



U.S. DEPARTMENT OF
ENERGY

Office of
Science

Office of Science Outreach

<http://science.energy.gov/>

Recorded Webinar

An Introduction to the Office of Science recorded webinar (6/11/2015), and a copy of the slides, are available at:

<http://science.energy.gov/wdts/outreach/>

- A guided tour of the Office of Science website
- Slides highlighting opportunities for undergraduate, graduate, and visiting faculty

Please address comments and questions to:

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U.S. DEPARTMENT OF
ENERGY

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Science

**Programs in the Office of Science / Office of Workforce
Development for Teachers and Scientists (WDTs)**

***STEM Opportunities
for Undergraduates and Faculty
at DOE Laboratories***

(authentic research learning experience opportunities in STEM)

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www.science.energy.gov

Pacific Postsecondary Education Council

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The DOE Office of Science (~\$5B/year)



The undulator hall at SLAC's
Linac Coherent Light Source (LCLS).

- The Office of Science (SC) is the single largest supporter of basic research in the physical sciences in the United States.
- Funds 25,000 Ph.D. scientists, graduate students, undergraduates, engineers, and technical staff supported at more than 300 institutions in all 50 States and DC through competitive awards
- 26 national user facilities serving more than 29,000 users each year
- 100 Nobel Prizes during the past 6 decades—more than 20₃ in the past 10 years

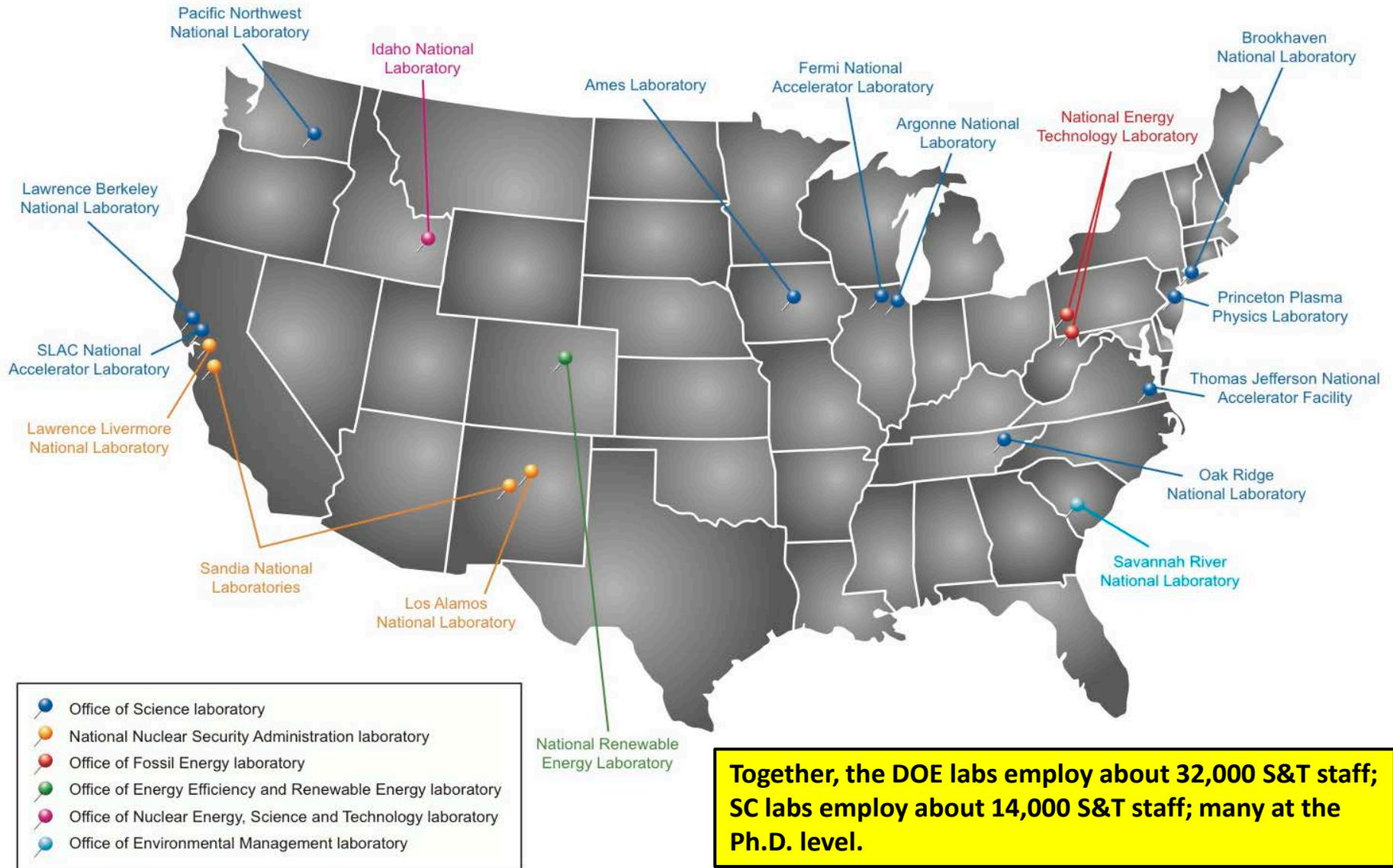
Office of Science

The Office of Science's (SC) mission is to deliver scientific discoveries and major scientific tools to transform our understanding of nature and advance the energy, economic, and national security of the United States. The SC is the Nation's largest Federal sponsor of basic research in the physical sciences and the lead Federal agency supporting fundamental scientific research for energy.

The SC accomplishes its mission and advances national goals by supporting:

- The frontiers of science—discovering nature's mysteries from the study of subatomic particles, atoms, and molecules that are the building blocks of the materials of our everyday world to the DNA, proteins, and cells that are the building blocks of entire biological systems; each of the programs in the SC supports research to probe the most fundamental questions of its disciplines.
- The 21st Century tools of science—providing the Nation's researchers with 26 state-of-the-art national scientific user facilities, the most advanced tools of modern science, enabling the U.S. to remain at the forefront of science, technology, and innovation.
- Science for energy and the environment—advancing a clean energy agenda through fundamental research on energy production, conversion, storage, transmission, and use and through advancing our understanding of the earth and its climate; targeted investments include the three DOE Bioenergy Research Centers (BRCs), the Energy Frontier Research Centers (EFRCs), two Energy Innovation Hubs, and atmospheric process and climate modeling research.

DOE Labs Employ >30,000 Scientists and Engineers



Why Office of Science (SC) sponsored internships?

In a word... **WORKFORCE***

The Workforce Development for Teachers and Scientists (WDTS) program mission is to ensure that DOE has a sustained pipeline of science, technology, engineering, and mathematics (STEM) workers. This is accomplished, in part, through support of undergraduate internships and visiting faculty programs at the DOE laboratories, administered by WDTS for DOE; and Nation-wide, middle- and high-school science competitions that annually culminate in the National Science Bowl® in Washington D.C. These investments help develop the next generation of scientists and engineers to support the DOE mission, administer its programs, and conduct its research.

WDTS activities rely significantly on DOE's 17 laboratories, which employ more than 30,000 workers with STEM backgrounds. The DOE laboratory system provides access to leading scientists; world-class scientific user facilities and instrumentation; and large-scale, multidisciplinary research programs unavailable in universities or industry. WDTS leverages these assets to develop and train post-secondary students and educators to enhance the DOE mission.

SC sponsors and operates these programs to help sustain the DOE's scientific and technical workforce pipeline.

**As a mission agency, "education" programs cannot be supported. As a result, WDTS does not solicit or provide direct awards to campuses, and instead, offers experience based learning opportunities directly to students and faculty.*

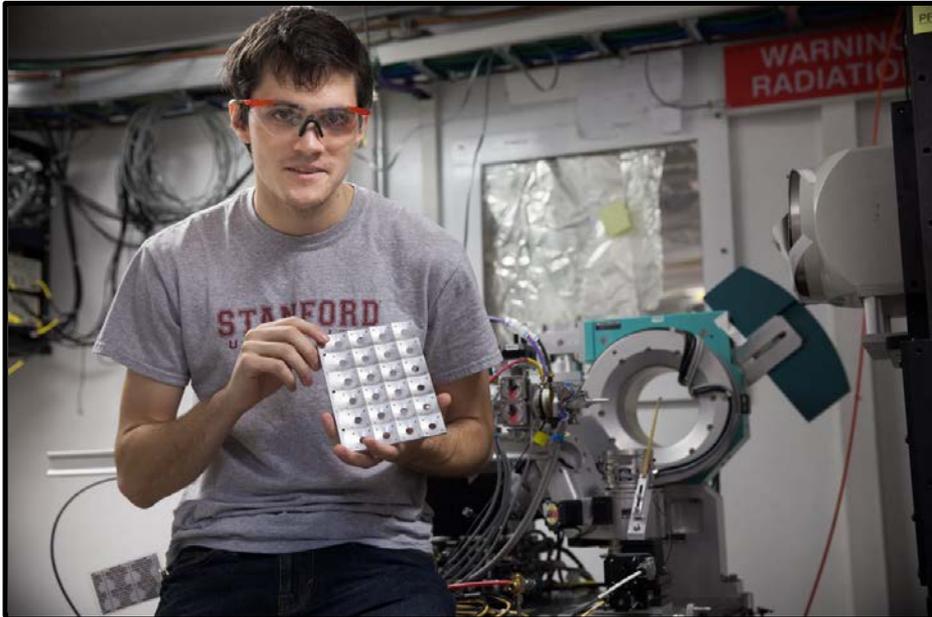
The Office of Workforce Development for Teachers and Scientists (WDTS) manages these programs

Mission: WDTS program mission is to ensure that DOE* has a sustained pipeline of highly skilled and diverse science, technology, engineering, and mathematics (STEM) workers.

- WDTS undergraduate student intern programs (one for 2/4-yr institutions and one for community colleges) and a visiting faculty program at the DOE laboratories:
 - *Science Undergraduate Laboratory Internship (SULI) - ~725/year*
 - *Community College Internship (CCI) - ~80/year*
 - *Visiting Faculty Program (VFP) - ~(60/25)/year*
- WDTS funds these programs, provides oversight, manages their national application systems, and ensures that a common set of core program elements are delivered.
- Host labs and facilities operate these programs locally; e.g. - identifying mentors and projects according to their mission overlap, reviewing & selecting candidates, and executing professional development activities per common programmatic baselines.

**project scope for these opportunities span the entire DOE S&T research mission space, less certain national security areas*

CCI Participant at SLAC Working in DOE Mission Need Area Project Pursues Engineering Degree

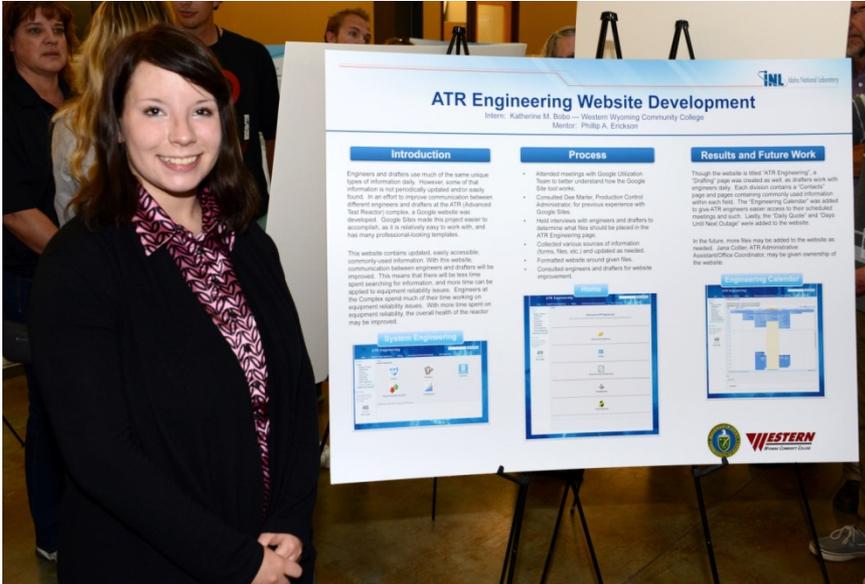


Christopher Kleinsasser shown holding part of a prototype multiplex X-Ray sample holder that he helped develop during his CCI appointment.

- The Community College Internship (CCI) program project involved development of a next-generation X-Ray sample holder for use by scientists worldwide, enabling rapid throughput X-ray diffraction (XRD) of many samples. Academic, DOE laboratory, and industrial users will all benefit using this device.
- At the outset, the 24-year-old Mathematics/Natural Science major at Delaware County Community College (PA) was ecstatic about the opportunity. “You are actually working one-on-one with a staff scientist,” Kleinsasser said. “I’m interested in potentially going into basic research and I’ll actually get an idea of what researchers do through this program.”
- Mr. Kleinsasser, winner of SLAC’s student intern award for altruism and leadership, credits his WDTS CCI experience based learning opportunity as being an important factor when deciding to pursue an engineering degree at Stanford University.



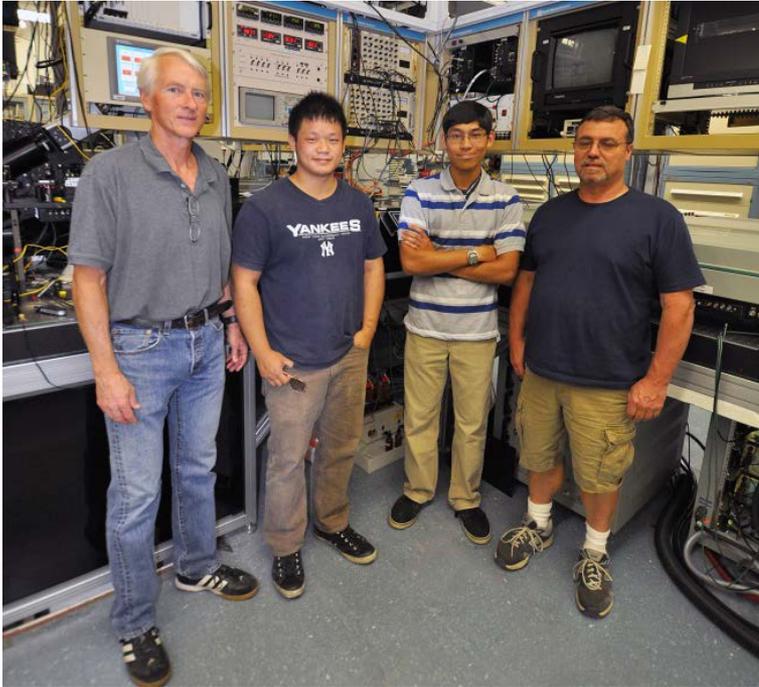
2014 CCI Student Inspired to Pursue Advanced Degree after Engineering Internship



CCI intern Katherine Bobo won the award for Best Website at INL's 2014 Intern Poster Session for her internship research project to create a new website for the Advanced Test Reactor engineering department.

- Katherine Bobo has an associate's degree in Engineering from Western Wyoming Community College in Rock Springs, WY and plans to attend Idaho State University in the spring of 2015.
- She worked with mentor Phillip Erickson at Idaho National Laboratory's (INL) Advanced Test Reactor facility.
- Ms. Bobo spent a portion of her internship giving communications assistance to the engineers, helping them organize Equipment Reliability (ER) information along with other focus topics for the other engineers in her group. She created a website organizing files so they can be easily found, organized, and updated.
- In a male dominated field, Katherine found herself falling in love with all things nuclear. *"Nuclear chemistry is kind of like magic, elements are created, there's lots of energy, everything is really cool."*
- She now plans to complete a master's degree in fusion research.

2014 CCI participant working in turbulent combustion at Sandia pursues chemistry degree

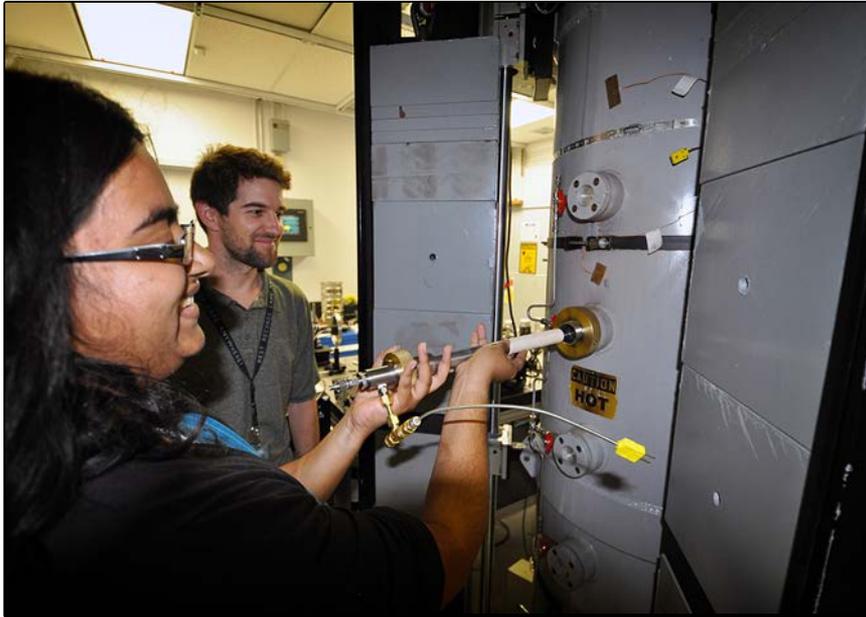


CCI intern Emmanuel Valenton (third from left) gained experience in programming for instrument control and data acquisition while working with mentor Dr. Robert Barlow (far left) and Bob Harmon (far right) at Sandia's Combustion Research Facility. Standing next to Robert is Terry Peng, a Science Undergraduate Laboratory Internship (SULI) student.

- In his Community College Internship (CCI) project, Emmanuel Valenton worked with mentor Dr. Robert Barlow and Bob Harmon to update data acquisition software for the Turbulent Combustion Laboratory, where researchers explore the interactions of turbulent flow and flame chemistry to create the science basis for cleaner, more efficient engines.
- Emmanuel gained in-depth knowledge of the LabVIEW programming language and developed an architecture for instrument control and data acquisition across several lab computers. This architecture was based on the Current Value Table model.
- Emmanuel studied physical sciences at Diablo Valley Community College in California and will continue his education at the University of California, Berkeley, where he plans to pursue a bachelor's degree in chemistry. The internship helped introduce Emmanuel to the highlights of a research career—one that he would like to pursue in the future. Emmanuel said that *"he greatly appreciates the time and encouragement that his mentors invested into his internship"*.



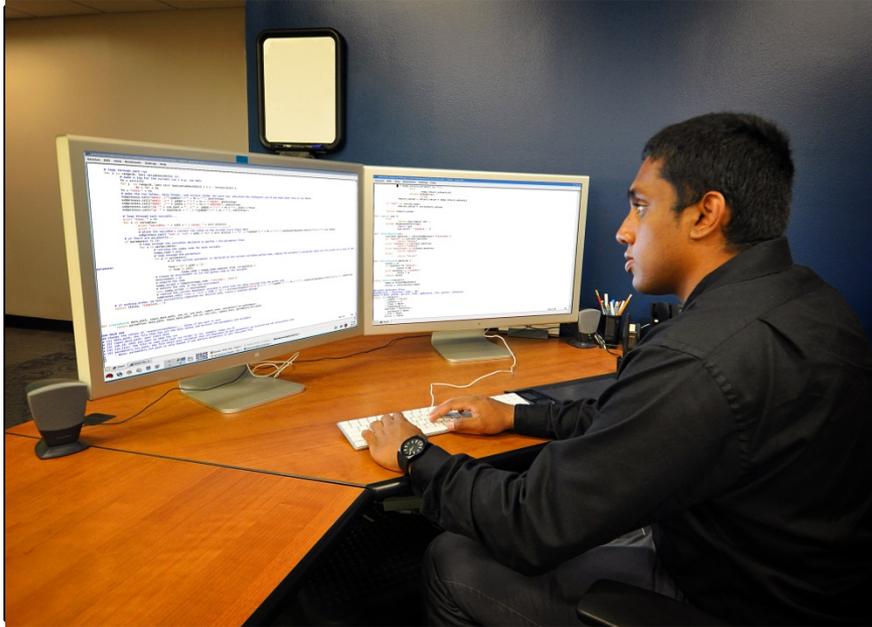
2014 CCI participant working in coal combustion at Sandia pursues mechanical engineering degree



Samira Iqbal, with mentor Dr. Ethan Hecht, worked with a reactor that is used to characterize the oxy-combustion kinetics of pulverized coal under pressure.

- This Community College Internship (CCI) project involved collecting and analyzing data to examine how coal particles react under different combustion environments. An improved understanding of coal kinetics under these conditions will enable the design of efficient coal-fired power plants that capture CO₂.
- Samira Iqbal, a 21-year-old mechanical engineering major at Las Positas Community College in California with hopes of transferring to the University of California, Davis, brought enthusiasm and intense curiosity to the internship. *“I love getting hands-on practice in my lab and not only applying the subjects I’ve learned in the classroom—but learning so much beyond that.”* She said that her mentor, Dr. Ethan Hecht, worked hard to ensure that her internship was a valuable learning experience.
- Samira especially appreciated knowing that her work could impact larger energy research goals. *“I’m glad to contribute as much as I can.”*

2014 CCI participant working in large eddy simulations at Sandia pursues computer science and engineering degree



CCI intern Raj Kumar worked on uncertainty quantification in large eddy simulations with mentor Dr. Jeremy Templeton.

- This Community College Internship (CCI) project involved developing an infrastructure to run uncertainty quantification studies of large eddy simulations (LESs) - a mathematical model for turbulence used in computational fluid dynamics - on Sandia's high-performance computer systems, as well as analyzing the results of these studies. The work will help determine the viability of LES as an engineering tool for improving combustion efficiency.
- Raj Kumar, a 20-year-old computer science and engineering major at Las Positas Community College in California plans to transfer to one of the University of California campuses, preferably Berkeley or Davis, next fall. *"I especially enjoyed the opportunity to work with Sandia's high-performance computers,"* Raj said. *"As a result of the internship, I've grown much more interested in computer architecture and, in particular, highly parallel systems."*
- Through his work, Raj gained experience with programming in a Unix environment and became familiar with the Python programming language and Bash shell scripting. Raj also attended a two-day uncertainty quantification workshop that was taught by Sandia employees.
- *"My mentors have made my time at Sandia an invaluable learning experience, far more than any experience inside the classroom has been or could be,"* Raj said.

Student Intern Participant (CCI & VFP) Pursues Graduate Studies in DOE Mission Need STEM Field



WDTS student intern Ms. Jasmine Hatcher receives hands-on experience working with Senior Chemist Dr. James Wishart in Brookhaven Lab's Chemistry Department.

- Working as a WDTS intern with Dr. Wishart and his team at Brookhaven, Ms. Jasmine Hatcher became proficient in purifying ionic liquids (salts that are in a liquid state). Gaining an understanding of how ionic liquids work may lead to processes that help sort and safely dispose of nuclear waste.
- Chemistry wasn't in Hatcher's original study plan. "I always say that chemistry chose me," she said. "I originally wanted to be a nurse, but once I came to Brookhaven I became thoroughly intrigued by the wonders of science and I got hooked."
- Hatcher earned her Associates Degree from Queensborough Community College, and her B.S. in Chemistry from Queens College.
- Jasmine is currently pursuing her Chemistry Ph.D. at Hunter College, working on research that will remove technetium (^{99}Tc) from radioactive waste, allowing the waste to be stored safely for many years. ^{99}Tc is a major product of uranium and plutonium fission in nuclear power reactors and from weapons production during the Cold War. It has a half-life of 213,000 years, making safe storage an important issue now and for future generations.



Former VFP faculty participant awarded research funds enabling new STEM programs and opportunities at Alabama A&M University



Dr. Egariéwé in the lab at BNL with his VFP student, Ariel Dowdy

- Dr. Stephen Egariéwé, faculty at Alabama A&M University (an HBCU), is a three-term VFP participant, who worked on the development of semiconductor nuclear detectors capable of operating at room temperature without cryogenic cooling. Based on this training and research collaborations, Dr. Egariéwé has since established a Nuclear Engineering and Radiological Science (NERS) Center at Alabama A&M University (www.nerscenter.org). The NERS Center supports students and faculty research activities, and with continued collaboration with BNL, several graduate students have successfully completed their Ph.D. dissertation and M.S. thesis research projects. Several of the students that participated in the VFP program have also co-authored papers published in peer-reviewed journals. The VFP program and collaboration with BNL also helped achieve full ABET accreditation of the Electrical Engineering Technology and Mechanical Engineering Technology B.S. degree programs at Alabama A&M University. These efforts also led to the development and establishment of "Nuclear Systems" as a new concentration in Electrical Engineering and Mechanical Engineering B.S. degree programs at Alabama A&M University.
- During this time period, Stephen developed and submitted a number of research proposals. He was awarded 5-year, \$2 million grant by the Department of Homeland Security - Domestic Nuclear Detection Office, Applied Research Initiative Program.



VFP faculty participant from becomes a collaborator on the PHENIX experiment

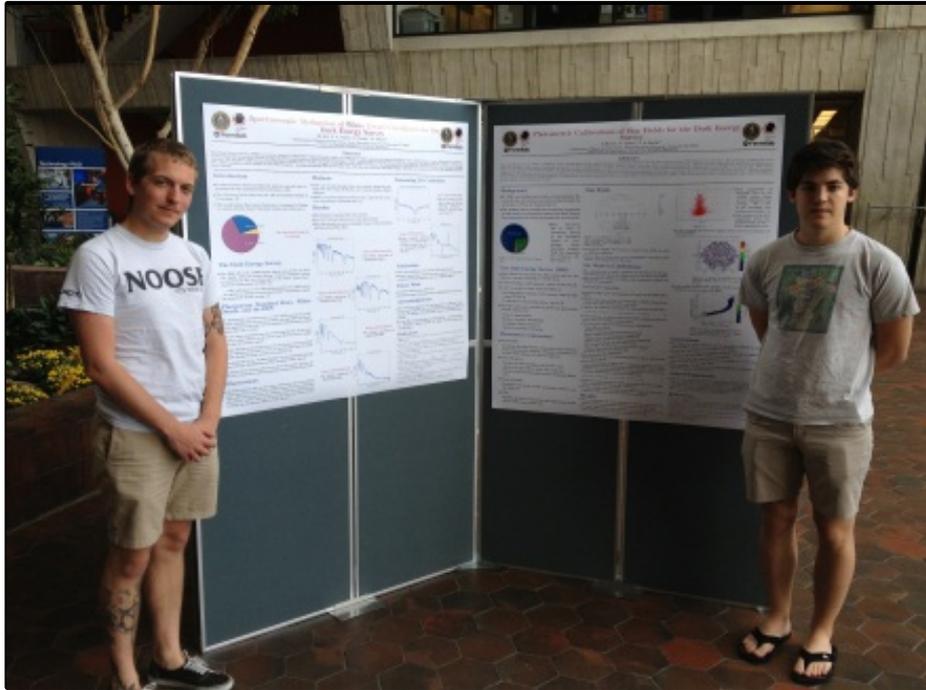


Dr. Alfred with his students at BNL – PHENIX Project at the Relativistic Heavy Ion Collider (RHIC), an SC national user facility.

- VFP faculty participant Dr. Marcus Alfred from from Howard University is now a collaborator on the PHENIX experiment (for Pioneering High Energy Nuclear Interaction eXperiment) at the Relativistic Heavy Ion Collider (RHIC) national user facility (Brookhaven National Laboratory). His work involved work to design and test a 10 ps time of flight detector. The detector, a multi-gap resistive plate chamber, is made up of a few circuit boards and simple off the shelf materials (that can be picked up at most hardware stores). This means it is also very inexpensive. However, there are still some unanswered questions about a discrepancy between its expected performance and actual performance seen in the laboratory. Marcus addressed this discrepancy this past summer and plans to continue work on this question during the fall.
- By joining the PHENIX collaboration, Marcus and Howard University are listed as a contributor to all PHENIX publications, making Howard University the only active HBCU member on PHENIX. This membership helps expose undergraduate and graduate students in nuclear physics to cutting-edge research, and could be a natural conduit for HBCU students to participate in one of the most fascinating subjects in all of physics. As a result of the PHENIX collaboration, Marcus and Howard University are planning on building a lab to design, build, and test the detectors mentioned above. Marcus Alfred is also a co-author on four manuscripts submitted for publication by the PHENIX project.



VFP Student Participant Discovers New Star while working on the Dark Energy Survey



Mees Fix, left, and Sam Wyatt, presenting their project results at Fermi National Accelerator Laboratory. A presentation is one required VFP-Student participant deliverable, in addition to a research report, a peer review, and a general audience abstract. These deliverables are intended to help prepare interns for future STEM professional careers.

- Fermilab scientists Douglas Tucker and William Wester collaborated with visiting Professor J. Allyn Smith and student interns Samuel Wyatt and Mees Fix (all from Austin Peay State University) in a research project using Fermilab's unique "the cosmos as a laboratory" capability. This research directly supports ongoing Dark Energy Survey calibration studies, an experiment with the potential of discovering the nature of dark energy.
- Spectrographic data from many dozens of a certain type of star were collected and analyzed, where data from one star revealed a surprise when Mees Fix discovered that the emission spectrum had two components . . . one from the parent DA white dwarf and another component likely due to material from an unseen object falling into the white dwarf.
- The spectral data classifies the newly identified star as being a rare "cataclysmic variable star" — an object that warrants further studies.



2014 VFP faculty participant at Sandia helps team open a new research area



Visiting Faculty Program (VFP) participant Dr. Jennie Guzman helped build a new experimental apparatus to enable the pursuit of a new scientific thrust area.

- Dr. Jennie Guzman, an assistant professor of physics at California State University, East Bay, collaborated with postdoc Dr. Lori Culberson and mentor Dr. Dave Chandler on new experiments to image high-resolution spectroscopy and photophysics associated with atomic transitions, such as Rabi cycling and AC Stark energy shifts.
- Dr. Guzman helped measure Kr atoms scattering that produced low-velocity Kr atoms. Along with her student Catilin Montcreiffe, Dr. Guzman built an atom trap that uses lasers and magnetic fields to capture these slowly moving Kr atoms.
- To enable this new scientific thrust, Dr. Guzman and Dr. Culberson built a new apparatus for these experiments.
- This work has impact in several areas of chemistry and physics. The trapping and velocity-mapped ion imaging of cold atoms provide a new way to conduct ultrahigh-resolution spectroscopy and increase the possibility of using collision methods for trapping molecules.



SULI Participant becomes Investigator on LCLS Experiment



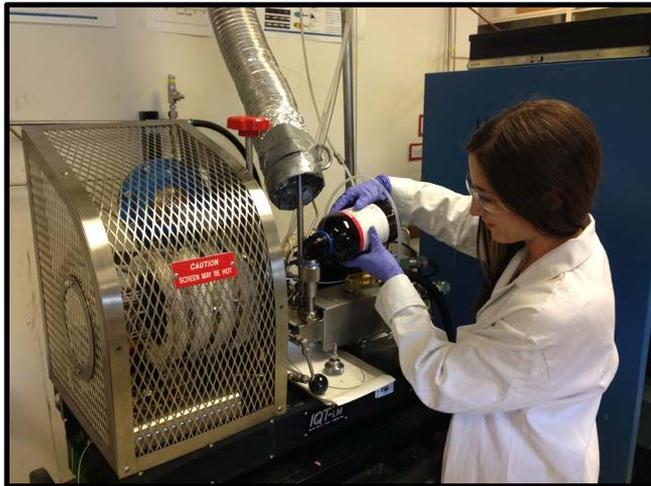
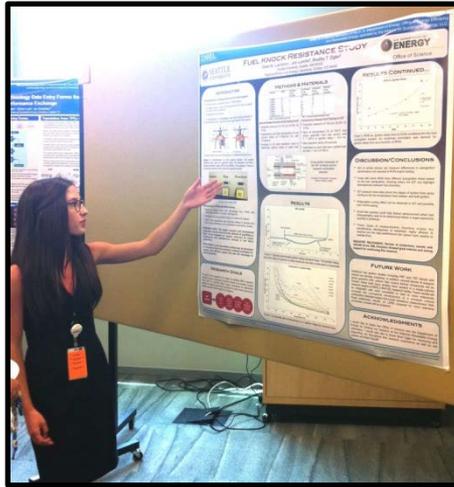
Stephanie Mack, right, in the control room at LCLS, taking data for her experiment.

- Stephanie Mack, 20, a Nebraska native and now a senior at the University of Ottawa, is the youngest person to serve as an investigator in an experiment at the Linac Coherent Light Source.
- Mack was a SULI participant for the past two summers at SLAC. Last summer she observed an LCLS experiment for the first time and helped write a proposal for an LCLS experiment, which was successful.
- She credits her SULI experience, the mentorship of LCLS instrument scientist Joshua Turner, and guidance from members of the Soft X-ray Materials Science (SXR) instrument team in preparing her for the LCLS experiment.
- As part of an international collaboration, she studied manganite, one of a class of complex manganese-oxide compounds that has many desirable electronic and magnetic properties and that could ultimately lead to extremely fast, low-energy, non-volatile computer memory chips or data-switching devices.



2014 SULI participant at NREL plans mission area graduate studies

Right: Drew Cameron, who studies Mechanical Engineering with a concentration in Environmental Studies at Seattle University, presents her Fuel Knock Resistance Study to NREL research staff at the SULI Poster Session.

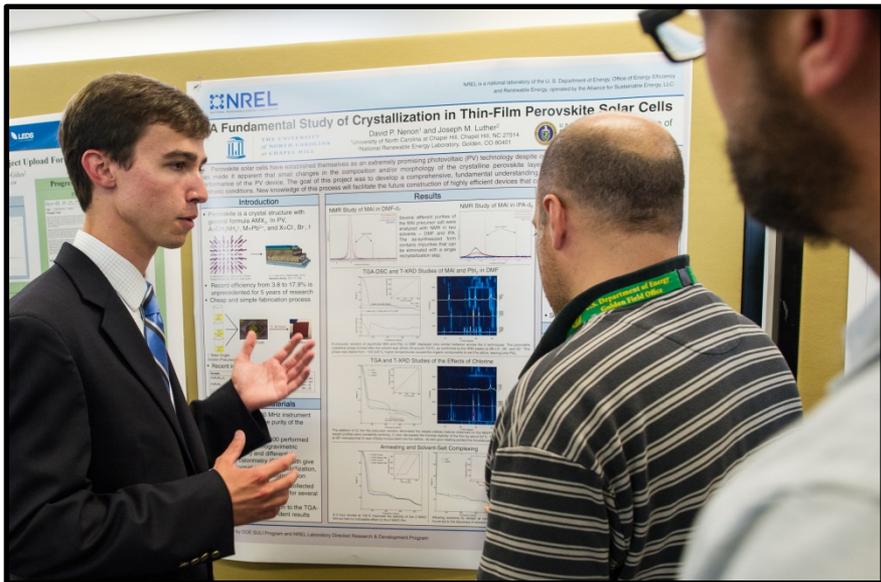


Above: Ms. Cameron pours fuel into the Ignition quality tester (IQT), a constant volume research combustion chamber.

- Ms. Drew Cameron of Seattle University was a 2014 Science Undergraduate Laboratory Internship (SULI) participant at the National Renewable Energy Laboratory (NREL) where she performed fuel knock resistance studies under Dr. Brad Zigler exploring development of an alternative octane rating system characterization to help increase the efficiency of motor vehicles.
- Drew felt at home at NREL; *“NREL is an inspiring place to work, and every day my passion for contributing to a sustainable energy future is reignited,”* she said. Drew added that, *“I now have a clear understanding of what I would like to accomplish in my professional life and a better idea of how to achieve those goals.”*
- During the internship, Drew was able establish a clearer path for a future career in science as she enters her senior year of college. Drew said, *“prior to my internship at NREL, I was not considering obtaining a Ph.D., however I am now reconsidering this, as earning a Ph.D. would be a viable option for my future.”*



2014 SULI participant at NREL plans mission area graduate studies



David Nenon, presents his poster at the NREL SULI summer poster session.

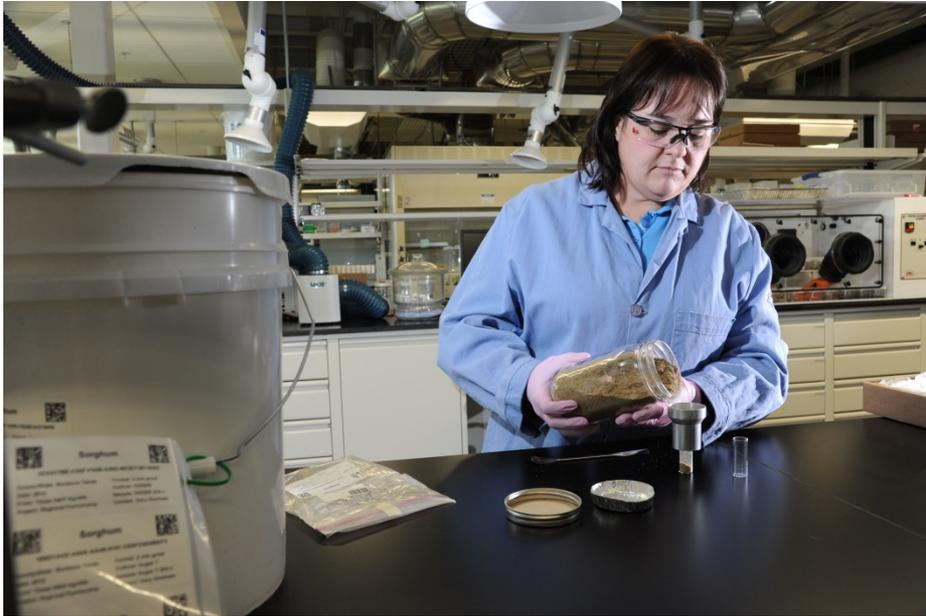


(From left to right) David Nenon, Celeste Melamed, and Bob Allen hold their trophies for winning the SULI poster competition.

- Current University of North Carolina senior Mr. David Nenon has decided to pursue a Ph.D. after his summer as a 2014 Summer Undergraduate Laboratory Internship (SULI) participant at the National Renewable Energy (NREL) under the direction of Dr. Joseph Luther.
- David Nenon studied crystallization and stability of the active layer in thin-film perovskite solar cells. Perovskite cells have seen dramatic increases in efficiency in the last few years and, as Mr. Nenon stated *“When considered together with the simple and inexpensive production process, it is easy to see why perovskites have been generating a lot of excitement in the scientific community.”*
- As a result of David’s work on novel experiments during his SULI internship, he will be the first author on a paper that he is preparing with his mentor, Dr. Joseph Luther.
- David Nenon won 1st Place in the NREL Summer SULI 2014 poster competition. Judges rated the interns on both technical content and their presentation skills.
- According to Mr. David Nenon, *“I’ve been considering pursuing a Ph.D. for a while now, but this summer really sealed the deal on going to grad school. I’m even more excited about renewable energy than I was before!”*



2014 SULI participant pursues environmental studies degree in DOE mission need STEM field



Leilani Beard conducting biomass (switch grass) measurement for analysis in a near infrared spectrometer. Her research will assist in determining the amount sugars that can be released with the application of nitrogen during the growth stage.

- A self categorized “non-traditional” student, Ms. Leilani Beard is currently a senior undergraduate student at University of Idaho pursuing a B.S. degree in Environmental Science.
- Although she was initially intimidated by the chemistry, as an intern in the Idaho National Laboratory Biofuels & Renewable Energy Technologies department, she has grown confident that she can succeed at even the most complex areas of Environmental Science, and enjoys the work she has done with her mentor, scientist Amber Hoover.
- During her 2104 SULI appointment at Idaho National Laboratory, she has had the opportunity to perform her own hands-on experiment analyzing the effect of adding nitrogen (an environmental factor) to a field of switch grass has on the ability to extract sugars from the biomass during biofuel production.
- After earning her undergraduate degree, Leilani plans to go on for a master’s degree and a PhD. She hopes others will see her story and realize that *“it’s never too late to go back to school and pursue something you’re passionate about.”*



2014 SULI participant working on fault-tolerant PDE solver project at Sandia inspired to study parallel computing in graduate school



Under the supervision of mentor Dr. Bert Debusschere, Kathryn Dahlgren developed visualization tools and conducted performance analysis for fault-tolerant PDE solvers.

- This Science Undergraduate Laboratory Internship (SULI) project contributed to the development of novel solvers for partial differential equations (PDEs). The goal was to develop PDE solvers that are resilient to hard and soft faults in extreme-scale computing architectures, an emerging problem in the move towards exascale computing.
- Kathryn Dahlgren, a computer science student at California State University, Stanislaus, said, *“I worked on visualization tools that offer users different formats and methods for mapping the data generated by the PDE solvers.”*
- Kathryn especially appreciated learning about techniques for organizing the development of large software and methods for conducting detailed software performance analyses, focusing on key areas for parallel-processing bottlenecks.
- Kathryn believes that her internship experiences in efficient algorithm design and software implementation considerations *“will prove extremely helpful as she works on upper-division class projects.”* She also said that *“the internship inspired a keen interest in pursuing graduate-level education and research related to parallel computing.”*



2014 SULI participant working in chemical kinetics at Sandia prepares for graduate school in analytical/computational chemistry

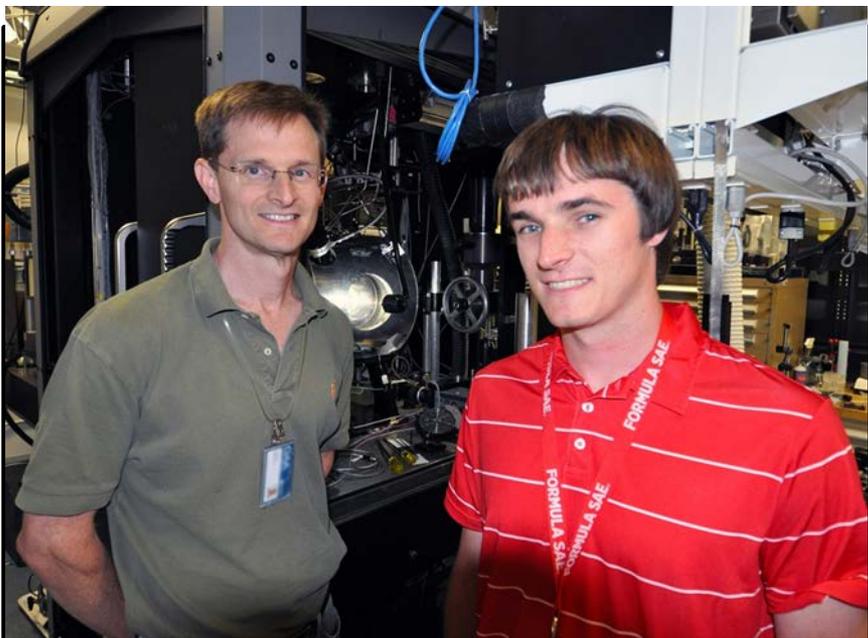


Intern Brittany Hagler helped develop C++ code for the Uncertainty Quantification Toolkit (UQTK) software package while working side-by-side with mentor Dr. Habib Najm and postdoc Dr. Kenny Chowdhary.

- Undergraduate Brittany Hagler, a recipient of a Science Undergraduate Laboratory Internship (SULI), worked alongside mentor Dr. Habib Najm and postdoc Dr. Kenny Chowdhary to develop improved statistical methods for calibrating chemical kinetic mechanisms. These mechanisms, which are used to model the oxidation of hydrocarbon fuels, will lead to better predictions of ignition times in combustion engines.
- Brittany is starting her senior year at Union University in Tennessee, where she is majoring in chemistry with a minor in physics and mathematics. *“My mentors placed emphasis on teaching me and ensuring I would have a productive and enjoyable learning experience.”*
- Brittany helped develop C++ code for the Uncertainty Quantification Toolkit (UQTK) software package, targeting the statistical calibration of physical models. Through this process, she learned about Bayesian inference, nonlinear optimization, and polynomial approximation theory.
- The mathematical tools and techniques that Brittany became familiar with through this internship will prepare her for graduate school, where she plans to focus on analytical and computational chemistry.



2014 SULI participant at Sandia helped advance experiments to reduce soot from compression ignition engines

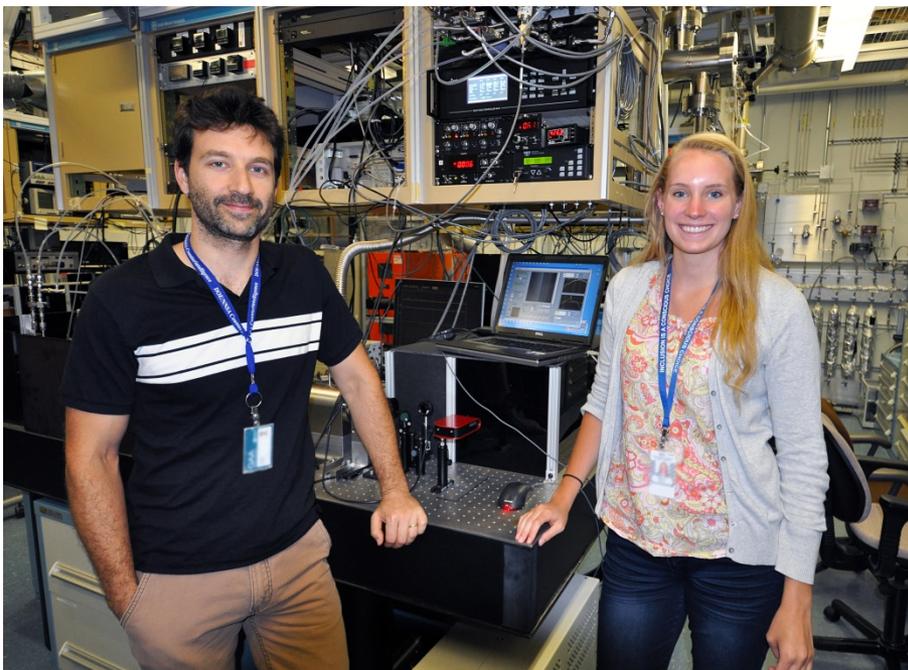


WDTS intern Christopher Nilsen has been working with mentor Dr. Charles Mueller on a project that examined fuel injection through a duct to reduce soot emissions from compression ignition engines.

- This Science Undergraduate Laboratory Internship (SULI) project involved assessing the potential of direct injection of fuel through a duct to reduce soot formation and emissions in compression ignition engines.
- Christopher Nilsen, 19-year-old mechanical engineering major at California State Polytechnic University, Pomona, helped design the duct assembly and test it in a constant-volume combustion vessel.
- *“It was great to have the opportunity to learn about advanced diesel combustion and gain hands-on experience in advanced engine research labs,”* said Christopher. He also learned how to use high-speed optical diagnostics and computational tools—and was pleased to find he could apply concepts from his coursework to his efforts in the lab.
- Christopher said he appreciated the chance to work on the ducted combustion chamber experiment with mentor Dr. Charles Mueller. *“It’s a new and exciting area of research, and I’m happy I gained this experience.”*



2014 SULI participant working on Criegee intermediates project at Sandia prepares for graduate degree in chemical engineering



Ashley Scully studied Criegee intermediates in reaction with tropospheric compounds with mentor Dr. Leonid Sheps.

- This Science Undergraduate Laboratory Internship (SULI) project is part of Sandia's larger investigation of Criegee intermediates, which are implicated in autoignition chemistry and are important atmospheric reactants.
- Using time-resolved UV spectroscopy, Ashley Scully, a chemistry major at Saint Michael's College in Vermont, studied the reaction of Criegee intermediates with water vapor, which has been proposed as the most important loss pathway for Criegee intermediates in the troposphere.
- At Sandia, Ashley was exposed to novel technology and had the opportunity to work with and learn from elite scientists. The mentorship she received from Dr. Leonid Sheps allowed her to grow as both a person and a chemist.
- Ashley says she *"will apply what she learned about experimental research to a variety of technical fields"* — especially as she pursues her goal of obtaining a master's degree in chemical engineering.



Science Undergraduate Laboratory Internship (SULI)

The SULI program places undergraduate students (from 2 or 4 year institutions) in paid internships in science and engineering research activities at 16/17 DOE Laboratories, and one National User Facility. Students work with laboratory staff scientists or engineers on projects related to ongoing research programs. This, or its predecessor programs, have been in operation since the early '90s.

- Appointments are for:
 - 10 weeks during the Summer Term (May through August) or 16 weeks during the Fall Term (August through December) and Spring Term (January through May).
 - Application process for the 2015 Summer and Fall Terms are closed – The 2016 Spring Term application will open in late-July 2015.
- All interns have defined research projects that must be within the DOE mission space.
- All interns have required deliverables: A research report, an oral or poster presentation, a peer review, a general audience abstract, and pre- and post- participation surveys.
- Interns receive a \$500 weekly stipend, travel to and from the laboratory, and possibility for a housing allowance.
- Laboratories also provide an array of seminars and professional development opportunities.
- Undergraduates from 2 or 4 year colleges, in their sophomore through senior year, or recent graduates, are eligible to apply.
- Must be at least 18 years old at the time of application; and a U.S. citizen or PRA.
- Must have a minimum cumulative GPA of 3.0.
- May participate as an intern a maximum of two times; May apply a maximum of three times.
- WDTS sponsors ~700 participants per year, majority (~535) in the Summer Term.

Please visit <http://science.energy.gov/wdts/suli/> for full details and how to apply.



Community College Internship (CCI)

The Community College Internship (CCI) places students from community colleges in paid internships in technology based projects supporting laboratory work under the supervision of a laboratory technician or researcher. This, or its predecessor program, have been in operation since 1999.

- Operates primarily during a 10-week Summer Term (May through August), but a semester term opportunity pilot is planned the 2016 Spring Term.
 - Application process for the 2015 Summer Term is closed – New Spring Term pilot program opportunity (applications open late-July 2015).
- All interns have defined technical projects that are within the DOE mission space.
- All interns have required deliverables: A research report, an oral or poster presentation, and pre- and post- participation surveys.
- Interns are compensated as follows: \$500 weekly stipend, travel to and from the laboratory, and a housing allowance.
- Laboratories also provide an array of seminars and professional development opportunities.
- Must be at least 18 years old; and a U.S. citizen or PRA.
- May participate as an intern a maximum of two times; May apply a maximum of three times.
- Must have a minimum cumulative GPA of 3.0.
- WDTS supports ~70 participants each Summer Term.

Please visit <http://science.energy.gov/wdts/cci/> for full details and how to apply.



Visiting Faculty Program (VFP)

Opportunities for faculty from academic institutions that are typically underrepresented in the DOE research community to engage in a jointly developed research project at a DOE laboratory during the Summer Term. The scope of the projects should be robustly connected to ongoing host lab research project activities. This, or its predecessor program, have been in operation since 2003.

- **Faculty may optionally invite up to two students to participate, one of whom may be a graduate student. VFP- Students must meet SULI requirements, apply separately, and only if invited.**
 - Students must have a minimum cumulative GPA of 3.0.
 - Student interns have required deliverables matching those for SULI: A research report, an oral or poster presentation, a peer review, general audience abstract, and pre- and post- participation surveys.
- Operates during a 10-week Summer Term (May through August) - Application process for the 2015 Summer Term is closed; reopens for 2016 in early October 2015.
- Faculty receive stipend of \$13,000 for 10 week term, undergraduates receive stipend of \$500/week; all participants are provided travel to and from the laboratory, and possibility for a housing allowance.

Please visit <http://science.energy.gov/wdts/vfp/> for full details and how to apply.



Visiting Faculty Program (VFP), *cont.*

- Must be a full-time faculty member at an accredited U.S. degree granting, postsecondary, institution of higher education historically underrepresented in the U.S. research community, in an area of physics, chemistry, biology (non-medical), mathematics, engineering, environmental sciences, materials sciences, or computer / computational sciences (link to list of ineligible institutions from VFP webpages).
- Must be a U.S. citizen or LPR. Faculty may participate up to three terms.
- **Faculty must, through their own efforts, establish a collaboration with a laboratory scientist to co-develop a 6-page research project proposal prior to applying to the program.**
 - Faculty can contact host labs by using the POCs listed at:
<http://science.energy.gov/wdts/vfp/how-to-apply/selecting-a-host-doe-laboratory/>
 - Proposal requirements are posted at:
<http://science.energy.gov/wdts/vfp/how-to-apply/submitting-a-proposal-to-doe/>
- Students may only apply after receiving an invitation through the online system
 - Faculty, in their application, must list student(s) to receive system-generated invitation(s)
 - If a student had already applied to CCI or SULI, they must first “un-submit” this application
- WDTS supports ~ 50 faculty and ~25 students each Summer Term (this ratio is not prescribed).

Please visit <http://science.energy.gov/wdts/vfp/> for full details and how to apply.

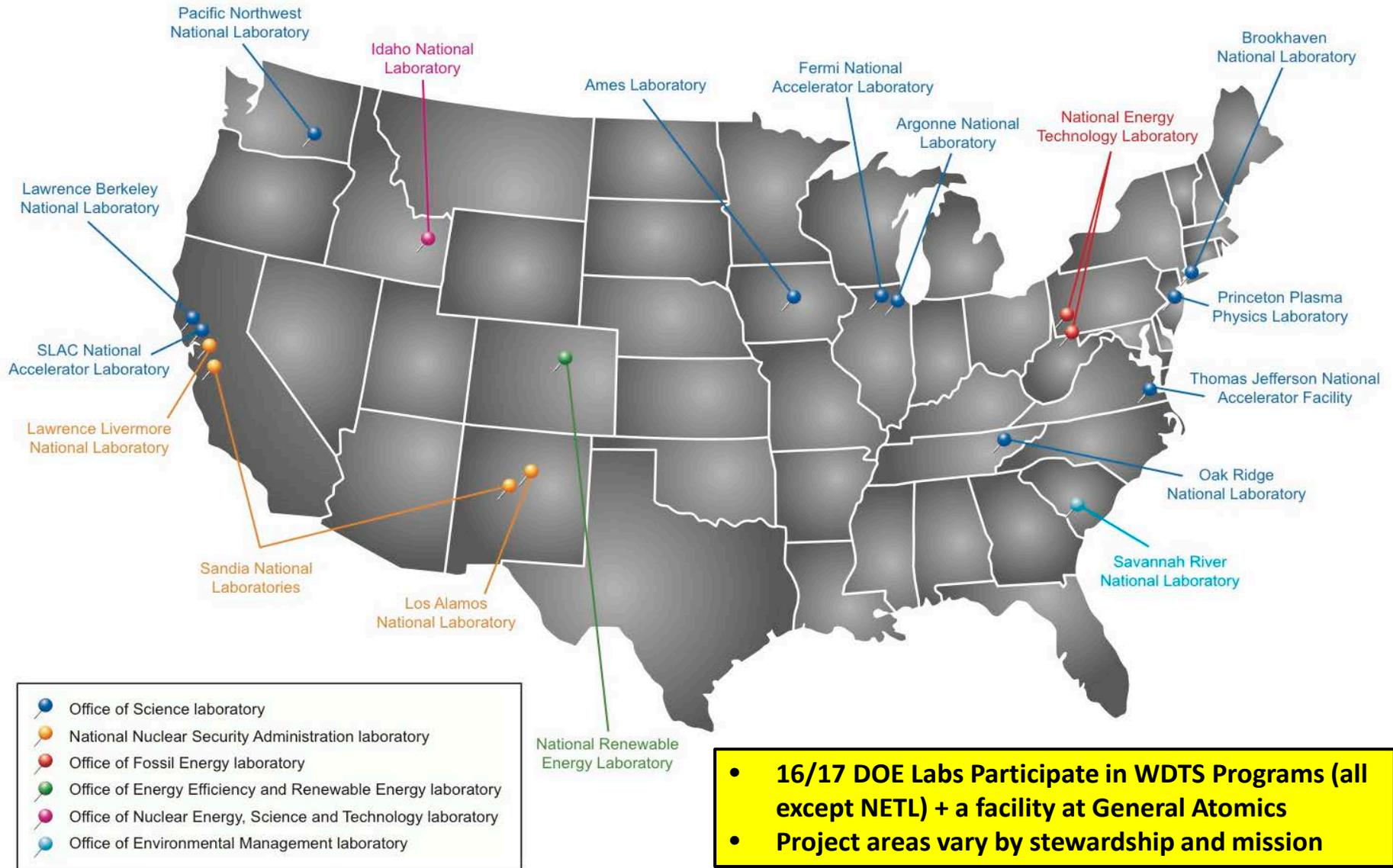


Navigating the Online Application System

- Applications, and all required materials, must be submitted using the WDTs online application system:
 - Account creation is required for access (links are on WDTs website program pages)
 - When completing (student, not faculty applicants) an application, have available pdf copies of your most recent transcripts (and from all other institutions attended)
 - Have available names and email addresses for at least 2, but no more than 3, individuals able to complete a recommendation form on your behalf (the first two received recommendations by the online system fulfill this requirement)
 - The system sends a recommendation request email to your recommender providing them a link to its form
- The application, in addition to general information, includes:
 - Numerous elements that tie directly to the eligibility requirements
 - A cumulative GPA calculator
 - Inquires about your areas of STEM studies, specialization, and interests
 - Inquires about your skills and experience
 - Four short essay questions
- **Applicants** select a 1st and 2nd choice host DOE lab
 - Only these labs will view your application
 - Host labs do not all offer the same STEM specialization areas
 - Information on specific project opportunities may be available from host labs
 - Host labs do all offer similar professional development activities



DOE Laboratories (16/17 are WDTs Host Labs)



SULI, CCI, and VFP Information Resources

- Review the WDTs program web pages, including the FAQs:
 - The left-hand navigation items provide links to information related to eligibility, compensation, obligation, applying, selecting a host lab, recommendations, key dates, notification, and FAQs

[Science Undergraduate Laboratory Internships \(SULI\)](http://science.energy.gov/wdts/suli/)

<http://science.energy.gov/wdts/suli/>

[Community College Internships \(CCI\)](http://science.energy.gov/wdts/cci/)

<http://science.energy.gov/wdts/cci/>

[Visiting Faculty Program \(VFP\)](http://science.energy.gov/wdts/vfp/)

<http://science.energy.gov/wdts/vfp/>

- Visit the WDTs Outreach page for additional presentations and recorded webinars:

<http://science.energy.gov/wdts/outreach/>

SC/WDTs Points-of-Contact

Jim Glownia – james.glownia@science.doe.gov; (301) 903 2411

<http://www.science.energy.gov/wdts>

- SULI, CCI, & VFP:
 - **Cindy White** - Program Manager: cindy.white@science.doe.gov

 - <http://science.energy.gov/wdts/suli/contact/>
 - <http://science.energy.gov/wdts/cci/contact/>
 - <http://science.energy.gov/wdts/vfp/contact/>
 - sc.suli@science.doe.gov
 - sc.cci@science.doe.gov
 - sc.vfp@science.doe.gov



Closing Words and Tips for Applicants

Application deadlines and requirements are firm, including receipt of recommendations (**no exceptions!**)

- Don't wait until the last minute, especially for requesting recommendations
- Host labs offer additional information resources regarding their programs and opportunities - visit their websites listed on our program pages or ask us for their contact information
- Ask us any questions using the provided resources
- Technical support for the online system is available during regular business hours
- One application per program, per term (see eligibility information for other limitations)
- When determining the SULI one-year completion requirement, we only count credits earned *while enrolled as a matriculating student*
- Only complete, compliant, and eligible applications are released to host labs
- One offer per term only, independent of acceptance or declination