

TECHNICAL FORUM 2012



ENGINEERING

TECHNOLOGY

MATHEMATICS

PHYSICAL SCIENCES

CAREER DEVELOPMENT

EDUCATIONAL ADVANCEMENT

**MEETING
THE FOSSIL ENERGY CHALLENGE**



MICKEY LELAND ENERGY FELLOWSHIP 2012

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PROGRAM OVERVIEW



The Mickey Leland Energy Fellowship (MLEF) is headquartered in Washington, DC, and is sponsored by the Office of Fossil Energy, U.S. Department of Energy. MLEF's mission is to provide women and under-represented minority students majoring in Science, Technology, Engineering and Mathematics (STEM), the opportunity to apply their academic achievements to actual research and gain hands on experience as they prepare to enter the workforce.

The 10-week summer internship places each student at one of the FE sites including: the Strategic Petroleum Reserve sites in Louisiana and Texas; the National Energy Technology Laboratory in Pittsburgh, Pennsylvania, Morgantown, West Virginia, and Albany, Oregon; the Pacific Northwest National Laboratory, in Richland, Washington; and the Department of Energy Headquarters sites in Washington D.C. and Germantown, Maryland.

During the final week of the program the interns attend a Technical Forum and present the project they have worked on during their internship to their peers, mentors, site representatives, and senior Fossil Energy managers.

The Mickey Leland Energy Fellowship Program was awarded the Secretary of Energy's EEO/ Diversity Best Practices Award in 2007.



Sponsored by the US Department of Energy Office of Fossil Energy





George Thomas "Mickey" Leland

George Thomas "Mickey" Leland was a six-term U.S. Congressman and Texas state representative who was best known for focusing much-needed attention on issues of health and hunger. He was an effective spokesman for the hungry, and rallied support which resulted in both public and private action to reduce hunger in the U.S. and throughout the world.

Mr. Leland was born on November 27, 1944 in Lubbock, Texas to Alice and George Leland II. He moved to Houston's Fifth Ward at a young age with his mother and brother. In 1964 he graduated in the top ten percent of his class from Houston's Phyllis Wheatley High School. While attending Texas Southern University (TSU), he became a vocal leader of the local civil rights movement and brought national leaders of the movement to Houston. He graduated from TSU's School of Pharmacy in 1970 with a Bachelor of Science. From 1972 to 1977 he served in the Texas state legislature in Austin representing Houston's 88th District. As a state representative he became famous as a champion of health care rights for the poor.

In 1978, Mr. Leland was elected to the United States Congress from the 18th Congressional District in Houston. His ability to reach out to others with innovative ideas and to gain support from unlikely sources was key to his success in effectively addressing the problems of the poor and minorities. Congressman Leland led an eight-member House of Representatives delegation on a tour of famine stricken areas in Ethiopia. Increasingly active in international human rights and world hunger issues, he worked tirelessly to solve the problems of hunger and malnutrition around the world. On August 7, 1989 while leading a humanitarian mission to a United Nations refugee camp, his plane crashed in a mountainous region of Ethiopia. He was accompanied on this trip by members of his staff, State Department officials, and Ethiopian nationals. There were no survivors.

In 2000, then-Secretary of Energy Bill Richardson renamed the Office of Fossil Energy's Minority Education Initiative the Mickey Leland Energy Fellowship. The more than 100 members of the class of 2000 became the first Mickey Leland Energy Fellows. Mr. Richardson stated that the ceremony to honor the late Congressman would be a way to "remember a great American who dedicated his life to expanding human potential." He added that he "could find no better way to honor [Mr. Leland's] memory than to endow his name on a program that will elevate the opportunities for future generations of minority students."





MLEF INTERNS

DOE HQ, OFFICE OF FOSSIL ENERGY

NATIONAL ENERGY TECHNOLOGY LABORATORY

PACIFIC NORTHWEST NATIONAL LABORATORY

STRATEGIC PETROLEUM RESERVE



LUIS D. ALAYÓN

Junior

Mechanical Engineering

Turabo University

Gurabo, Puerto Rico

Mentor: J. M. Drake

BIOGRAPHY:

Luis D. Alayón Fernández is a junior, currently enrolled at Turabo University in Gurabo, Puerto Rico in Mechanical Engineering. After graduation, he intends to pursue a Master's Degree in Aerospace Engineering. Luis enjoys learning how mechanical devices work and how they are developed, maintained and designed. He would like to eventually work on design projects. He has an academic scholarship in the Honor's Program of Turabo University and is also a member of the Society of Hispanic Professional Engineers (SHPE). The MLEF internship is his first, but he is looking forward to participating in other internships to acquire more experience and knowledge.

PROJECT: **Pump and Piping Performance Evaluation Procedure at the Strategic Petroleum Reserve Sites**

SITE: **Strategic Petroleum Reserve, New Orleans, Louisiana**

Luis reviewed the Pump and Piping Evaluation Procedure at the SPR sites. He worked at the New Orleans office, but concentrated on the SPR Louisiana storage sites: Bayou Choctaw and West Hackberry. He searched for and analyzed ways to improve the evaluation procedures at these sites, and also developed computer programs that make calculations easier during the evaluation process.



CHARLES ALEXANDER
Junior
Mechanical Engineering
Rochester Institute of Technology
Rochester, New York

Mentor: Allison Kuhn

BIOGRAPHY:

Charles Alexander is a fourth year Mechanical Engineering student at the Rochester Institute of Technology (RIT) in Rochester, New York. He is currently pursuing both his Bachelor's and Master's of Science degrees in Mechanical Engineering through RIT's dual-degree program. He has received the President's and Merit Scholarships from RIT as well as a merit scholarship from the National Merit Scholarship Corporation and is currently on the Dean's List. As a former intern at Bartlett Engineering in Metairie, Louisiana, Charles played a crucial role in a number of design projects and conducted finite element analysis of dive bell components for a coast guard vessel certification package. He studies engineering out of an interest in energy and future technologies. His short term goals include finishing school and finding an aerospace industry job in California.

PROJECT: West Hackberry Variable Frequency Drive Feasibility Study

SITE: Strategic Petroleum Reserve, West Hackberry, Louisiana

Charles worked with mentor Allison Kuhn at the Strategic Petroleum Reserve (SPR) West Hackberry Storage Site in Hackberry, Louisiana, where he conducted a feasibility study of adding a variable frequency drive (VFD) system to the Raw Water Injection Pumps (RWIPs) on site. Although maximum rate drawdown readiness is the SPR Mission, the majority of daily activities do not necessitate maximum pump flow rate. The power consumed by a pump is a function of the square of the pump's speed. This implies that if the pumps were slowed to provide only the necessary flow rate, significant energy savings could be realized. Charles assessed the benefits and drawbacks of using a VFD system to control the operating speed of the RWIPs using data from past drawdown and leaching operations.



CHINAZOR AZUBIKE

**Junior
Biology
Tennessee State University
Nashville Tennessee**

Mentor: Natenna Dobson

BIOGRAPHY:

Chinazor Stephanie Azubike is a junior at Tennessee State University. Her major is Biology with a concentration in Bioinformatics and minor in Chemistry. She is a member of Golden Key International Honor Society, Phi Eta Sigma Honor Society, and National Society of Collegiate Scholars. She interned at the Doheny Research Institute through the NSF-BMES and the University of Southern California. Last summer, she participated in the NSF-Undergraduate Research Mentoring program where she conducted environmental science research. She also studied abroad in Segovia/Madrid, Spain. Chinazor not only enrolled in several classes but also got involved with family and community service with the locals.

PROJECT: Evaluating Opportunities and Challenges of Safe and Responsible Unconventional Gas and Oil Development in Arid African and Middle-Eastern Countries

SITE: Department of Energy Headquarters, Washington, D.C.

The objective of this project was to evaluate opportunities and challenges of safe and responsible unconventional gas and oil (i.e., shale gas, tight sands, oil shale) development in countries with limited water resources within Africa and the Middle East, specifically in the countries of Jordan, Saudi Arabia, and South Africa. The research involved the collection of information on existing unconventional oil and gas fields, technical challenges and opportunities to increase production with a lack of water availability, current well stimulation practices like fracturing, in-place oil and gas infrastructure, socioeconomic issues surrounding development, the effect of added supply on international and USA oil and gas markets, and other energy market factors.



TANEASHA BLEDSOE

**Graduate
Architectural Engineering
University of Kansas
Lawrence, Kansas**

Mentor: Nick Siefert

BIOGRAPHY:

Taneasha Bledsoe was born and raised in Kansas City, Missouri. She is currently in her 2nd year of graduate school studying Architectural Engineering at the University of Kansas (KU). Math and science were her favorite subjects and her hobbies were drawing and designing, so the Architectural Engineering program at KU was an ideal fit for her. The graduate study specializes in power systems and studies different technologies for improving their overall efficiency in buildings. Taneasha currently holds certifications as a LEED Green Associate, and Sunpower Advanced Certified PV Installer and Designer. She has participated in many activities and organizations such as Zeta Phi Beta Sorority Inc., National Society of Black Engineers, Society of Women Engineers, Big Brother Big Sister of Greater Kansas City Area.

PROJECT: Solid Oxide Fuel Cell Integrated with Coal/Waste Gasification & CO₂ Sequestration using CaO-CaCO₃ Chemical Looping

SITE: National Energy Technology Laboratory, Pittsburgh, Pennsylvania

Taneasha designed a solid oxide fuel cell system that utilized municipal solid waste (MSW) to create the syngas for the fuel and lime catalyst agent to capture amounts of CO₂ in the gasifier. While assigned at the Pittsburgh site, she spent time between Carnegie Mellon University and the NETL. Taneasha has had an amazing summer at the DOE/NETL Pittsburgh site and has met some great people. She has learned so much and is very grateful for the opportunity to be a participant in the Mickey Leland Fellowship Program.



CHRISTELLA CHAVEZ

**PhD Candidate
Engineering
University of Oklahoma
Norman, Oklahoma**

Mentor: Richard Chinn

BIOGRAPHY:

Christella (Chriss) Chavez is a 4th Year PhD Engineering candidate at the University of Oklahoma. Her goal is to complete a doctorate in engineering and gain meaningful research employment in government or industry, and eventually become a professor. She is studying telecommunications/computer science engineering because she enjoys problem solving and addressing complex engineering challenges in the telecommunications sector. Chriss is a member of the Society of Women Engineers (SWE), Society of Hispanic Professional Engineers (SHPE), and IEEE. She has served on the NBOD for SHPE and as a senator for SWE. She completed an internship with DOE at Los Alamos National Lab in 2011, where she worked in D Division, developing a simulation model for telecommunications disaster recovery.

PROJECT: **Evaluating the Thermal Properties of High Chrome Oxide Refractory Liners in Gasifier Applications**

SITE: **National Energy Technology Laboratory, Albany, Oregon**

This research project required evaluating the thermal properties of high chrome oxide refractory liners in gasifier applications. Chriss utilized a Netzsch thermal conductivity analyzer to evaluate any changes in thermal diffusivity in slag penetration and non-penetration of the refractory liner materials. This project is important for improving the life of current liners, thereby saving time and money and positively impacting the energy sector as well as the environment. Chriss thoroughly enjoyed the cool temperatures on the west coast and took advantage of the many bike trails, biking in to work every day from Tangent.



JANICE DUY

**Graduate
Functional Genomics
University of Maine
Orono, Maine**

Mentor: Paul R. Ohodnicki, Jr.

BIOGRAPHY:

Janice Duy is a PhD candidate in Functional Genomics at the University of Maine. Her dissertation research is the development of a colorimetric biosensing platform for the detection of environmental pathogens. She aspires to pursue a career in sensor development for either energy or medical applications. She is currently the graduate advisor of the Maine Alpha chapter of the Tau Beta Pi engineering honor society and a past president of the electrical engineering honor society Eta Kappa Nu.

PROJECT: Optical Thin Films for Gas Sensing in Advanced Coal Fired Power Plants

SITE: National Energy Technology Laboratory, Pittsburgh, Pennsylvania

Power generation technologies require sensor systems that can operate in corrosive high temperature and pressure regimes. Evanescent wave absorption spectroscopy-based sensors are compatible with these environments and are under exploration for quantifying different gas species. These devices are composed of a fiber optic core material coated with a gas-sensitive cladding layer. The formulation and characterization of novel cladding materials and detection geometries is in progress. Computer-based simulations of the expected sensor response are being used to optimize device parameters and configurations. Preliminary results suggest that signal acquisition using angular interrogation is desirable for these schemes.



LINDSAY FULLER
Undergraduate
Environmental Studies
Virginia Commonwealth University
Richmond, Virginia

Mentor: Regis Conrad

BIOGRAPHY:

Lindsay Fuller is a second year transfer student at Virginia Commonwealth University (VCU). She is in the 5-year accelerated bachelors to masters program pursuing a masters degree in Environmental studies. Lindsay is pursuing a degree in environmental studies because she is very concerned with helping the public understand how to live more sustainably and make less of a negative impact on our planet. She is a member of the National Society of Collegiate Scholars, Green Unity for VCU, Young Democrats at VCU, Running Buddies at VCU, and helped start the Green Team at Northern Virginia Community College (NVCC). Some of her goals include: graduating from VCU with a M.S. in Environmental Studies, working for the Peace Corps, and using her knowledge to educate others about the environment.

PROJECT: Analysis of Projects Completed Under the Materials Genome Initiative for the Benefit of Fossil Energy

SITE: Department of Energy Headquarters, Germantown, Maryland

The purpose of this research was to define the state of current material models, identify the scientific and technical gaps in modeling materials, and to propose future focus areas to minimize those gaps and advance the use of modeling. The discovery and development of new materials involves a combination of intuition and deep chemical knowledge, numerous failures, and very costly and lengthy experiments before a new product is developed. Modeling and simulation helps researchers with new and improved materials, to avoid dead ends, and to cut down on the number of costly experiments required to bring a product to market.



ROBIN GRUENFELD

Second Year Graduate

Environmental and Occupational Health Sciences

Louisiana State University

New Orleans, Louisiana

Mentor: Rita Czek

BIOGRAPHY:

Robin Gruenfeld is studying Environmental and Occupational Health Sciences at Louisiana State University School of Public Health in New Orleans. She has undergraduate degrees in Geology and Chemistry from the University of New Orleans, and has studied Biophysics at University of California, Berkeley. Currently, Robin is president of the Student Government Association and interns with the Best Babies Zone, a program that works to improve birth outcomes by eliminating sources of health disparities. In the past she has worked as a cook, a Pilates instructor, a dancer, and a secretary. She is grateful to the Mickey Leland Energy Fellowship for offering her the opportunity to use all the science she learned. You can find Robin studying, drinking too much coffee, practicing yoga, and knitting in the Bywater neighborhood of New Orleans.

PROJECT: Strategies for Implementing Natural Resource Damage Assessments

SITE: Strategic Petroleum Reserve, New Orleans, Louisiana

Water quality is well monitored around the Strategic Petroleum Reserve (SPR), but there are no monitoring programs for the biota within the water column. This project aimed to develop baseline biological conditions in nearby lakes, wetlands, reservoirs, and the Gulf of Mexico. The data helps conduct natural resource damage assessments (NRDAs), which are used to conduct annual impact assessments, to determine levels of damage resulting from sentinel events, and to quantify restoration costs. Flora and fauna were evaluated using aerial assessments and direct sampling methods around the Bayou Choctaw site. Several types of analyses were under consideration, including chemical analysis, microscopy, and comparative studies. Assessment focused on the determination of baseline biota and the level of impingement of invasive species at SPR sites.



ALEXIS HALLING

Senior
Public Health and Industrial Hygiene
Utah State University
Logan, Utah

Mentor: James De Paoli

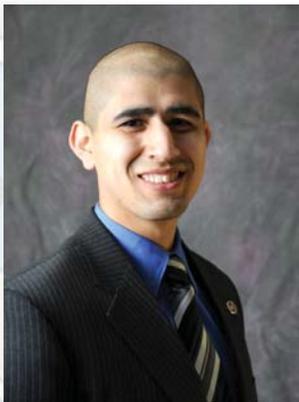
BIOGRAPHY:

Alexis Halling is a senior at Utah State University (USU) majoring in Public Health with an emphasis in Industrial Hygiene and a minor in Chemistry. She is a member of the American Industrial Hygiene Association as well as USU's section of the Industrial Hygiene Student Association. For the past two years Alexis has held a position on the executive board of USU's Student Alumni Association as well as being an Ambassador for the College of Science. Alexis is principally interested in preventative medicine and helping people live better through improving health. The lessons she has learned through the MLEF internship have been invaluable and will serve her well in future schooling and employment.

PROJECT: Industrial Hygiene Monitoring of Physical and Chemical Hazards on Strategic Petroleum Reserve Sites

SITE: Strategic Petroleum Reserve, New Orleans, Louisiana

The Strategic Petroleum Reserve's storage sites are periodically sampled for hazardous exposures, both chemical and physical, which can harm employee health and negatively impact long-term quality of life, as well as impede physical ability to perform work. Existing potentially hazardous exposures include hydrogen sulfide, volatile organic compounds, solvents, and welding fumes, as well as heat stress and noise. Under the direction of James De Paoli, the lead Industrial Hygienist for the SPR in New Orleans, monitoring of these common potential exposures was performed by Alexis. From the personal breathing zones of selected high-risk employees, sampling trains using air-flow pumps and adsorption media collected airborne chemicals. The samples were analyzed by the Occupational Health Laboratory in Wisconsin. Alexis also evaluated noise intensity and heat stress using specialized instruments.



RAFAEL HERNANDEZ

Graduate

**Mechanical Engineering
Washington State University
Pullman, Washington**

Mentor: Danny Taasevigen

BIOGRAPHY:

Rafael Hernandez is a recent graduate from Washington State University located in Pullman, Washington where he received both his Bachelor of Science and Master of Science in Mechanical Engineering. Rafael is an active member of the Society of Hispanic Engineers and Scientists (SOLES), Louis Stoke Alliance for Minority Participation (LSAMP), and the Team Mentoring Program. This summer will complete Rafael's fifth summer as an intern at Pacific Northwest National Laboratory (PNNL). Rafael's internship programs, Mickey Leland Energy Fellowship (MLEF), LSAMP, and Student Research Apprenticeship Program (SRAP), have all contributed greatly to his success. After successful completion of the MLEF program in summer 2012, Rafael will join the Peace Corps and teach high school mathematics in Mozambique.

PROJECT: **Smart Monitoring and Diagnostic Systems (SMDS) for Packaged Air Conditioners and Heat Pumps**

SITE: **Pacific Northwest National Laboratory, Richland, Washington**

Packaged air conditioners and heat pumps used on commercial buildings are often poorly maintained and operated. The Smart Monitoring and Diagnostics Systems' objective is to provide building owners and/or facility managers with enough information to make decisions regarding servicing of packaged air conditioning units (often referred to as rooftop units, RTUs). A methodology and subsequent algorithms have already been developed to evaluate the degradation of the RTUs for the vapor compression cycle only. The current objective is to now develop a new methodology and set of algorithms to account for the heat pumps and evaluate the degradation of the system over time.



WENDY KUSSMANN

Junior

**Mathematics/Math Education
Northwestern State University
Natchitoches, Louisiana**

Mentor: Alfred Crain

BIOGRAPHY:

Wendy Kussmann is a junior at Northwestern State University in Natchitoches, Louisiana. She is a double major in both Mathematics and Mathematics Education. After earning her bachelorette's degree, Ms. Kussmann hopes to go to graduate school and obtain her master's and doctorate's degrees in Mathematics. Wendy is a member of the Spirit of Northwestern Marching band. In this organization she is a section leader and plays the flute. Wendy is also a member of the Alpha Lambda Delta Honor society and is a Dean's List recipient. The Mickey Leland Energy Fellowship, in conjunction with the Strategic Petroleum Reserve has given Wendy the opportunity to not only learn how to apply Mathematics to a job task, but also learn valuable knowledge about Project Management.

PROJECT: **Development of a Resource Tracking System**

SITE: **Strategic Petroleum Reserve, New Orleans, Louisiana**

Wendy assisted the SPR with a pilot project for the implementation of a Resource Management System. Wendy's project focused on creating a standardized method which will:

- Allocate resources, track projects, their schedules, and their progress, and provide reporting in SAP
- Track details related to tasks and build templates for reuse on multiple projects
- Track and report on all resources related to "work" including Materials, Crafts, Contracts, Purchases, and Labor
- Manage evolving demands of the operation & maintenance aspects of SPR's enterprise assets

Using SAP, Wendy integrated existing capabilities such as employee time management, asset management, and new resource management capabilities. This will make completing projects in the SPR more efficient.



BRICE NSONGUE A. A.

Senior

**Petroleum Engineering
West Virginia University
Morgantown, West Virginia**

Mentor: Eilis Rosenbaum

BIOGRAPHY:

Brice Dang Nsongue A. A. is a Senior double majoring in Petroleum engineering and Geology at West Virginia University (WVU). Born and raised mostly in Cameroon, Central/West Africa, he moved to the U.S. 6 years ago. Brice has always been fascinated with energy production, the issues that revolve around it, and how to solve them while keeping our much loved and beautiful planet clean. When not involved with his academic life, he is either playing soccer or travelling around the world and meeting new people. He is also an active member of numerous student organizations at WVU such as the WVU chapter of National Society of Black Engineers, American Association of Drilling Engineers, Society of Petroleum Engineers, Phi Sigma Pi National Honors Fraternity, African Student Association, and WVU Club Soccer team. This is Brice's second year as a Mickey Leland intern.

PROJECT: **Develop a Database Structure to Input, Save, Collect, Search and Retrieve Information About Scans Performed with NETL's CT Scanners**

SITE: **National Energy Technology Laboratory, Pittsburgh, Pennsylvania**

Brice created a database structure in which it will be easy to input, save, collect, search and retrieve information about scans performed with NETL's CT scanners (Micro, Industrial Or Medical). NETL performs many scans for multiple teams and projects and currently has no way to electronically collect information about the data that is searchable, can be retrieved from any computer, and is comprehensive. This will save time as it facilitates access to technical information faster and enables researchers to replicate previous scans for comparison without the need to look through multiple files and notebooks for the information. This will also enable the CT Scanning group to easily add data to the NETL EDX (Energy Data Exchange).



LARS PAULSON

**Junior
Chemistry
Oregon State University
Corvallis, Oregon**

Mentor: Kelly Rose

BIOGRAPHY:

Lars Paulson is a junior at Oregon State University. During his study of chemistry, he hopes to make a positive impact both in his town and the scientific community. He is volunteering with the American Youth Soccer Organization, and has officiated many youth soccer matches with that organization. After graduation, Lars wants to apply his chemistry knowledge to solve problems faced by people around the globe.

PROJECT: Acquisition and Analysis of X-Ray Diffraction (XRD) Data

SITE: National Energy Technology Laboratory, Albany, Oregon

Lars developed a system to quantitatively measure mineralogy using x-ray diffraction. Rocks, soil, and seafloor sediment contain different crystal structures, and knowing the relative concentrations is important for everything from oil drilling to construction. By comparing the pattern of a sample and standards for pure minerals, the composition can be determined.



DANIELLE PRICE

Senior

**Mechanical/Aerospace Engineering
West Virginia University
Morgantown, West Virginia**

Mentor: Doug Straub

BIOGRAPHY:

Danielle is from Fairmont, West Virginia and is a student at West Virginia University. She will begin her senior year in the fall studying Mechanical and Aerospace Engineering, and will graduate in December 2013. Danielle chose this program because of her fascination with the inner workings of mechanical components and her childhood dream of one day going into space. She was a team member for the WVU Design/Build/Fly team from 2010 to 2011 placing 12th in the international UAV design and construction competition in Tucson, Arizona. After graduation, she plans to travel the world as an engineer before coming back to reside in her home state of West Virginia.

PROJECT: **Design and Test Advanced Film-Cooling Design for Gas Turbine Applications**

SITE: **National Energy Technology Laboratory, Morgantown, West Virginia**

Danielle's project was design and test a Haynes 230 Alloy to be used as a test coupon in his turbine project. This project was designed to study the heat flux across the coupon when subjected to hot gas flow by utilizing various cooling techniques. Once the coupon was designed and manufactured, it was placed inside the testing facility and the data was analyzed. The project was performed in a high pressure combustion test rig at the Morgantown DOE site. Danielle was excited to apply her understanding of thermodynamic processes to physical applications while interning at the DOE.



EMILY RATERMAN

Junior

**Electrical/Computer Engineering
Oregon State University
Corvallis, Oregon**

Mentor: David Smith

BIOGRAPHY:

Emily Raterman will be entering her junior year at Oregon State University in the fall of 2012. She is studying Electrical Engineering and Computer Engineering, and hopes to be an integral part of the renewable energy revolution. She was Captain and Lead Electrical on her FIRST (For Inspiration and Recognition of Science and Technology) Robotics team in high school, worked with the OSU Robotics Club, and is now the secretary of the OSU Ballroom Dance Club. Presently, she is enjoying exploring all different types of scientific disciplines to gain as much understanding as possible.

PROJECT: X-Ray Diffraction Operation, Analysis, and Procedure Development for Quantitative Analysis

SITE: National Energy Technology Laboratory, Albany, Oregon

Emily worked with the Rigaku X-Ray Diffractometer in order to discover the composition of unknown materials. This required instruction on the operation of the diffractometer, methods of collecting the most precise reflection data, and tactics in analysis of these diffraction plots. She was excited to learn about a new field, and to be working with such a complex and fascinating piece of ingenuity.



HEATHER REDDY

**Junior
Computer Science
Drake University
Des Moines, Iowa**

Mentor: Gordon Payne

BIOGRAPHY:

Heather Reddy graduated high school a semester early to study Architecture at the University of Arizona. She transferred to Computer Science and is currently attending Drake University. At Drake, Heather is involved in Alpha Phi and the Association for Computing Machinery. Her Mickey Leland Energy Fellowship has opened her eyes to the skills necessary to improve her performance in her career and the workplace.

PROJECT: Revision to the SPR Active Force of Protection Safety Orientation Video

SITE: Strategic Petroleum Reserve, New Orleans, Louisiana

Heather was assigned to work at the Strategic Petroleum Reserve in New Orleans, Louisiana. Her mentor, Gordon Payne, helped her through the task of editing, updating, and reshooting the Safety Orientation video. HD formatting is newly required for camera compatibility establishing the need for completely new film shots. Heather worked on filming new scenes for this safety video at the Bayou Choctaw site in Baton Rouge, Louisiana, and she updated the script by removing non-safety related information, shortening the script by five pages. Some of the removed content correlated with Environmental Safety issues and those paragraphs are now incorporated into a new Environmental Safety video script written by Heather in correspondence with representatives of the SPR's Environmental Department.



AMANDA RUSSO
Senior
Mathematics
La Salle University
Philadelphia, Pennsylvania

Mentor: Regis Conrad

BIOGRAPHY:

Amanda Russo is a senior at La Salle University in Philadelphia, where she is also a member of the Kappa Mu Epsilon Beta Chapter, and secretary of the math club. She will graduate next May with a B.S. in Mathematics. Amanda hopes to continue her studies after graduation in the field of math, pursuing either a concentration in differential equations or probability and statistics. She chose math as her field of study because she has had a passion for it her entire life and believes that mathematics is one of the most beautiful ways to interpret the world around her.

PROJECT: Uncertainty Quantification for CCSI

SITE: Department of Energy Headquarters, Germantown, Maryland

The objective of this project was to find literature that would bridge the gap between the engineers and the statisticians working on the Carbon Capture Simulation Initiative. Through literature research, the hope was to find other projects which had used Uncertainty Quantification in the modeling of complex and multi-physical systems. In understanding the success and pitfalls of other projects, the V/UQ (verification/uncertainty quantification) team was able to find the best starting point to begin modeling of the carbon capture processes. This provided a strong foundation for making carbon capture systems more accessible by finding errors in the computer model quickly at early stages and taking the necessary routes to avoid such errors in the creation of scale models (and eventually full-fledged power plants).



ROCHELLE SAMUEL

**Undergraduate
Chemical & Biomolecular Engineering
University of Maryland-College Park
College Park, Maryland**

Mentor: Gabriela Intihar

BIOGRAPHY:

Rochelle Samuel is an active mentor and tutor for younger students, and the Vice President of the Black Honors Caucus, an honors organization that aims to support and promote the unity and development of Black students within the Honors College. She is a member of the University Honors Program, the Quality Enhancement Systems and Teams (QUEST) Honors Program, an engineering/business multidisciplinary honors program, and is an American Chemical Society Scholar. Since her freshman year she has worked as an Office Assistant in the Women In Engineering Department, where she also has the opportunity to reach out to younger STEM students and create personal relationships with engineering faculty. She was fortunate to have an internship sponsored by the National Science Foundation last summer with the Institute of Cellular Engineering at the University of Massachusetts at Amherst, and at the U.S. Department of Agriculture her senior year of high school. However it is her internship at the DOE where she is really able to harness her interests in energy and sustainability and contribute to the quest for a more secure energy future.

PROJECT: Program Planning and Performance Metrics

SITE: Department of Energy Headquarters, Washington, D.C.

The objective of this project was to assist in the development of the program plan for the Office of Oil and Natural Gas. The activities involved gaining a comprehensive understanding of the Office of Oil and Natural Gas mission and program activities through research and interactions with senior staff. Meetings with senior management at HQ and NETL were imperative to help management determine clear strategies, goals, objectives, and annual performance measures included in the program plan. The performance metrics process was planned and organized to aid in performance measurement as a tool for decision making and program operations. Programmatic reporting guidelines are important in assisting the senior leadership and NETL staff in measuring the programmatic areas of research progress against the annual performance targets, using the performance measures reporting process. These were expressed in such reporting tools as Program Reviews, Performance Management Manager (PMM), and the FE Executive Dashboard. This strategic work will be of assistance to the office, supporting the DOE mission in energy, environment, and national security.



JONATHON TORRES

**Graduate
Mechanical Systems
University of Central Florida
Orlando, Florida**

Mentor: Kirk Gerdes

BIOGRAPHY:

Jonathan Torres is a 2nd year Masters student at the University of Central Florida, planning to graduate in May 2013 with a degree in Mechanical Systems. Following graduation, Jonathan will pursue a PhD in Mechanical Engineering from UCF under advisor Nina Orlovskaya. Through his course of study and graduate research, Jonathan is pursuing his interest in alternative and renewable energy sources. Jonathan loves to travel and has taken advantage of domestic research collaboration opportunities (such as MLEF), as well as international academic and research fellowships including 6 months studying abroad (Spain), 3 months with Siemens (Germany), and a planned internship at EMPA (Switzerland).

PROJECT: The Role of Tensile and Compressive Strength on the Performance of Solid Oxide Fuel Cells

SITE: National Energy Technology Laboratory, Morgantown, West Virginia

Jonathan worked on the topic of solid oxide fuel cells (SOFC) with the Fuel Cell Research Team at the National Energy Technology Laboratory in Morgantown, WV under the mentorship of fuel cell research group leader Kirk Gerdes. Data collected at NETL advanced Jonathan's graduate research and facilitated timely completion of his thesis, as well as clearly defining his advanced research goals for his dissertation. Following successful SOFC manufacturing, Jonathan also experimentally probed cell performance through electrochemical testing and impedance analysis, and examined as-operated cell microstructure using Scanning Electron Microscopy. In addition to these endeavors, Jonathan also studied an advanced direct carbon fuel cell utilizing a unique liquid metal anode, and studied performance differences obtained from a selection of candidate anode alloys.



SABINA UDE

**Doctoral Candidate
Materials Science and Engineering
University of Tennessee Knoxville
Knoxville, Tennessee**

Mentor: Joe Giove

BIOGRAPHY:

Sabina Ude is a 3rd year PhD student in Materials Science and Engineering (MSE) at the University of Tennessee Knoxville. She was a Pipeline Engineering Diversity Fellow from 2008-2010 while working on her Master's degree in MSE at UT. Sabina received her Bachelor's degree in Metallurgical and Materials Engineering in 2000 from Enugu State University of Science and Technology in Nigeria. As a student intern at Project Development Authority in Nigeria, Sabina realized how important the study of materials is to all engineering applications, and decided to further her education on the subject. Her doctoral research is on the "Synthesis and Characterization of Doped Mayenite ($\text{Ca}_{12}\text{Al}_{14}\text{O}_{33}$) as a Transparent Conducting Oxide for Solar Application." Part of her research is carried out at different departments in Oak Ridge National Laboratory. She is a member of Materials Research Society, ASM, Society of Women Engineers, and National Society of Black Engineers.

PROJECT: Project Finance

SITE: Department of Energy Headquarters, Germantown, Maryland

The main goal of this project was to build a model portfolio for financing a coal-fired power plant that uses the integrated gasification combined cycle (IGCC) system. The work included researching the technical terms associated with project finance such as EBITDA, Pro Forma, Cash Flow, Capital Structure, non-recourse loan, etc, then studying various risks associated with constructing and operating an IGCC power plant; and how to minimize the risks, including risk identification, analysis, allocation and management. Also knowing the contractual framework and different entities that are parts of a project finance and how they work together to ensure the success of a proposed project, studying various financial statement models using spreadsheet, and acquiring/analyzing data used in making sound projections/assumptions. The project was completed by building a Pro forma financial statement for the IGCC project.



CARLOS VALDEZ

**Graduate
Mechanical Engineering
University of Texas
El Paso, Texas**

Mentors: Thomas Brown and Paul Ohodnicki

BIOGRAPHY:

Carlos Valdez is a second year Master of Science in Mechanical Engineering student at The University of Texas at El Paso. Mr. Valdez's goals after obtaining his Master's degree are to pursue a career in industry, enroll in a Master of Business Administration, and open up his own business. Carlos was motivated to study Mechanical Engineering because the field is challenging, collaborative with different engineering majors, and permits him to work in an extensive variety of fields. He is a member of Tau Beta Pi the Engineering Honor Society, and Pi Tau Sigma the Mechanical Engineering Honor Society.

PROJECT: **Optical Thin Films for High Temperature Gas Sensing in Advanced Coal Fired Power Plants**

SITE: **National Energy Technology Laboratory, Pittsburgh, Pennsylvania**

Carlos's primary focus was the design and development of a high pressure/high temperature furnace for analysis of sensor materials. The laboratory is located in Pittsburgh, Pennsylvania at the National Energy Technology Laboratory facilities.







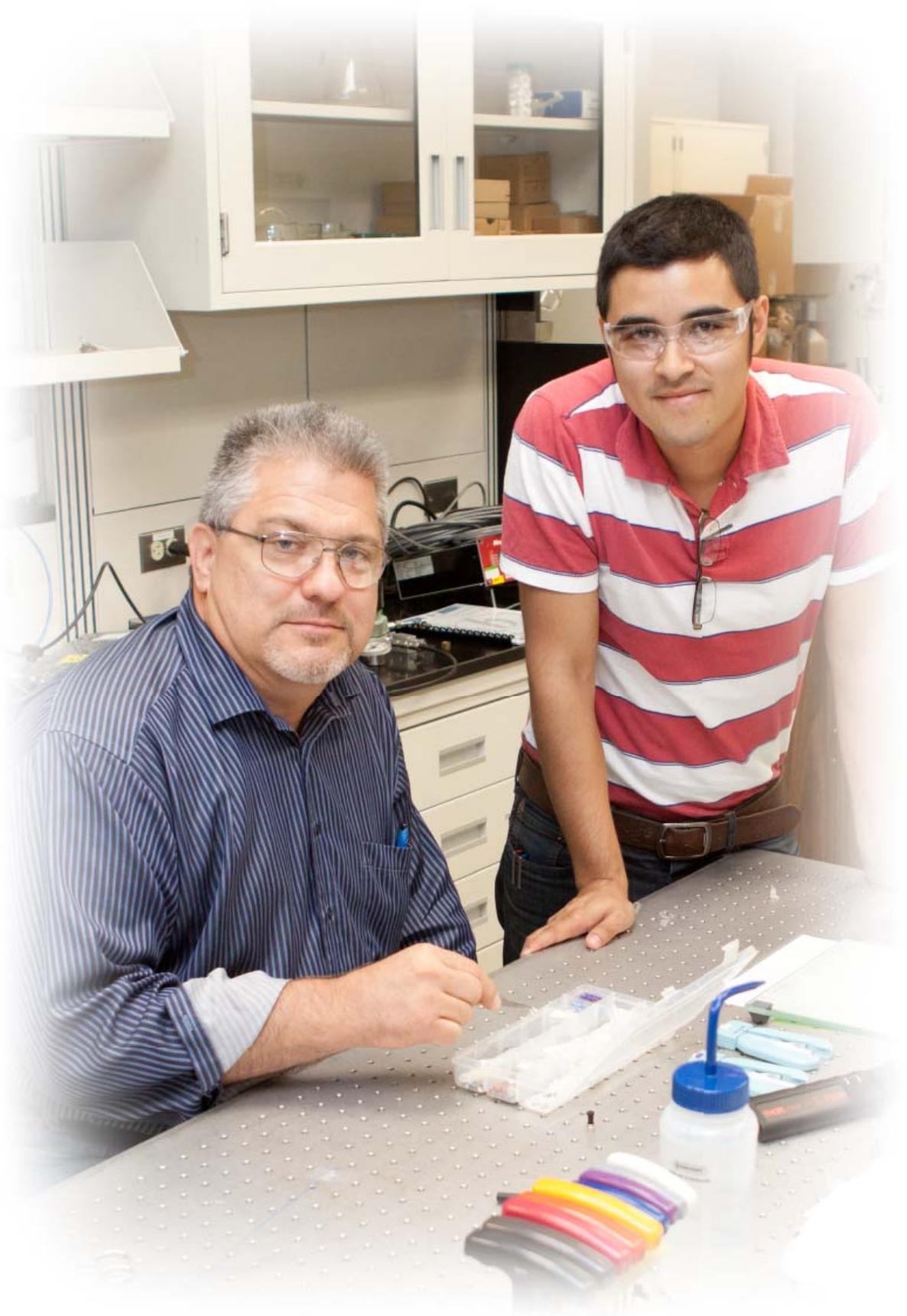
MLEF INTERNS

DOE HQ, OFFICE OF FOSSIL ENERGY

NATIONAL ENERGY TECHNOLOGY LABORATORY

PACIFIC NORTHWEST NATIONAL LABORATORY

STRATEGIC PETROLEUM RESERVE



OFFICE OF FOSSIL ENERGY

EXECUTIVE SPONSOR



CHARLES "CHUCK" MCCONNELL
Assistant Secretary of Fossil Energy
Office of Fossil Energy
U.S. Department of Energy

Charles "Chuck" McConnell is the Assistant Secretary of Fossil Energy (ASFE) in the Office of Fossil Energy at the U.S. Department of Energy. As ASFE, Mr. McConnell manages the daily operations of Fossil Energy's programs and leadership, including strategic planning, program direction, and evaluation. He also oversees Fossil Energy's administrative and budgetary operations.

Prior to joining DOE, Mr. McConnell served as Vice President of Carbon Management at Battelle Energy Technology in Columbus, Ohio, with responsibility for business and technology management, including leadership of the Midwest Regional Carbon Sequestration Partnership.

Mr. McConnell also spent 31 years with Prazair, Inc., in various positions in the U.S. and Asia and most recently in Houston, Texas, as Global Vice President, where he provided leadership to research and development initiatives in oxy-coal technologies, hydrogen, refining and chemicals, enhanced oil recovery, and carbon management science for carbon dioxide capture and sequestration.

Mr. McConnell has held a number of advisory positions, including chairmanships of the Gasification Technologies Council and the Clean Coal Technology Foundation of Texas. He has served on the FutureGen Advisory Board; the Gulf Coast Carbon Center; T&P Syngas Company; Pittsburgh Coal Conference; and the Coal Utilization Research Council.

Mr. McConnell holds a Bachelor's degree in Chemical Engineering from Carnegie-Mellon University and an MBA in Finance from Cleveland State University.



PENNY BOYCE
Program Manager
Germantown, Maryland

Penny Boyce joined the Office of Fossil Energy as a Training and Diversity Specialist in January 2011. In addition to managing the MLEF, Penny is responsible for strategic planning and implementation of training and diversity initiatives in the Office of Management and Field Operations. Prior to her arrival at the Department of Energy, she was at the U.S. Food and Drug Administration for 31 years where she held a variety of positions, the last as Program Manager of a leadership development program. Penny has a Bachelor of Science degree in Behavioral Sciences from the University of Maryland University College, a Masters of Social Work from the University of Maryland, and a certificate in Leadership Coaching from the Georgetown University Center for Professional and Continuing Education.



VANESSA DODSON-CUNNINGHAM (RET.)
Program and Site Coordinator
Germantown, Maryland

Vanessa Dodson-Cunningham joined the Office of Fossil Energy (FE) in September, 1992. She works on the Training and Diversity Team to design and develop a comprehensive training program for the Office of Fossil Energy. She has supported a variety of FE's training and personnel initiatives and programs as a DOE mentoring liaison, and as a mentor and coordinator and coordinator for the Mickey Leland Energy Fellowship Program. Ms. Dodson-Cunningham worked with the former MLEF Program Manger from 2006 to 2007 and is returning to the program, serving in two capacities, first as the Headquarters Site Coordinator and second as the MLEF Program Coordinator. Vanessa retired from federal service in July 2012.

HQ MENTORS



REGIS CONRAD

Director, Cross-cutting Research

Regis Conrad has worked in electrochemistry and materials engineering since 1978. Currently Mr. Conrad manages the research on sensor and control, computational modeling and high temperature materials research. Prior to working for the Department of Energy he worked for the Department of Navy as a materials engineer. Mr. Conrad has a B.A. in Chemistry and Zoology from George Washington University.



NATENNA DOBSON

Physical Scientist

Natenna Dobson is a Physical Scientist and Industry Analyst for the U.S. Department of Energy's (DOE) Office of Oil and Natural Gas within the Fossil Energy program. Her work focuses on enabling responsible development of domestic oil and natural gas resources through innovative research, policy analysis, and international leadership. As an international industry analyst, she has experience performing regulatory, legislative and market analysis on oil and gas production and environmental management issues in the regions of Africa and the Middle East. She has served many roles for her office including working on issues related to unconventional oil and gas development, energy-water nexus, and hydraulic fracturing.



JOE GIOVE

Director, Division of Carbon Capture and Storage Demonstrations

Joe Giove is the Director of the Division of Carbon Capture and Storage Demonstrations for the United States Department of Energy's Office of Fossil Energy. Mr. Giove's division provides management oversight for the FutureGen 2.0, Clean Coal Power Initiative, and Industrial Carbon Capture and Storage Programs. Before joining the DOE, Mr. Giove worked in project and financial management for the Office of Management at the National Cancer Institute in Bethesda, Maryland. Mr. Giove holds a Bachelor of Science degree from Lee University, and a Master of Science in Computer Systems Management from the University of Maryland University College. Mr. Giove holds three project management certifications and has over 10 years of project management experience.



GABRIELA (GABBY) INTIHAR

Senior Program Analyst

Gabby Intihar is currently managing the budget and strategic processes for the Office of Oil and Natural Gas. Gabby will assist program managers in their planning activities with internal and external groups and promotes annual and long-term planning efforts between Headquarters and NETL staff. Gabby manages the development and reporting of program performance, including benefits. Gabby will be working with NETL and HQ to ensure the development and computation of benefits for the Oil and Natural Gas Office.



DANI PETRUCCI

Engineer

Ms. Petrucci attended Penn State University and received her Bachelor's Degree in Energy Engineering, with a minor in Environmental Engineering. She began working for DOE in 2008, when she was accepted into the Department of Energy's Technical Career Internship Program. She interned in Washington, DC in the summer of 2008 in the Office of Fossil Energy, Office of Planning and Environmental Analysis. In the summer of 2009, she interned in Germantown, MD in the Office of Fossil Energy's Office of Sequestration, Hydrogen, and Clean Coal Fuels. She began working full-time at DOE Headquarters in June 2010 in the Office of Fossil Energy, Division of Carbon Capture and Storage Research. At Penn State, she studied various energy systems, from fossil fuels to renewable energy. At DOE, she has primarily been focused on coal power systems and greenhouse gas emissions reduction research, specifically the processes of carbon capture, utilization, and storage (CCUS).



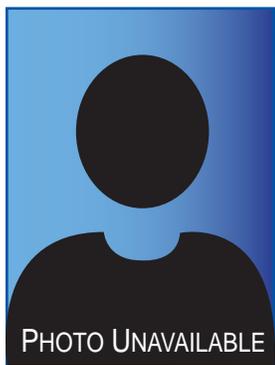
SITE COORDINATOR



NANCY ANDRES
Program Analyst
Pittsburgh, Pennsylvania

Nancy Andres is a Program Analyst in the National Energy Technology Laboratory's (NETL) Office of Research & Development. She manages the education and outreach programs for NETL and also works on the Regional University Alliance. This is her second year of involvement with the Mickey Leland Energy Fellowship Program.

NETL MENTORS



THOMAS D. BROWN

Senior Research Engineer

Thomas D. Brown is currently a Senior Research Engineer within the US DOE National Energy Technology Laboratory, Office of Research and Development (ORD). Over his thirty six-year career, Mr. Brown has conducted fundamental research, through proof-of-concept R&D associated with the utilization of fossil fuels from pre- and post-combustion, combustion and flue gas clean up processes to by-product recovery and waste disposal. For close to fifteen years he had responsibilities within the DOE's Fine Particulate Programs, while initiating and being responsible for the Air Toxics, and Mercury Measurement and Control Programs. This was during the critical years when coal-fired utilities were being targeted as a possible major emission source of a majority of hazardous pollutants as result of the congressionally mandated Clean Air Act Amendments of 1990. Mr. Brown has published over 80 papers and policy documents throughout his career.



RICHARD E. CHINN

Research Engineer

Richard E. Chinn earned his BSc in metallurgical engineering and his MSc in materials science at the Colorado School of Mines in Golden, CO, USA. He worked in the development laboratories of Coors Brewing Company and CoorsTek Inc. for ten years as a materials engineer. He has been a materials research engineer for the National Energy Technology Laboratory (NETL), U.S. Department of Energy, in Albany, Oregon, since 2000.

A registered Professional Engineer in Colorado and Oregon, and a Certified Quality Engineer of ASQ, Chinn also holds credentials in nondestructive testing from ASNT.



KIRK GERDES

Chemical Engineer

Kirk Gerdes received a B.S. in Chemical Engineering from the University of Kansas in 2001, and obtained a Ph.D. in Chemical Engineering from the University of Houston in 2006. Since 2006, Dr. Gerdes has researched solid oxide fuel cell systems at the U.S. Department of Energy's National Energy Technology Laboratory (NETL), first as an Oak Ridge Institute for Science and Education Fellow, and later as a Research Assistant Professor for the Department of Mechanical and Aerospace Engineering at West Virginia University. In 2008, Dr. Gerdes received an appointment as a staff researcher and general engineer to the U.S. Department of Energy, and has served as the NETL research group leader of fuel cells since 2009.

NETL MENTORS



PAUL OHODNICK

Scientist

Paul Ohodnicki is a material scientist in the chemistry and surface science division at NETL working on high temperature sensor materials for gas sensing applications in advanced fossil energy applications. Paul received a dual bachelor's degree in engineering physics and economics from the University of Pittsburgh. He then moved on to Carnegie Mellon University where he received his PhD in materials science and engineering. Paul spent several years in new product development working on large area sputtered thin film coatings for energy efficient window applications. He joined NETL in early 2010 and spent a short time as a project manager for the Solid State Energy Conversion Alliance program prior to taking his current position.



KELLY ROSE

Geologist

Kelly Rose is a geologist with the National Energy Technology Laboratory's (NETL) Office of Research & Development (ORD). Rose works within NETL-ORD conducting geologic and geospatial research in support of energy and climate related programs. Rose has more than 13 years experience as a geologist and more than 6 years project and research management experience in both the public and private sectors. Since 2006 Rose has participated in energy and climate related studies worldwide. Her research focuses on characterizing and identifying spatial geologic controls on hydrocarbon and geothermal resource distribution, occurrence, and migration pathways from the grain to the regional scale. Between 1999 – 2006 she worked on the geologic assessment of tight gas resources in the western United States, first as an exploration geologist with Marathon Oil Company (1999 – 2001) and then with DOE/NETL (2001 - 2006). Rose is currently pursuing a PhD in Geology at Oregon State University.



EILIS ROSENBAUM

Research Engineer

Eilis Rosenbaum is an experimentalist studying gas hydrates, geothermal technology, and foamed cements. She served as project PI for the development of the NETL thermal property probe which was primarily designed to measure the thermal properties of hydrates and hydrate bearing sediments. Currently she works with an Xradia MXCT-400, Micro CT scanner, and does qualitative and quantitative analysis of the high resolution data obtained from the scanner. Of particular interest is studying samples under in situ conditions while taking images with one of the NETL CT scanners, especially the Micro CT, to capture phenomena occurring inside the cores and at resolutions down to around a micron. Rosenbaum is also starting work on research to study foamed cements at in situ pressures, which has current relevance and will lead to a better understanding of the stability and properties of foamed cement under the conditions of a well.

NETL MENTORS



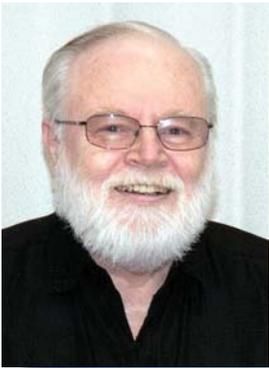
NICHOLAS SIEFERT

Mechanical Engineer

Nicholas Siefert is a Mechanical Engineer at the National Energy Technology Laboratory (NETL) in Pittsburgh, PA. He also attends Carnegie Mellon University as a graduate student in the Mechanical Engineering department. The NETL position is within the Office of Research & Development, and his current research is on integrating coal gasification with solid oxide fuel cells in order to reduce the environmental impact using coal to generate electricity.

Before joining NETL, he was a Gasification Engineer at Westinghouse Plasma Corporation and managed the integration of Coskata's pilot-plant scale bio-refinery with Westinghouse Plasma's gasifier in Madison, PA. Before joining Westinghouse Plasma, he was an officer in

the US Air Force, obtaining the rank of Captain after completion of his four year active duty service commitment. He was stationed at Wright Patterson AFB in Dayton, OH. He served as a mechanical engineer with the F-16 System Program Office and as a research scientist with the Propulsion Directorate of the Air Force Research Laboratory.

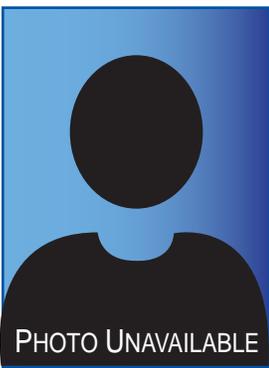


DAVID SMITH

Mechanical Engineer

Mr. Smith began working in the XRD lab about 15 years ago. He has become experienced in normal powder diffraction, diffraction of solid metals, high temperature diffraction, micro-area diffraction, and diffraction of large specimens up to the size of building bricks or larger (developed a large specimen stage capitalizing on the open architecture of recent XRD design). His training for this work has occurred through being mentored by an outstanding XRD analyst for several years and training at the facilities of the International Centre for Diffraction Data, the foundational organization providing XRD knowledge used by XRD analysts worldwide.

Experience has included work on an extremely wide variety of materials used to develop knowledge used for patents, publications, and material improvements vital to industry and the nation's future production.



DOUG STRAUB

Apologies, at the time of this publication this information was not available. However we would still like to thank Doug Straub and to encourage all those mentors who have sacrificed their time and expertise in guiding these young minds of tomorrow.



Elaine King
Richland, Washington

Elaine King is an education specialist and is responsible for managing several national DOE educational programs. She has been the site coordinator for the Mickey Leland Energy Fellowship program since 2003. Mrs. King is an advocate for those historically under-represented in scientific and technical fields, where she promotes and participates in local and regional STEM education outreach.

Mrs. King has spent 16 years working in education management, administration, marketing and recruiting. She began her career at Battelle in 2001 following a ten-year career in community college administration, marketing recruiting, non-profit educational management. Her experience also includes, licensed insurance agent, retail sales and working as a certified paralegal. She holds a Bachelor's degree in psychology, minor in sociology from the University of Puget Sound in Tacoma, Washington; and paralegal certification from the University of San Diego. She serves as Vice-Chair of the Yakima Valley/Tri-Cities Mathematics, Engineering and Science Achievement Board and is an active member of local educational committees emphasizing educational awareness for under-represented populations.

PNNL MENTORS



DAN TAASEVIGEN

Mechanical Engineer

Mr. Taasevigen started working at Pacific Northwest National Laboratory (PNNL) in November, 2010 after receiving his Masters of Science in Mechanical Engineering from Montana State University in May, 2010, with an emphasis on renewable fuels. Since joining the lab, Mr. Taasevigen has been heavily involved in developing fault detection and diagnostic (FDD) tools for built up air-handling units (AHUs) and packaged equipment. He is also the lead data analyst for the commercial building retuning project, which involves analyzing end-use data with the energy charting and metrics tool (ECAM), and recommending building operational changes to maximize low-cost/no-cost energy efficiency measures. In conjunction with the FDD and retuning work, Mr. Taasevigen also works on several biomass projects, including renewable energy feasibility studies for Air Force Bases around the world, and biomass gasification of various residues, including wood, corn stover, and high lignin materials. He is an active member of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), American Chemical Society (ACS), and the Association of Energy Engineers (AEE).





SITE COORDINATORS



JORGE AGUINAGA

Senior Site Representative

Jorge Aguinaga serves in the capacity of Senior Site Representative for the Department of Energy's Strategic Petroleum Reserves located at the Bryan Mound Site in Freeport, Texas. Jorge has been an integral player in the internship program since 1998. As the Hispanic Program Manager for the Mickey Leland Energy Fellowship Program, Jorge enjoys the satisfaction of helping students gain experience and knowledge in preparation of a fulfilling career.



JUDY GRIFFIN

Administrative Professional

Judy Griffin holds the position of Administrative Professional for the Department of Energy's Strategic Petroleum Reserves located at the Bryan Mound Site in Freeport, Texas. Judy assists with the placing of students into the Mickey Leland Energy Fellowship Program. She has been involved with the internship program, supporting the Texas and Louisiana sites, since 1998.



KELLY SCHWEHM

General Engineer

Kelly Schwehm is a General Engineer in the Site Operations & Maintenance Division of the Department of Energy's Strategic Petroleum Reserves (SPR). She received both her BS in Mechanical Engineering (2002) and MBA (2007) from the University of New Orleans. She has been with the SPR's New Orleans office for 6 years. This is her second year serving as a Mickey Leland Energy Fellowship Program site coordinator. She is currently attempting to learn Spanish, loves reading and enjoys playing with her five cats.

SPRO MENTORS



ALFRED CRAIN

Performance Development Manager

Alfred Crain is the Performance Development Manager for DM Petroleum Operations Company, a prime contractor for the Department of Energy's Strategic Petroleum Reserve, located in New Orleans, Louisiana. He is certified by the International Society for Performance Improvement as a Performance Technologist and The Project Management Institute as a Project Management Professional. Mr. Crain was responsible for building the EAM Consultant Mentoring program for IBM and has managed major business and software implementation re engineering projects for the Gillette Company, the Pentagon, Miller Brewing and DTE Energy.



RITA CZEK

Chemical Management Specialist

Rita Czek is the Chemical Management Specialist for DM Petroleum Operations Company with programmatic responsibility for the Qualified Products List, chemical inventory and SARA regulatory reporting. She also manages the SPR wildlife program, promotes native flora and fauna through the development of inventories of native and migrating birds, and records sightings of animals and other wildlife and rare plants. In her life before the SPR she was Project Manager for the Urban Waste Management Center at the University of New Orleans (UNO); acted as liaison between University, EPA, other government agencies, and NGOs; and co-founded the Center for Brownfield Initiatives. During her tenure at Louisiana State University she founded the Transcontinental Materials Exchange, an international exchange that facilitated the reuse and recovery of off-spec products, wastes or discarded chemicals.



JAMES DE PAOLI

Industrial Hygiene and Behavioral Safety Lead

James De Paoli holds the position of Industrial Hygiene and Behavioral Safety Lead, Safety and Health Department, for DM Petroleum Operations Company, a prime contractor for the Department of Energy's Strategic Petroleum Reserve, and is located in New Orleans, LA. James has served as a mentor with the Mickey Leland Energy Fellowship Program for 6 years.

SPRO MENTORS



J. MADISON "J.M." DRAKE

System's Engineer

J.M. Drake is a System's Engineer at the Project Management Office of the Strategic Petroleum Reserves. He is registered as a mechanical engineer with the State of Louisiana and is a Fellow Member of the National Society of Professional Engineers (NSPE). He has actively mentored students for many years both through the Mickey Leland Program and through NSPE. He has worked with students from Tulane University, the Thomas Jefferson High School, the Colorado School of Mines, and Mentornet. He has served as the President of the Greater New Orleans Science and Engineering Fair, and taught Technical Mathematics at the Junior College level. He worked on the NASA Space Shuttle Program for ten years prior to joining DOE and was an officer in U.S. Army from 1971 to 1976. He began his civil service career as a summer intern with the U.S. Department of Navy in a program similar to the Mickey Leland Program while a student at college.



ALLISON W. KUHN

Senior Site Representative

Allison W. Kuhn has been with the DOE SPR West Hackberry Storage Site located in West Hackberry, LA since April 2006. She was the Resident Engineer prior to being promoted to Senior Site Representative in February 2011 where she provides the oversight to ensure safe operations and construction while assuring Drawdown readiness. Allison received her BS in Chemical Engineering from Louisiana State University in 2002 and an MBA from Georgia College and State University in 2004. She obtained her Federal On-Scene Coordinator Level III Incident Management certification and Level I Federal Project Director certification in November 2009 and January 2010, respectively. Allison was a mentor with the US Air Force in Warner Robins, GA while working as a Process and Facilities Engineer from 2006-2006. She has mentored with the Mickey Leland Energy Fellowship for 4 years. Allison is the Chairperson of the SPR Employee Management Advisory Committee and is an Active member of the Junior League of Lake Charles, Inc.



GORDON PAYNE

Graphics Supervisor

Gordon Payne has been the photographer and Graphics Supervisor for DM Petroleum Operations Company and the Strategic Petroleum Reserve (SPR) since 1984. He is also the Associate Public Affairs Officer for the SPR. Gordon has mentored three previous summer interns who produced a new SPR video, a new SPR safety video, and a revision of the SPR's Public Affairs Emergency Plan. Besides acting as an MLEF mentor, Gordon is an adjunct professor on the faculty at the University of New Orleans, teaching Business Communication. Gordon supported DM through the Baldrige Award-winning process in 2005 as a member of the award ceremony cadre and participates in the Louisiana Quality Foundation as a member of the Board of Directors.

