



MICKEY LEELAND ENERGY FELLOWSHIP PROGRAM

Sponsored by the U.S. Department of Energy Office of Fossil Energy

2015 TECHNICAL FORUM



AGENDA

August 3-6, 2015

Philadelphia Room

DoubleTree by Hilton Hotel & Suites - Downtown Pittsburgh



<http://energy.gov/fe/mickey-leland-energy-fellowship>



Providing opportunities for students who are pursuing degrees in science, technology, engineering, or mathematics.



**MICKEY LELAND ENERGY FELLOWSHIP
TECHNICAL FORUM AGENDA**

SUNDAY, AUGUST 2, 2015

- 4:00 – 6:00 pm** **Student Registration**
- 7:00 – 9:00 pm** **Presentation Practice**

MONDAY, AUGUST 3, 2015

- 8:00 – 8:30 am** **Student Registration**
- 8:30 – 9:00 am** **Opening Remarks**
Alan Perry
Office of Fossil Energy
- Welcome Remarks**
Dr. Grace M. Bochenek
Director, National Energy Technology Laboratory
- 9:00 – 10:15 am** **Keynote Welcome Remarks**
- Reginal “Reg” Spiller
MLEF Program Co-Founder
Former Deputy Assistant Secretary
Department of Energy
- Captain (Ret) Ernest R. Hunter, Sr.
Co-Founder, MLEF
Former Deputy Assistant Secretary
Office of Fossil Energy



MICKEY LELAND ENERGY FELLOWSHIP TECHNICAL FORUM AGENDA

10:15 – 10:30 am Break

(Students with morning session presentations load slides onto computer)

10:30 am – 12:00 pm Student Presentations

- **Jessica Farrell, HQ, DC**
To Fit or Not To Fit: An Analysis of State-by-State Coal-Fired Power Plants and their Potentials for CCS Retrofits
- **Jacqueline Elwood, NETL, PA**
A Study in Optical Fiber pH Sensors
- **Vanessa Espinoza, NETL, PA**
Spectroscopic Analysis of Doped Metal Nanoclusters
- **Bryce Reynolds, HQ, MD**
Indirect Supercritical CO₂ Power Cycles
- **Sarah Narburgh, NETL, PA**
Comprehensive Exergy Analysis of an IGCC Plant with Carbon Capture
- **Claude Phan, NETL, WV**
Advanced Computational Chemistry

12:00 – 1:00 pm Lunch

(Students with afternoon session presentations load slides onto computer)

1:00 – 2:30 pm Student Presentations

- **Samantha Martinez, HQ, MD**
Searching For Rare Earth Elements – A Well Log Analysis
- **Lidiya Gavrilenko, HQ, MD**
Process Economics of REE Extraction from Coal Seam Underclay Formations
- **Brandon Mathis, NETL, PA**
Foam Cement Bubble Characterization



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- **Luke Macfarlan, NETL, WV**
Video Processing to Identify Light-Activated Particle Groups and Movement in Two-Dimensional Fluidized Beds
- **Jeremy Gibbs, HQ, DC**
The Hydrologic Impacts of Shale Gas Drill Pads on Small Watersheds
- **Kyle Stewart, NETL, WV**
Flow of Particles in the Chemical Looping Process

2:30 – 2:45 pm **Group Picture/Break**

2:45 – 4:00 pm **Student Presentations**

- **Azhar Ali, HQ, MD**
CFD Simulation of Coal Gasification in a Spouted Bed Reactor
- **Joshua Kubiak, PNNL, WA**
Optical Characterization of Gold Plasmonic Fishnet
- **Tracy Tran, PNNL, WA**
Modeling the Degradation of Used Nuclear Fuel Canisters
- **Jeremiah Wilson, HQ, MD**
Financial Analysis of LNG Processing Plant
- **Emma Menio, HQ, MD**
Innovative Concepts for Managing Water in Fossil Fuel Based Energy Systems: Project Benefits and Updates

4:00 – 4:30 pm **Closing Remarks**

Grant Ervin
Chief Resilience Officer
City of Pittsburgh

4:30 – 5:30 pm **Presentation Practice**



MICKEY LELAND ENERGY FELLOWSHIP TECHNICAL FORUM AGENDA

TUESDAY, AUGUST 4, 2015

8:45 – 10:15 am Student Presentations

- **Huda Ashfaq, NETL, WV**
Nanocatalysts for High-Temperature, High-Pressure Syngas Production from Distributed Shale Gas Resources
- **Jordan Bordonaro, NETL, PA**
The State of Supercritical Carbon Dioxide Heat Exchanger Technology
- **Jessica Torres, NETL, WV**
Numerical Modeling of Rotating Fluidized Beds in Complex Static Geometries
- **Elizabeth Ritterbush, SPR, LA**
A Mission Driven Systems Approach to Analyzing the Effectiveness of the MLEF Intern Program
- **Lauren Smales, NETL, WV**
Carbon Dioxide Relative Permeability Measurements in Rock Cores Using CT Scanning Technology
- **Thornton Wilson, SPR, LA**
The Impact of Regulatory Requirements of the Strategic Petroleum Reserve

10:15 – 10:30 am Break

(Students with second morning session presentations load slides onto computer)

10:30 am – 12:00 pm Student Presentations

- **Lucy Tang, NETL, PA**
Numerical Simulation of a Falling Ball Viscometer
- **Amanda Foley, NETL, PA**
Experimental Study of the Viscosity of Perfluoropolyether Oil at High-Temperature High-Pressure Conditions
- **Matthew Kang, NETL, PA**
Improvement of a User-Friendly Predictive Tool for Hydrocarbon Mixtures Properties at High-Temperature and High-Pressure Conditions



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- **Brenna Doherty, NETL, OR**
The Application of Reduced-Order Models to Estimate the Leakage along Wells During Geologic CO₂ Storage
- **Phillip Tilson, SPR, LA**
Industrial Hygiene and Ergonomics at the Strategic Petroleum Reserve (SPR)
- **Mack Weaver, SPR, LA**
AutoCAD SAP PLM Integration Pilot

12:00 – 1:00 pm Lunch

(Students with first afternoon session presentations load slides onto computer)

1:00 – 2:15 pm Student Presentations

- **Tyler Castillo, SPR, LA**
Analyzing and Optimizing Quarterly Pump Runs with Respect to Efficiency, Reliability, and Cost
- **Alexander Horn, NETL, PA**
Evaluation of Ionic Liquids for Supported Ionic Liquid Membranes: Application in Pre-combustion Carbon Capture
- **Michael LeClaire, NETL, PA**
Post-polymerization Modification of Commercially Available Polymers for Post-combustion Gas Separation Membranes
- **Zachary Branum, NETL, WV**
Real Time Fuel Cell Model Development for Temperature Control for a Cyber-Physical Simulation of a Hybrid System
- **Carol Sadek, NETL, WV**
Supplementing a Workflow Interface to the MFix GUI

2:15 – 3:00 pm Break/Skits

(Students with second afternoon session presentations load slides onto computer)



MICKEY LELAND ENERGY FELLOWSHIP TECHNICAL FORUM AGENDA

3:00 – 4:15 pm

Student Presentations

- **Daniel Schultz, NETL, OR**
Development of the Robust Application of Multiple Power Sources & Systems – Power Flow Tool
- **Simone Gelinas, LANL, NM**
Novel Mixed Matrix Membranes for Gas Separations
- **Laurel Boser, NETL, OR**
Development of the EDX SFIRE Portfolio
- **Meghan Brandi, NETL, OR**
Electron Microscopy & Microanalysis
- **Matthew Grasinger, LANL, NM**
Robust Site Selection for CO₂ Sequestration Using Decision Theory

4:15 – 4:30 pm

Program Announcements

4:30 – 5:30 pm

Presentation Practice

WEDNESDAY, AUGUST 5, 2015

7:15 am – 3:00 pm

Facility Tour

Conemaugh Generating Station
Seward Generating Station



MICKEY LELAND ENERGY FELLOWSHIP TECHNICAL FORUM AGENDA

THURSDAY, AUGUST 6, 2015

8:30 – 9:00 am

Opening Remarks

Dr. Cynthia Powell
Director, Office of Research and Development
National Energy Technology Laboratory

9:00 – 10:15 am

Student Presentations

- **Jessica Spears, NETL, WV**
Homogeneous Characterization, Collection, and Expansion of Granular Material Properties for Advanced Gasification
- **Jaileen Del Valle Maldonado, LANL, NM**
National Risk Assessment Partnership - Wellbore Integrity
- **Andrew Bean, NETL, WV**
Assessment of & Recommendations for Management of NETL's Physical & Digital Geosample Assets
- **Daniel Peluso, NETL, WV**
Assessment of & Recommendations for Management of NETL's Physical & Digital Geosample Assets
- **Adit Patel, NETL, PA**
Fugitive Methane Emissions from Inactive Production Oil/Gas Wells

10:15 – 10:30 am

Break

(Students with second morning session presentations load slides onto computer)



MICKEY LELAND ENERGY FELLOWSHIP TECHNICAL FORUM AGENDA

10:30 – 11:45 am Student Presentations

- **Danielle Mathews, NETL, WV**
Granular Material Properties Database Designer
- **Amy Falcon, NETL, WV**
Production of Activated Carbon from Coal vs. Wood via a Two Stage Acid Treatment
- **Molina Nichols, NETL, WV**
Building a Machine Learning Framework for Creation of Rapid Performance Reservoir Models for Use in CO₂ Sequestration Risk Assessment
- **Jared Carpenter, NETL, WV**
Analysis of Particle Movement through the L-valve of Chemical Looping
- **Wyatt Adams, SNL, CA**
Rayleigh Scattering Combustion Diagnostics

11:45 am – 12:45 pm Lunch

(Students with afternoon session presentations load slides onto computer)

12:45 – 1:15 pm Special Speaker

Rebecca Winkel
Economic Analyst, Policy Analysis
American Petroleum Institute

1:15 – 2:15 pm Student Presentations

- **Ashley LeDonne, NETL, PA**
Extracting and Recycling Rare Earth Elements from Aqueous Solutions Using Layered Double Hydroxide (LDH) Anionic Clay
- **Liliia Reddy, NETL, WV**
An Examination of Two-Phase Flow Through a Seal During Carbon Dioxide Sequestration



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- **Gavin Glenn, NETL, WV**
Effects of Geologic Faulting on Gas Flow
- **David Etim, NETL, PA**
Development of Predictive Analytics and Visualization Methods for 9Cr Steel Alloys

2:15 – 2:30 pm

Break

2:30 – 4:00 pm

Forum Closing Keynote Remarks

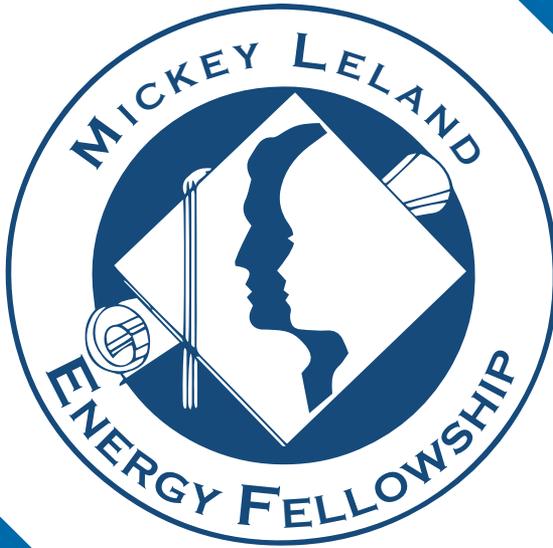
Christopher A. Smith
Assistant Secretary for Fossil Energy
U.S. Department of Energy

Graduation

Group Photo



**Thank you for attending the
2015 Mickey Leland Energy Fellowship
Technical Forum**



Mickey Leland Energy Fellowship Program

For more information please contact:

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U.S. Department of Energy
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National Energy Technology Laboratory
Pacific Northwest National Laboratory
Strategic Petroleum Reserve
Oak Ridge Associated Universities
Los Alamos National Laboratory
Sandia National Laboratory