Spring 2012

Annual Report 2012

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Louisiana Tech University

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LOUISIANA TECH UNIVERSITY
COLLEGE OF ENGINEERING AND SCIENCE

12

2011

LEADING THE WAY

ANNUAL REPORT

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LEADERSHIP TEAM

Stan Napper, Dean

Sheila Barham, Executive Administrative Assistant

Jenna Carpenter, Associate Dean, Administration and Strategic Initiatives

Mel Corley, Director, Civil Engineering, Construction Engineering Technology and Mechanical Engineering

Sumeet Dua, Director, Computer Science, Electrical Engineering, Electrical Engineering Technology

Catherine Fraser, Director of Development

Eric Guilbeau, Director, Biomedical Engineering

Hisham Hegab, Associate Dean, Undergraduate Studies; Director, Nanosystems Engineering

Carrie Kelly, Budget Manager

Jim Palmer, Interim Associate Dean, Graduate Studies; Director, Chemical Engineering and Industrial Engineering

Ramu Ramachandran, Associate Dean, Research

Lee Sawyer, Director, Chemistry and Physics

Bernd Schroeder, Director, Mathematics and Statistics

The College of Engineering and Science's annual report is made possible through the support of the College of Engineering and Science Foundation and was published without the use of taxpayer funds. We owe a debt of gratitude to our alumni, friends, parents and corporate sponsors.

Leading the Way in Education and Research

Meeting the Funding Challenges of Today

I hope you will enjoy reading about our faculty and student successes and take pride in the accomplishments of the College. We continue to do our best to advance each student who walks through our doors, in spite of continued state budget cuts. In the summer of 2012, I had to make some of the hardest decisions in my tenure as dean of the College of Engineering and Science. These cuts have affected our ability to replace faculty who have retired or taken other positions, to purchase needed equipment and supplies, and much more. I have asked our faculty and our Leadership Team to move forward with me in spite of these budget cuts and to continue to "lead the way" in innovative STEM education and transformative research.

Meanwhile, we have much good news to share. This year, the College of Engineering and Science rolled out its Cyber Discovery Camp to a national audience, with support from the Cyber Innovation Center in Bossier City and funding from the Department of Homeland Security. This successful program, which was created within our College, is now being duplicated at colleges and universities across the U.S. Additionally, our highly successful *Living with the Lab* first-year curriculum is also being emulated, both in this country and around the world. We have had faculty from New Zealand, Florida and Massachusetts visit our College this past year to learn more about this exciting new learning environment.

Our faculty continues to make national news in research. Dr. Erez Allouche, Associate Professor of Civil Engineering and Director of the Trenchless Technology Center at Louisiana Tech University, has won Technology Product of the Year honors from the Louisiana Technology Council and the North Louisiana Economic Partnership for his innovative green geopolymer concrete technology. Dr. Lee Sawyer, Dr. Dick Greenwood and Dr. Markus Wobisch, physics professors at Tech, were actively involved in the discovery of the Higgs boson — one of the most significant scientific discoveries in 30 years. Additionally, this fall we will begin offering a pioneering, interdisciplinary Ph.D. in Molecular Sciences and Nanotechnology, as well as the new B.S. in Cyber Engineering.

As you read this report, I hope that you will feel a sense of pride in the accomplishments of our faculty, staff and students who continue to excel under difficult conditions. I realize that many others are facing similar problems, so I appreciate your support and words of encouragement more than ever.

Sincerely,

Stan Napper

Stan Napper
Dean and Thigpen Professor

Our vision is to be the best college in the world at integrating engineering and science in education and research.

STAY CONNECTED

College of Engineering and Science
Louisiana Tech University
600 West Arizona St.
Ruston, La 71272

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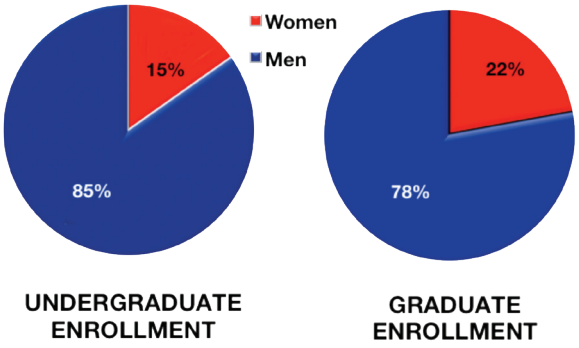


UNDERGRADUATE DEGREES
9 Engineering, 4 Science, 1 Technology

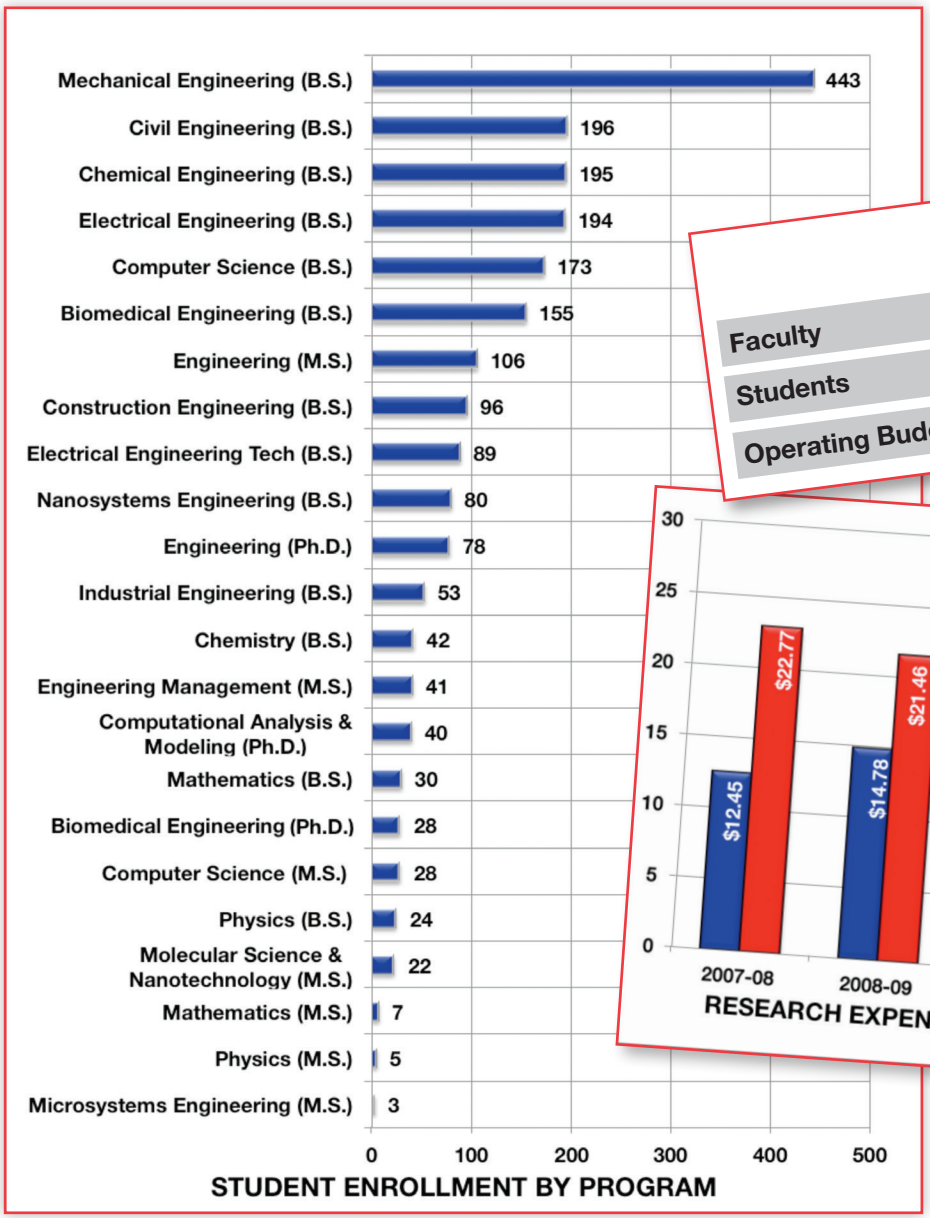
GRADUATE DEGREES
7 M.S. Degrees, 4 Ph.D. Degrees

NEW DEGREES
1 B.S., 1 Ph.D.

TOTAL
25 Degree Programs

FROM 2007 TO 2011

49% - R&D Expenditure Increase
18% - Ph.D. Enrollment Increase
14% - B.S. Enrollment Increase
6% - Faculty Decrease



	2007	2011
Faculty	103.5	97.5
Students	1953	2241
Operating Budget	$308,000	$278,000

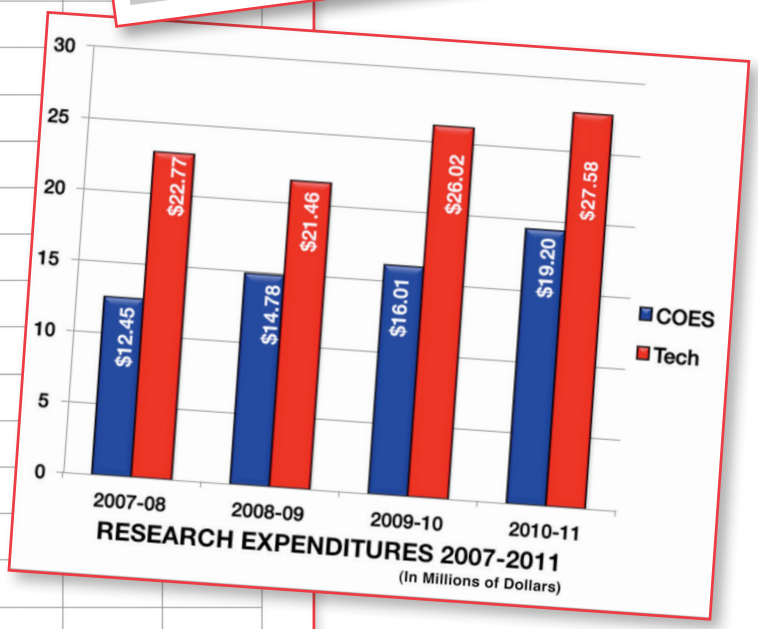


Photo by Cody Bryant

Professors Heath Tims and Michael Swanbom, Erez Allouche, Lee Sawyer and Arun Jaganathan, presented talks at the TEDxLouisianaTech event.

TEDx talks are designed to stimulate dialogue at the local level.

LeadingtheWayinEducation

Biomedical Engineering

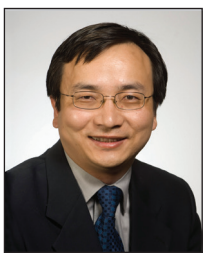
Dr. Leon Iasemidis

The program is pleased to announce that **Dr. Leon Iasemidis** from Arizona State University will fill the Dusty Rhodes Eminent Scholar Chair in Biomedical Engineering, effective fall of 2012.

Biomedical Engineering has been awarded a $25,000 graduate fellowship from the Louisiana Board of Regents. Two instruments have been added to enhance prototyping capabilities: a computer-controlled milling machine and a rapid prototyping machine.

Dr. Eric Guilbeau, Director of the Biomedical Engineering and CBERS research programs; Dr. Mark DeCoster, Associate Professor of Biomedical Engineering; and Dr. Steve Jones, program chair for the Biomedical Engineering and Center for Biomedical Engineering and Rehabilitation Science research programs, have initiated startup companies. Guilbeau's company, Biovations, applies micromanufactured thermopiles with high temperature sensitivity to detect the heat of reaction of important biological reactions. Applications will include DNA analysis and glucose sensing. DeCoster's company, Nanogaia, uses nanotechnology to study biological processes and biology to better understand nanotechnology. Current projects include a three-dimensional platform for cancer drug screening and the biologically-mediated synthesis of very high aspect ratio nano- and micro-wires. Helpflix, Jones's company, uses computational modeling software to generate easily navigated animated videos. Applications include product assembly, maintenance and repair.

Chemical Engineering



Dr. Shengnian Wang

Dr. Shengnian Wang has received $300,000 in funding from the National Science Foundation and $330,000 from the National Institutes of Health for his work on scalable nano-manufacturing of nanowire-based sensing systems.


Dr. Daniela Mainardi

ChemicalEngineering *(cont.)*

Dr. Daniela Mainardi, Associate Professor and program chair for Chemical Engineering, has been elected chair of the Transport and Energy Processes Division of the American Institute of Chemical Engineers (AIChE).


Dr. Jim Palmer

Dr. Jim Palmer, Director of Chemical and Industrial Engineering, has been appointed Interim Associate Dean of Graduate Studies for the College.

Chemistry


Dr. Yuri Lvov

Dr. Yuri Lvov, Professor of Micro and Nanosystems, has been ranked in the top 5 percent of the most cited authors in Chemistry by the American Chemical Society. Lvov and other Chemistry research faculty published 12 articles and 15 abstracts this past year.


Dr. Tom Bishop

The program is pleased to announce that **Dr. Tom Bishop**, Associate Professor of Chemistry and Physics will be serving a joint appointment with the programs.

Civil Engineering


Dr. Nazimuddin Wasiuddin

Dr. Nazimuddin Wasiuddin, Assistant Professor of Civil Engineering, experimented with innovative asphalt technology at the Joe Aillet Stadium parking lot and presented his results at the annual meeting of theTransportation Research Board in Washington, D.C.


Dr. Jean Gourd

Computer Science

Dr. Jean Gourd, Assistant Professor of Computer Science, has been named program chair for the new Cyber Engineering program. The Computer Science program has established concentrations in Cyber Security, Graphics and Game Design, Bioinformatics and Computer Engineering.


Dr. Vir Phoha

Dr. Vir Phoha, Professor of Computer Science, in collaboration with researchers at the New York Institute for Technology, has received a $450,000 grant from the Defense Advanced Research Projects Agency (DARPA) for ongoing research in keystroke authentication technologies.


Dr. Mike O'Neal

Dr. Mike O'Neal, Professor of Computer Science, assisted in securing $70,000 in funding from the Board of Regents for integrating robotics into the Computer Science curriculum.


Dr. Travis Atkison

Dr. Travis Atkison, Assistant Professor of Computer Science, also received a grant from the Board of Regents for his research on using machine-learning and data-mining techniques in the detection of malicious software.


Dr. Sumeet Dua

Dr. Sumeet Dua, Associate Professor of Computer Science, published two books this year, *Data Mining for Bioinformatics* and *Computational Analysis of the Human Eye.* Dua has been named Interim Director of Computer Science, Electrical Engineering and Electrical Engineering Technology.

Electrical Engineering

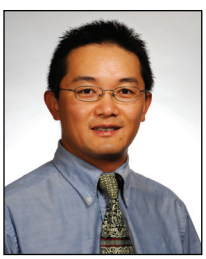
Dr. Dentcho Genov, Assistant Professor of Physics and Electrical Engineering; Dr. Sandra Zivanovic, Associate Professor of Electrical Engineering; and graduate students have filed a provisional United States patent application for semi-continuous metal dielectric composite for optoelectronic devices. This material supports broad-band surface plasmon resonances that store electromagnetic radiation at the nanoscale and acts as an effective bulk concentrator without the need of increasing the solar cell physical collection area.

Students Mindy Brock, Jake Scroggin and Jake Terracina placed second in the 2011-12 Top Dawg Competition for their senior design project, 'Integrated Waveguide System.'

Industrial Engineering

The Industrial Engineering faculty received the Outstanding Teaching Award last fall for the successful implementation of online courses for the M.S. in Engineering and Technology Management degree program. This effort helped boost enrollment in the program from 25 in 2010 to 50 in 2012.

Three Senior Design groups worked with regional companies (Lockheed-Martin, Red Ball Oxygen and Green Clinic Surgical Hospital), while one team competed in GE's National Lean Challenge (marking Tech's inaugural entry into this competition). These efforts significantly contribute to regional economic development. Dr. Stanley Cronk, Dr. John Easley and Dr. Jun-Ing Ker provided a Lean Manufacturing training workshop and a Six Sigma Green Belt training workshop to employees at Mid-South Extrusion, Inc.



Dr. Don Liu

Mathematics and Statistics

Dr. Don Liu, Assistant Professor of Mathematics and Statistics, has been awarded a National Science Foundation (NSF) research grant titled, *Collaborative Research: an Efficient Computational Approach for Wave and Surge Attenuation in Wetlands and Applications in Flood Risk Reduction.* The program was also awarded an NSF grant last year.

Mechanical Engineering

The Louisiana Tech Eco-marathon Team again took top honors in the annual Shell-sponsored competition in Houston. The team is led by Dr. Heath Tims, Dr. Michael Swanbom and Dr. Kelly Crittenden. *(See Page 15 for details)*

The program has purchased more than $100,000 worth of new equipment for the manufacturing processes lab.

Dr. Leland Weiss, Assistant Professor of Mechanical Engineering has reported a breakthrough in small-scale energy harvesting at 97 percent efficiency.

Dr. Chad O'Neal

Nanosystems Engineering

Dr. Chad O'Neal, Associate Professor of Mechanical Engineering, has been named the new program chair for Nanosystems Engineering effective fall of 2012.

The program recently added new equipment to the micro/nano teaching lab, including a carbon nanotube furnace and an optical profiler system. The purchases were made possible by the Student Technology Fee Board and the College lab fee.

Dr. Hisham Hegab received a $76,500 grant from the Louisiana Board of Regents Enhancement Fund to purchase an additional desktop scanning electron microscope.

Nanosystems Engineering graduate Katherine Elfer has received a prestigious National Science Foundation Research Fellowship and was also recognized as a Grand Challenge Scholar at spring commencement.
(See Page 8 for details)

Physics

Members of the Physics program have collaborated with other CERN researchers in the search for the Higgs boson particle. *(See Page 13 for details)*

Leadership Changes

College Bids Farewell to Longtime Friend and Announces New Associate Dean

Dr. Hisham Hegab

For the first time in more than 20 years, a new face will greet incoming undergraduate engineering and science students this fall. Dr. Hisham Hegab, Director of Nanosystems Engineering, has been named the new Associate Dean for Undergraduate Studies, taking over for Dr. Jim Nelson who retired at the end of the 2011-2012 academic year. In making the announcement, Dean Napper commented that Hegab has done an excellent job as Program Chair for Nanosystems Engineering.

"Working with others, he designed the curriculum, recruited students, established labs, obtained external funding for the curriculum development and laboratory enhancement, established a student organization, organized a functioning advisory board for the program, and wrote the ABET Self-Study which received a perfect score and initial accreditation – a remarkable accomplishment for the University and the state."

Dr. Jim Nelson

Nelson leaves Louisiana Tech after 32 years as an engineering professor and 24 years as Associate Dean of Undergraduate Studies. During that time, he led the development of the integrated teaching approach that resulted in the Science, Technology, Engineering and Mathematics (STEM) Education Research Center and the nationally recognized *Living with the Lab* hands-on, integrated engineering curriculum at Tech. Nelson and his wife, Gail, will remain in the Ruston area.

"I am honored to be named as the Associate Dean of Undergraduate Studies for the College. I am particularly excited to work in our freshman engineering curriculum and with the excellent faculty and staff we have that support it. It is truly an outstanding program that sets Louisiana Tech apart as a national leader in engineering and science education. Dr. Nelson has left a tremendous legacy with the many engineering and science educational activities our college provides, from K-12 to our undergraduate degree programs. I hope that I will be able to help our College continue to be a leader in engineering and science education."

At a Glance

Dr. Hisham Hegab

Place of Birth: New Orleans

Years at Louisiana Tech: 16

Education:
B.S. Mechanical Engineering
Louisiana Tech, 1989

M.S. Mechanical Engineering
Georgia Tech, 1991

Ph.D. Mechanical Engineering
Georgia Tech, 1994

Married:
20 years to Dr. Beth Hegab, Visiting Lecturer of Industrial Engineering, Louisiana Tech University

Children:
Three, ages 10, 13 and 15

Grand Challenge Scholars: Kate Elfer, Nishi Mehta, Megan Carroll, Dela Jakob-Wood

Grand Challenge Scholars

Four Tech Graduates Receive Prestigious Award

Four seniors completed the College's National Academy of Engineering Grand Challenge Scholars Program, joining an elite group of approximately 50 Grand Challenge Scholars graduates from around the United States. Kate Elfer (nanosystems engineering), Nishi Mehta (biomedical engineering, electrical engineering and physics), Megan Carroll (biomedical engineering) and Dela Jakob-Wood (mechanical engineering) received their degrees during spring commencement in May.

Louisiana Tech is one of only 12 universities nationwide with an active Grand Challenge Scholars Program.

"We are pleased with the success of our Grand Challenge Scholars," said Dr. Jenna Carpenter, Associate Dean of Administration and Strategic Initiatives and Professor of Mathematics and Statistics. "The program provides them with broader skillsets and motivates them to reach for even higher accomplishments that will distinguish them as some of the top engineering and science graduates in the nation."

In addition to being a Grand Challenge Scholar, Elfer received a prestigious National Science Foundation Graduate Fellowship to pursue a Ph.D. in Biomedical Engineering at Tulane University. Elfer credits her Grand Challenge experiences with helping her land the fellowship. "The Grand Challenge Scholars Program provided a solid framework for me to organize all of the various activities I have accomplished."

The Grand Challenge Scholars Program was started in 2009 by the National Academy of Engineering in an effort to better prepare engineering graduates to solve the complex issues facing the world in the 21st Century. It requires students to go beyond the regular curriculum by combining engineering and science courses with experiences and activities outside of the classroom that can help them understand the broader social, cultural and ethical implications of their technology through research experience, interdisciplinary curricula, entrepreneurship experiences, global exposure and service learning.

Leading in Graduate Education

First Ph.D. Graduate in Engineering (Education)

Dr. Krystal Corbett

In spring of 2012, Krystal Corbett earned the first Louisiana Tech Ph.D. in Engineering with a concentration in Engineering Education.

Corbett had known that she wanted to help educate future engineers since she was an undergraduate. When her advisor, Dr. Heath Tims, explained the new Engineering Education track to her, she immediately joined the program.

As part of the Engineering Education program, Corbett taught *Living with the Lab* courses and helped with the Freshman Enrichment Program, Cyber Discovery Camps and NASA Threads workshops. Through these hands-on experiences, she developed successful teaching techniques that she presented at the American Society for Engineering Education and Frontiers in Education conferences.

"The College trusted me with developing material for the classes and with teaching the students. Teaching here gave me the confidence to present material both as a teacher and as a researcher."

While Corbett is looking forward to her new position as the Cyber Innovation Center Director of Curriculum Development, she will never forget the lessons she learned at Tech. "I learned how to work as part of a team and give other people the floor, and that it's okay to make a mistake. I think it's made me a better leader and a better teacher. I believe the structure of a curriculum can make or break students."

First-Class Graduate Research

Cyber Security in the Real World

Miguel Gates

After four years of developing cyber security defenses as a member of Dr. Ratsko Selmic's micro-aerial vehicles and sensor networks lab at Louisiana Tech, Miguel Gates understands the benefits of research at the University. Through collaboration with Dr. Selmic and other professors and students, Miguel has worked on Department of Defense and U.S. Air Force projects, experimented with cutting-edge equipment, produced three conference publications, earned a summer fellowship at the Air Force Research Laboratory on the Wright-Patterson Air Force Base in Ohio, and is working on a journal publication that he expects to submit by the end of the summer. Of course, there's also the Cyber Security track Electrical Engineering Ph.D. that he hopes to earn by the end of the 2012-2013 academic year.

Gates says that he was prepared for the rigors of research at Wright-Patterson, during which he programmed unmanned micro-aerial vehicles (MAVs) to locate hidden electromagnetic sources using sensor technology.

"Working with Dr. Selmic has refined my problem-solving skills and required me to develop a more in-depth thought process for research."

As a Tech student, Gates has had the opportunity to use the same equipment as researchers in top-notch government and industrial labs. "This is not something that you would see at many other universities. I have experiences that go beyond those of my peers because of my access to it."

Once Gates earns his degree, he hopes to either join the Air Force Sensors Directorate as a research engineer or become an assistant professor of engineering.

New Advanced Degree Offered

Ph.D. in Molecular Science and Nanotechnology

Bobby Mathew, post doc, prepares a thermal evaporator for depositing a thin layer of aluminum on silicon wafers in the Nanotechnology Lab

In the fall of 2012, Louisiana Tech will offer a new doctoral degree program in molecular science and nanotechnology. This program is the first interdisciplinary nanotechnology Ph.D. degree program in the nation. It builds upon the strengths of the master's degree in molecular science and nanotechnology, which has already produced 73 graduates since its inception in the fall of 2004.

"This new degree expands Louisiana Tech's ability to train professionals and conduct research in high impact topics that often lead to technology transfer and economic development results," comments Dean Stan Napper. "It also leverages prior state, federal and industry investments in physical and human resources at Louisiana Tech."

Louisiana Tech created the new Ph.D. program to train students in experimental, theoretical and computational aspects of research in molecular biology, chemistry and physics, particularly where these disciplines intersect. It also enhances interdisciplinary applied research at Louisiana Tech in micromanufacturing and nanotechnology, and prepares students to become national and international academic, research and industry leaders.

"This program gives the College and the University the advantage of being able to include a remarkably wide range of research efforts in a single program with a coherent administration."

- Dean Stan Napper

"Scientists and engineers who study nanoscale systems assembled by nature and those who study nanoscale structures and devices assembled by humans will work under the same umbrella as a result of this innovative, interdisciplinary program," said Dr. Ramu Ramachandran, Associate Dean for Research in the College.

Nanotechnology is used in the development of many commercial products and processes. For example, nanomaterials can be used to manufacture strong, lightweight materials for use in such products as boat hulls, sporting equipment, automotive parts, and even sunscreens and cosmetics. Nanotechnology can also be used to produce space-saving insulators which are useful when size and weight is at a premium - for example, when insulating pipelines in remote places or trying to reduce heat loss from an old house.

The College of Engineering and Science has seven research centers that perform interdisciplinary, collaborative research on technological problems. Examples of this interdisciplinary research are drug delivery systems; tissue engineering; real-time environmental monitoring; trenchless installation, inspection and remediation of underground utilities; computational nanotechnology, bioinformatics and layer-by-layer assembly for the pulp and paper industry.

Leading the Way in Research

Professor's Work Selected by NASA

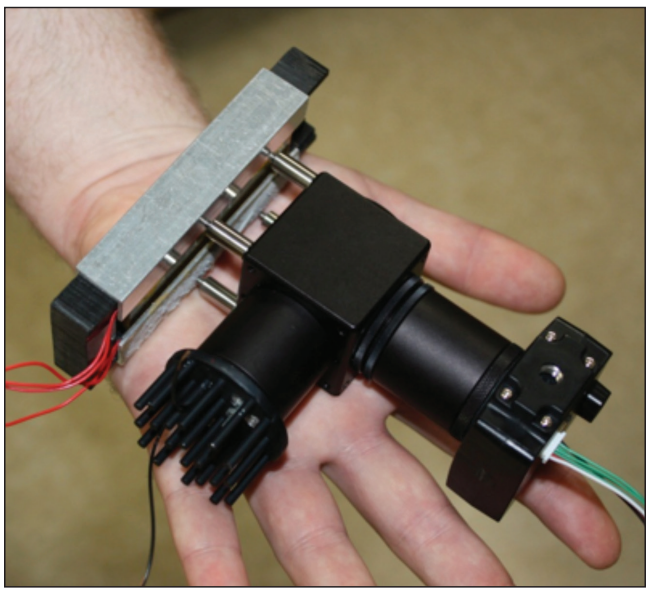
Dr. Niel Crews

Dr. Niel Crews, Assistant Professor of Mechanical Engineering and a member of Louisiana Tech's Institute for Micromanufacturing (IfM), has been awarded an Early Career Development grant by the National Science Foundation for his proposal *Thermal Gradient Microflow Calorimetry using Anisotropic Temperature Sensors.* The five-year $400,000 award will help Crews expand the scope of his research and integrate it with a series of educational and outreach activities that will involve students from the high school to doctoral levels.

In his research, Crews will explore a new, fast and highly sensitive method for measuring the extremely small amounts of heat released when molecules react. The technique uses microfluidics, which is the area of science that studies how fluids behave when confined to spaces that are many times smaller than the thickness of human hair. Crews envisions that a hand-held and self-contained device based on his technology would revolutionize many fields, such as pharmaceuticals, molecular biology and materials science.

The sophisticated equipment and facilities required to fabricate the microscopic components for such devices are available at the IfM and are regularly used by Tech researchers and their students. Randy Null, Director of IfM and Professor of Biomedical Engineering, said, "Niel's work with microfluidics and its biomedical applications is a great example of our interdisciplinary research culture and provides a platform for innovative solutions in the future."

The hand-held DNA analysis device fabricated at IfM by Niel Crews and graduate student Collin Tranter was selected by NASA for zero-gravity testing onboard a special aircraft. NASA's goal was to understand how the device behaved under conditions similar to actual deployment in space flights.



The microfluidics device fabricated at Louisiana Tech's IfM which was used in zero-gravity tests during fall 2011

Early Career Development or CAREER grants are among the most prestigious grants awarded by the National Science Foundation to support the careers of young academic researchers and help them become national leaders in research and education. Including Crews, six Louisiana Tech engineering researchers have received CAREER awards so far; five of them have been associated with the Institute for Micromanufacturing.

LeadingtheWayinSustainability

Professor Receives Award for Green Technology

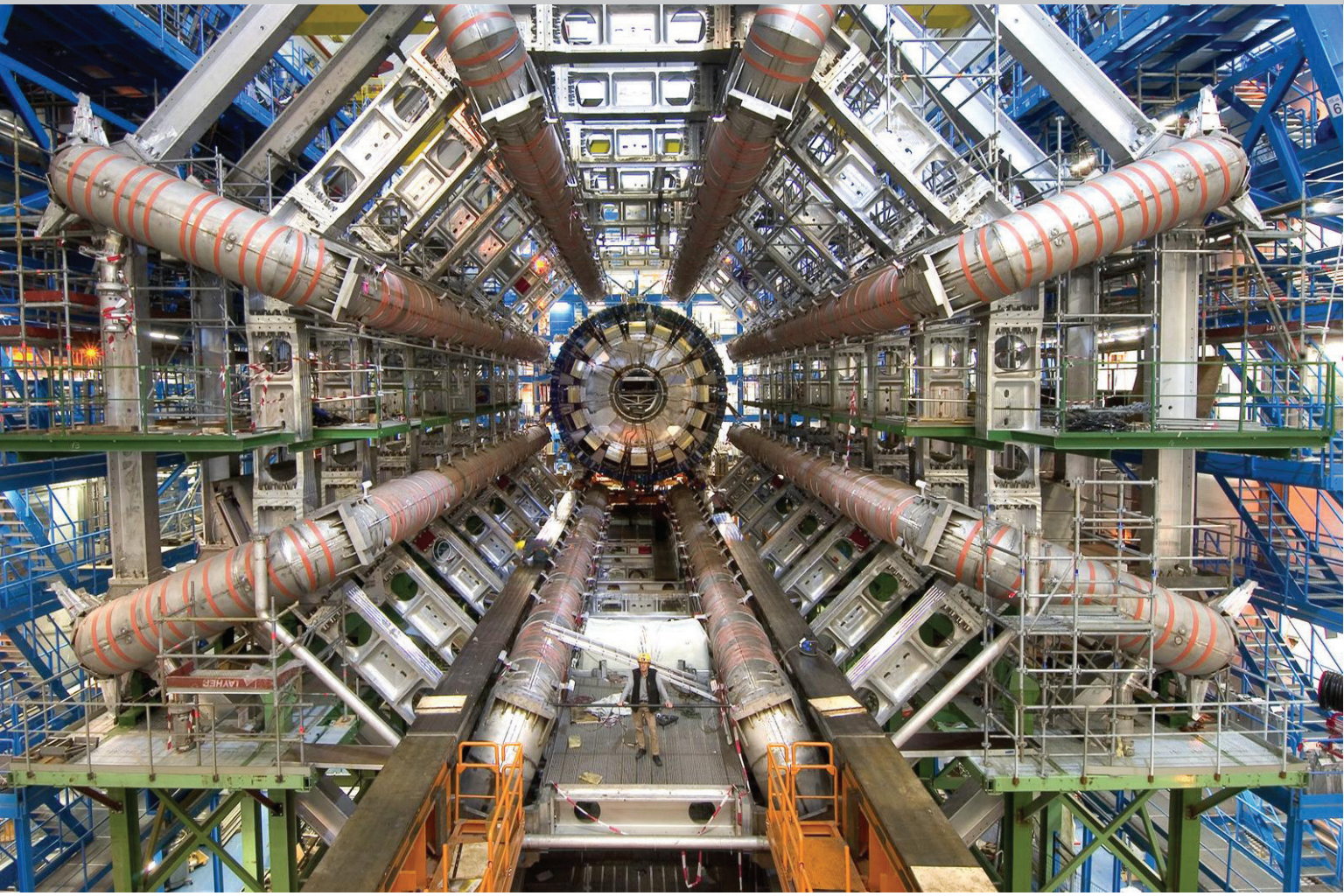
Dr. Erez Allouche

Dr. Erez Allouche, Associate Professor of Civil Engineering and Director of the Trenchless Technology Center, won Technology Product of the Year honors from the Louisiana Technology Council and the North Louisiana Economic Partnership for his innovative green geopolymer concrete technology. Allouche received the eWARD for the Shreveport/Bossier City Northern Louisiana region during a ceremony sponsored by CenturyLink. Organizers say the eWARDs are a celebration of innovation and achievement for those in the community that have made a positive impact in the technology industry over the past year.

Allouche has led a team of researchers to develop his patented geopolymer binder technology with emphasis on commercialization in the field of high end refractory materials. Allouche's unique process uses a sodium silicate based polymer to convert a waste by-product, specifically fly ash from coal-fired power plants, into a high performance refractory and corrosion resistant material. Compared to Portland cement, which is an industry standard in concrete construction, Allouche's geopolymer technology reduces the carbon-footprint by 90 percent and energy consumption by 85 percent. This green technology saves landfill space and reduces the risk of contaminating aquifers and bodies of surface water. The innovative new material has been licensed for a wide variety of commercial applications.

The Trenchless Technology Center continues to serve as one of the prime University-industry research centers of buried wet infrastructure around the world. During the 2011-2012 academic year, the Center received $1.2M in external funding and three new license agreements, and filed five patent applications.

A patch of HTGeopolymer, a high temperature concrete developed by the Trenchless Technology Center, was installed in the upper part of the rocket engine testing flame bucket at NASA Stennis in Mississippi. The sample exceeded the expectations during the testing day when exposed to a 4000˚F flame. The TTC team will be working with NASA this summer for further testing of this product.



The Large Hadron Collider - the world's largest and highest-energy particle accelerator near Geneva, Switzerland *ATLAS Experiment © 2012 CERN*

Leading the Way in Science

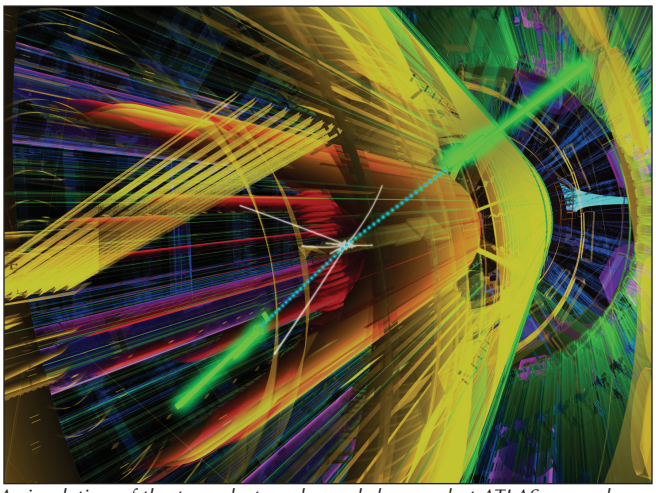
Tech Contributes to Discovery of New Particle

This past July, CERN, the European Organization for Nuclear Research, announced that a new particle had been observed, and Louisiana Tech scientists were among those who contributed to this groundbreaking discovery. Tech physicist, Dr. Lee Sawyer, is one of those scientists.

"This discovery is a momentous occasion, not just for particle physics but for all of science. It is the culmination of over 30 years of work at a number of laboratories around the world. Louisiana Tech's part in today's discovery is substantial. Members of our group, namely Dr. Z.D. Greenwood and Dr. Catrin Bernius, are part of the Higgs search team and have been specifically looking for electrically charged versions of the Higgs particle."

The full Louisiana Tech team includes Dr. Lee Sawyer, Dr. Z.D.Greenwood and Dr. Markus Wobisch; postdoctoral researchers Dr. Matthew Tamsett and Dr. Catrin Bernius; graduate students Ram Dhullipudi, Arirvan Sircar, Rajiv Subramaniam, Alex Johnson, Khadeejah Alghadeer and David Palma; and undergraduate Andrew Touchet.

Tech physicist Greenwood is equally excited. "We have independently discovered a new particle. This particle may be the long sought-after Higgs boson that was predicted by the Standard Model many years ago, or it could be a new particle that is described by some new model beyond the Standard Model of particle physics. Regardless, it is most likely the most important discovery in physics in the last 30 years and doubtlessly will open the door to new topics of research in our field for decades to come."



A simulation of the two-photon channel shows what ATLAS sees when the decay of a Higgs boson results in the production of two gamma rays

The long-sought Higgs boson has been seen as a theoretical particle until now, and is key to our understanding of why matter has mass, which combines with gravity to give an object weight.

Research Centers

Center for Applied Physics Studies

Center for Biomedical Engineering and Rehabilitation Science

Center for Entrepreneurship and Information Technology

Center for Secure Cyberspace

Integrated STEM Education Research Center

Institute for Micromanufacturing

Trenchless Technology Center

Back row, (L to R) Michael Bryant (computer systems manager), Dr. Z.D. Greenwood, Dr. Lee Sawyer, Dr. Catrin Bernius (post doc), Dr. Matthew Tamsett (post doc), Dr. Markus Wobisch, Front row, (L to R) Ram Dhullipudi, Scott Atkins, Rajiv Subramaniam (students).

Leading the Way in Student Successes

Students Receive Awards and Develop Leadership Skills

Dennis Dufrene and Jason Reich prepare the Urban Concept "Hot Rod" for competition in the diesel category.

Shell Eco-Marathon

While alumni and faculty enjoyed attending the Shell Eco-marathon this past spring in Houston and cheered on the students as they raced around the track in cars with cutting-edge designs, the faculty advisers involved with the competition saw the value of the event, not in the number of miles per gallon the cars earned, but in the lessons that were learned by the students.

"What makes the Shell Eco-marathon experience a success for us," says faculty adviser and Lecturer in Mechanical Engineering, Dr. Michael Swanbom, "is the skillset that gets past one person…it's faculty investing their time and effort into students and students investing their time and effort into other students, which results in the development of future leaders."

Although the Tech team won several awards, Dr. Heath Tims, Assistant Professor of Mechanical Engineering and another of the team's faculty advisors, says the process leading up to the event taught the students much more than how to design and build a fuel-efficient car. Senior Allie DeLeo, a driver for the team during most of her time at Tech, says she will take what she has learned from being part of the team to every job she has in the future.

> "We see the vehicles that we design as models for teaching the students of the future. This process teaches our students how to take initiative and how to problem-solve, and we see them developing leadership skills and communication skills as a result."
>
> *- Dr. Heath Tims*

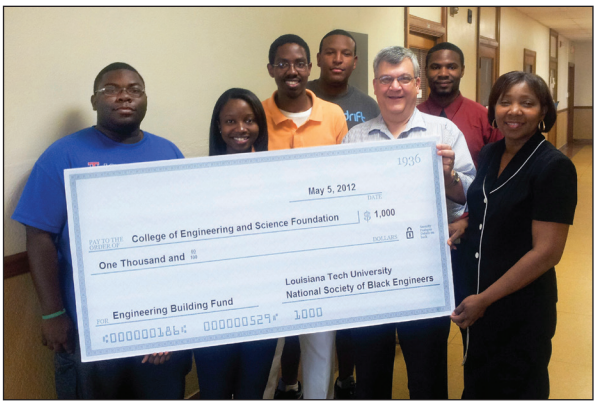
"I have learned how to work as part of a team, and I know these lessons will apply to my life after graduation. No matter where I go, there will always be someone I will need to collaborate with, and my experience on the team will ensure that I can do it."

Louisiana Tech's "Roadster" won the Urban Concept title last year with a record run of 646.7 miles per gallon. This year, Tech's new Urban Concept vehicle, "Hot Rod," took the first place award for mileage in the diesel fuel competition in Urban Concept, getting 488.7 miles per gallon. "Hot Rod" also won for best design with its retro hot rod look and red and white paint design featuring flames on each side of the front of the car. "Roadster" competed again this year and took second place in gasoline in the Urban Concept design with 321 miles per gallon. The team also won first place overall for Team Spirit. "I couldn't be more proud of our team and the way they have represented us," said Dr. Tims. "Even as we competed and worked to correct problems with our cars, we were still assisting other teams, especially the high school teams from Louisiana that competed in this year's event."

Benton High School, Bossier High School, Airline High School, Haughton High School and North Desoto High School all competed in the 2012 event and received assistance from the Louisiana Tech team during the year.

National Society of Black Engineers

The Louisiana Tech Chapter of the National Society of Black Engineers (NSBE) was named the 2011-2012 National Distinguished Chapter of the Year, the highest award any collegiate chapter can receive for being the best chapter in the nation and exemplifying the NSBE mission statement. They also received the NSBE Retention Program Award honoring their new Engineering Retention Program. In addition to the tributes, the national awards came with cash prizes totaling $10,000, which the chapter plans to use to improve its programs and community service projects.



Christopher Smith, Maya Rucks, Trevan Jenkins, Preston Johnson, Dean Napper, Tyre Davis and Carrie Kelly (NSBE Advisor)

There are more than 120 collegiate chapters of NSBE. The Louisiana Tech chapter is in Region 5, the Vanguard Region of NSBE, which includes all the chapters in Texas, Louisiana, Arkansas, Oklahoma, Missouri, Kansas, Iowa, Nebraska, North Dakota and South Dakota. The NSBE mission statement is "to increase the number of culturally responsible, black engineers, who excel academically, succeed professionally, and positively impact the community." The Louisiana Tech Chapter donated $1,000 of their national award money to the College of Engineering and Science New Integrated Education Building Fund.

ASCE Deep South Regional Conference

The student chapter of the American Society of Civil Engineers was also successful in 2012, winning first place in the concrete canoe competition at the Deep South Regional Conference at The University of Tennessee.

"The gratitude and respect demonstrated by the NSBE officers in sharing their prize money with the College, and in designating it for the drastically needed building, is humbling and honoring. We appreciate all that they do for our students and are proud of their accomplishments and attitude."

- Dean Stan Napper

Sarah Wells, Ashley Cummings, Kailey Dupre, Kori Madere, Kim Latino, Daniel Binet, Andrew Vicknair, David Chatelain, Sal Pellittieri, Devin Tant, Stephanie Kinler, Sam Tatro, Sam Petersen, Michele Schwarzlose, Claire Gauthreaux and Anamaria Torres

In addition to winning the overall first place award in concrete canoe, the team won awards in the following categories:
1st place – Final Product/Aesthetics,
1st place – Design Paper, 1st place – Co-ed Sprint,
2nd place – Women's Sprint, and 2nd place – Men's Sprint.

The Louisiana Tech steel bridge team also won various awards, including 1st place – Economy, 2nd place – Display, and 3rd place – Construction Speed.

"Outside of learning about concrete and steel, these students learned how to work as a team and communicate with professors, individuals in industry and each other."

- Jane Petrus, Student Success Specialist

The Louisiana Tech Engineering Foundation was founded in 1958 and provides much needed funds in several areas, such as scholarships and endowed Professorships and Chairs.

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2012 Distinguished Alumni

Recognizing Excellence

Louisiana Tech University's College of Engineering and Science annually recognizes those individuals from each program or discipline of the College for their leadership and professional accomplishments while serving as outstanding ambassadors for the University.

2012 Distinguished Alumni:
George Baldwin (PE78), Pete Ball (ChE61), Tom Hazelwood (IE86), Dana Landry (BE77), Bobby Lyle (ME63), Brent Parker (Ph97), Phillip Parker (CET83), Tim Petrus (EE76), Donna Reese (CS79), Thomas Sample (Math61)

Honorees not present: William Boggs Jr.(EET84), Laura Gahn(Chem85) and Kenneth Smith(CE86)

Vicki Hedden, Personnel Associate, Eastman Chemical Company, Texas Operations, and Charlotte Wilkerson, Office of Undergraduate Studies, College of Engineering and Science, Louisiana Tech, also received awards for their outstanding service to the College.

Alumnus Epitomizes the Tenets of Tech

Tower Medallion Recipient

Dr. Bobby Lyle

"Bobby Lyle is the epitome of the modern Southern gentleman. He is gracious and generous in every way, and very humble about his professional and business accomplishments." Those are the words Dean Stan Napper uses to describe Dallas resident and Tech alumnus Bobby Lyle, Mechanical Engineering, 1963. Lyle was awarded the University's highest honor when he received the Tower Medallion during spring 2012 commencement.

Napper continues, "Dr. Lyle's life's work exemplifies the Tenets of Tech. His life and career after graduation are evidence of the strong moral and ethical compass he has used to guide himself. His confidence and knowledge have earned him the respect of his peers at SMU where he has shown himself to be an enthusiastic leader."

Lyle received a Master's of Science degree from Southern Methodist University (SMU) in 1967. Since that time, he has become a leader in the Dallas community, specifically

"He is sensitive to everyone around him – wait staff, students, faculty and others. He is wise and strategic and gently offers good advice. I am pleased to know him, and grateful that the Alumni Association has recognized his position as one of Tech's most Distinguished Alumni."

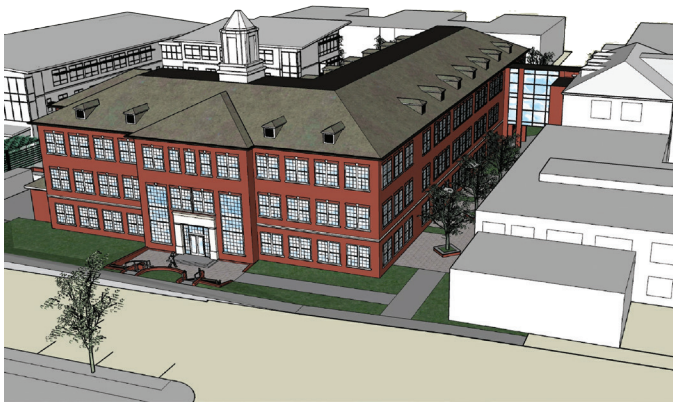
- Dean Stan Napper

on the SMU campus. His remarkable career in the oil and gas industry spans 29 years. From 1977 to 1981, he was President of Cornell Oil Company. In 1981, he formed Lyco Energy Corporation and served as its Chairman, President and CEO until the company was sold to Enerplus Resources (USA) Corporation in August of 2005. After assisting with the transition of ownership to Enerplus, he formed Lyco Holdings Incorporated in March of 2006 and currently serves as its Chairman, President and CEO. Lyco Holdings Incorporated is a private company engaged in private equity investments and ranching.

From 1970 to 1973, Dr. Lyle served as Dean ad interim of the SMU School of Business Administration and as Executive Dean from 1974 to 1975. Subsequently, he served as Trustee of the University for 23 years. In 2008, SMU named the Lyle School of Engineering in his honor. In 1976, he received a Doctor of Education degree from the University of Massachusetts where he wrote his dissertation on Leadership and Strategic Planning. He has made leadership development part of his life's work and continues to mentor young people today. He was the College of Engineering and Science 2011 Convocation speaker in Ruston, and he is the sponsor of a leadership development program at C.E. Byrd High School in Shreveport that encourages leadership in at-risk students.

Building Campaign

The following donors have committed to named spaces in the new building. Thank you for your generosity! To find how you can help, visit www.coes.latech.edu/building.



$1,000,000
Atrium - $1M (First and Second Floors)
KingTool Company, Longview, TX

$500,000
Integrated STEM Education Research Center
Tim and Elaine Petrus, Fort Worth, Texas

$300,000
Math Classroom (Third Floor)
Sophomore Engineering Classroom Lab (Second Floor)
The Eastman Chemical Company, Longview, TX

$250,000
Freshman Engineering Class Lab
Zeffrey and Mindy Lucas, Cyprus, TX

$100,000
Office of the Student Success Specialist (First Floor)
George and Jean Baldwin, Shreveport, LA

$100,000
Office of Women in Science and Engineering (First Floor)
Sandy Johnson, Houston, TX

$100,000
Outdoor Student Collaboration Area (North End)
Jim and Mary Terrill, Alexandria, LA

$100,000
Outdoor Student Collaboration Area (South End)
Ron Harrell, Houston, TX

$75,000
Student Collaboration Area
Engineering Faculty Office
O.V. 'Chip' and Carolyn Woodard, Longview, TX

$50,000
Two Engineering Offices (Third Floor)
Mike and Candy Pearson, Houston, TX

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Math Classroom (Third Floor)
Bill and Nancy Slack, Henderson, TX

$25,000
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William R. Brown IV, Houston, TX

$25,000
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Jerry Hudson, Ruston, LA

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Student Collaboration Area (First Floor)
In Honor of J.M. "Mac" McBride

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Student Collaboration Area (Second Floor)
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$25,000
Student Collaboration Area
Ed McGough, Mansfield, TX

$25,000
Engineering Faculty Office
John B. and Mary Roddey, Shreveport, LA

$25,000
Engineering Faculty Office
Bill and Sharon Bailey, Arab, AL

The College of Engineering and Science at Louisiana Tech officially launched the "Campaign for a New Integrated Engineering and Science Education Building" last fall. The building will provide learning space for first and second year engineering and science students.

The College will accept gifts and pledges through 2013.

Recognizing our Alumni and Friends for their Generous Support

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"Louisiana Tech has given me the foundation I needed to enter into the world of engineering."

- Kaitlyn McDaniel

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"It was the skilled faculty and caring atmosphere at Louisiana Tech that taught me that as an individual I could achieve my goals."

- Chris O'Rear

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College of Engineering and Science Partners with Business and Industry to Enhance Student Experience

The Industrial Partners Program provides the College with funds to bring alumni to campus to speak to students and take them on field trips to area businesses and industries. The partners also provide real-world guidance to professors in the classroom.

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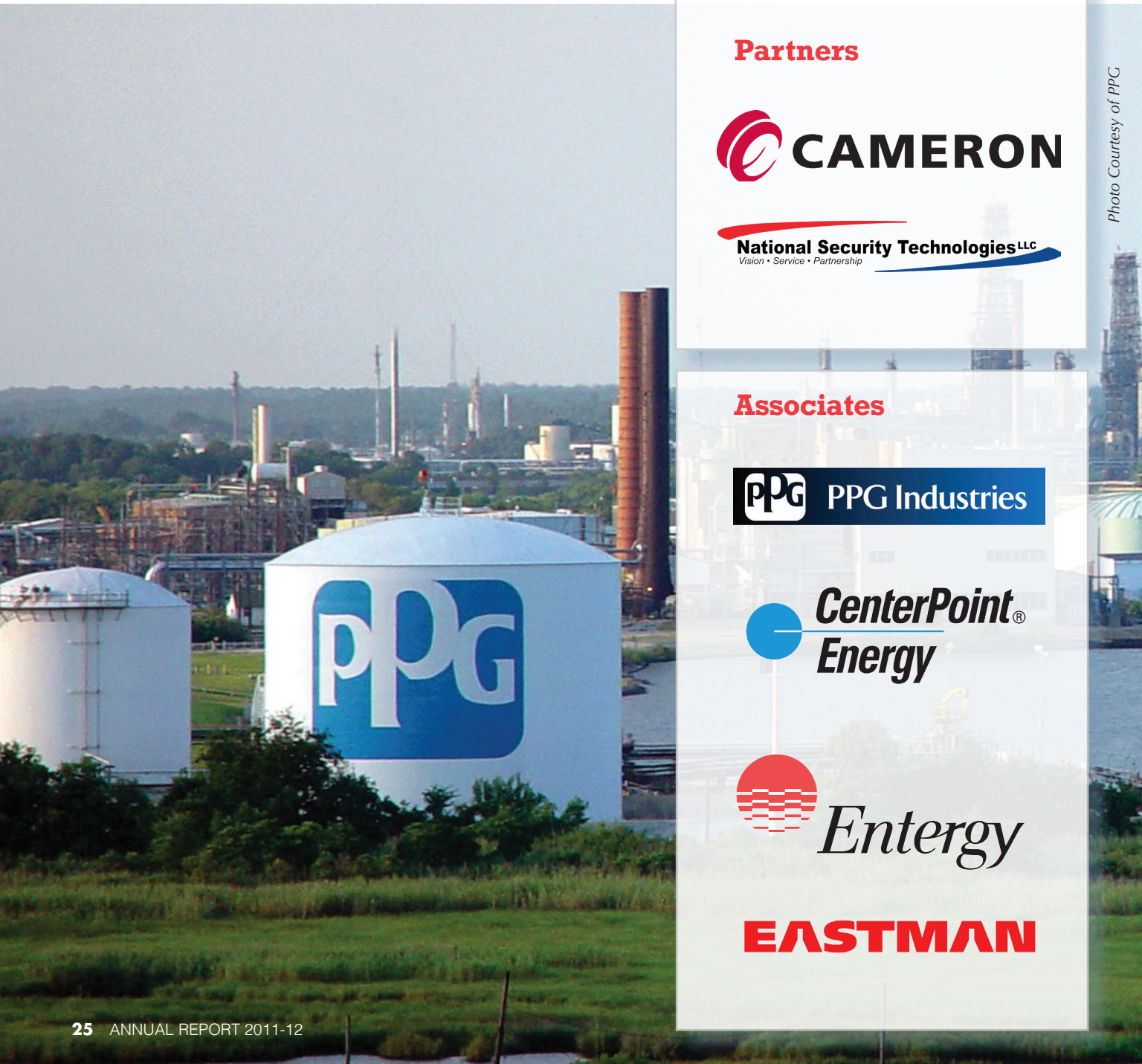

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Although Dr. Jim Nelson spent the majority of his career at Louisiana Tech as the Associate Dean for Undergraduate Studies in the College of Engineering and Science before he retired, he was also well known for his love of folk music. This past spring, he sang and played guitar at the College's annual Spring Release Crawfish Boil. One of the songs he is best known for is "Late Night Bogard Basement Blues," a tune he wrote himself.

There's work to be done while all my friends are havin' fun
I'll be lucky to be finished 'fore the risin' of the sun
Well sometimes you know it makes me feel a little used
I got the late night Bogard basement blues.

- excerpt from "Late Night Bogard Basement Blues"

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