr. Powell has also worked as the Materials Science Focus Area Lead, and as the Director of the Materials Performance Division for NETL, and previously for the Albany Research Center. She has 20+ years of hands-on research experience in high-temperature phase and microstructural development of structural materials and the effects of these phase changes on the bulk properties of these materials. She received her Ph.D. in materials science from Case Western Reserve University, preceded by an M.S. and B.S. in ceramic engineering from Clemson University. Her research has also addressed microstructure/processing relationships in a wide range of intermetallic, metallic, ceramic, and composite materials, and the influence of microstructure on the tribological performance of ceramics and ceramics-based composites.

FEATURED SPEAKERS

C. Alan Walker | Secretary, PA Department of Community and Economic Development



C. Alan Walker was confirmed as secretary of the Department of Community and Economic Development on April 12, 2011. As the head of DCED, Walker will lead the agency's efforts to improve our communities and position Pennsylvania businesses to grow and compete in the global economy.

Walker comes to DCED from Bigler, PA, where he was president and CEO of Bradford Energy Company Inc. He has also served as a member and chairman of several boards, including the Pennsylvania Chamber of Business and Industry, Team Pennsylvania, Pennsylvania Coal Association, and Pennsylvanians for Effective Government. He is also past president of the Pennsylvania Society.

In addition to an impressive business résumé, Walker has an extensive and effective civic record. He served with the Bigler Civic & Recreation Association, Clearfield YMCA, Clearfield Hospital Board of Directors, the Clearfield Foundation for Health, and Bucktail Council – Boy Scouts of America.

A trustee of Bucknell University, Walker served on the university's long range planning, building and grounds, trusteeship and executive committees.

Walker obtained his bachelor's degree in economics from Bucknell and earned a master's degree in business administration from Penn State.

DCED's secretary is married and is the father of two children, both Bucknell graduates.

Mark E. Schweitzer | Senior Vice President and Director of Research, Federal Reserve Bank of Cleveland



Mark Schweitzer is a senior vice president and the director of research at the Federal Reserve Bank of Cleveland. He leads the Bank's Research Department, setting the direction for economic research, selecting and developing staff, and briefing the Bank president prior to meetings of the Federal Open Market Committee of the Federal Reserve System. Dr. Schweitzer's own research has focused on the macroeconomic impact of labor market developments and the identification of factors contributing to regional economic growth.

Dr. Schweitzer joined the Bank in 1992 as an economist. From 2000 to 2002, he served as a senior economist at the Bank of England. He returned to the Federal Reserve Bank of Cleveland, and in 2004 was promoted to assistant vice president and director of the Regional Economic Issues Program. In 2007, Dr. Schweitzer was appointed vice president and branch executive of the Federal Reserve Bank of Kansas City's Denver Branch. He was named to his current position in 2008.

An economics graduate of the University of Chicago, Dr. Schweitzer holds both a master's degree and a Ph.D. in economics from the University of California at Los Angeles. A native of Seattle, Washington, Dr. Schweitzer lives in Shaker Heights, Ohio. He is married and has two daughters and a son.

FEATURED SPEAKERS

Bill Flanagan | Executive Vice President, Corporate Relations, Allegheny Conference on Community Development



Bill Flanagan is Executive Vice President—Corporate Relations for the Allegheny Conference on Community Development and its affiliated regional development organizations: The Pennsylvania Economy League of Greater Pittsburgh LLC, the Pittsburgh Regional Alliance and the Greater Pittsburgh Chamber of Commerce.

Bill supervises Investor Relations activities for the Conference and Affiliates, including fundraising, membership services and educational programming. He oversees organizational communications. In this role, Bill also hosts “Our Region’s Business” on WPXI-TV, WJAC-TV, WTOV-TV and the Pittsburgh Cable News Channel (PCNC), a program the Conference produces in partnership with WPXI-TV.

As President of The Pittsburgh G-20 Partnership in 2009, Bill helped to organize the public/private partnership of organizations from across southwestern Pennsylvania that came together to welcome the world for the Pittsburgh Summit. With the City of Pittsburgh, Allegheny County and VisitPittsburgh, the Allegheny Conference was one of the four founding members of the partnership.

As Executive Director of Pittsburgh 250, the celebration of the 250th anniversary of the naming of Pittsburgh in 2008, Bill supervised a multi-year, 14-county initiative that included signature projects and events, along with grassroots initiatives planned by a 200 member commission and involving more than 300 partners and supporters.

Prior to joining the Conference in September 2001, Bill had covered the economy of southwestern Pennsylvania almost 20-years, much of it as Money Editor of KDKA-TV, where he was Pittsburgh’s only broadcast reporter devoted exclusively to business and personal finance, and where he hosted “The Sunday Business Page.” Bill came to the region in 1982 as a general assignment reporter for the television station. He has written about personal finance for The Pittsburgh Post-Gazette and KDKA-AM.

A graduate of Northwestern University (B.S. Speech), Bill holds a Master’s Degree in Journalism from the University of Missouri-Columbia. He is a native of Dover, Delaware.

Bill and his wife, Ann Devlin Flanagan, have two children, Mara and Will.

THANK YOU for attending!

NOTES



Building
 Systems
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 Wind
 Universities
 Conservation
 Technology
 Innovation
 Energy
 Development
 Research
 Nuclear
 Formation
 Financing
 Universities
 Solar
 Delivery
 Infrastructure
 Intelligent
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