Bloomsburg University of Pennsylvania

SCITECH

OCTOBER 2015

COLLEGE OF SCIENCE AND TECHNOLOGY NEWSLETTER ■ WWW.BLOOMU.EDU/COST ■ 570.389.5333



CUSTOM FIT

ALI LUZIK, a second-year audiology doctoral student, learns how to use a Dremel to modify a custom earmold at BU's Speech, Hearing, and Language Clinic. These earmolds can be used as hearing aids, swim plugs, musicians' earplugs and more, but sometimes do not fit a patient perfectly. BU graduate clinicians are trained to reshape earmolds on-site to make them fit comfortably in patients' ears right away.

BU professor's new book fills gap in digital forensics literature



PHILIP POLSTRA, associate professor of digital forensics, has traveled the globe to speak at events like DEF CON in Las Vegas, the world's largest annual computer security conference. Over 20,000 people attended DEF CON in 2015, where Polstra held a successful early release for his most recent book.

"We sold out the first printing in under 25 hours," he says of *Linux Forensics with Python & Shell Scripting*. The book addresses a gap in the literature on conducting forensic investigations on computers that run Linux, a free, open-source computer operating system used more than any other system worldwide.

"Windows dominates here, but outside of the U.S. there are a lot of organizations that run Linux exclusively. There is very little out there today that is up-to-date on Linux, so there's no good guidance."

Polstra's passion is for developing small, low-powered security testing devices that put lessons from his books into practice. Using affordable technology, he creates small computers that can be used in professional digital forensics investigations.

"Typically if a company wants to test their security, they authorize what we call a penetration test, or pentest," Polstra says. For a pentest, a company will hire a digital forensics investigator to attempt to hack its network and obtain its most precious information.

Polstra builds custom hardware for affordable devices to build tools like remote hacking drones, which are vital for digital forensics work.

"These tools allow you to effectively do those sorts of tests," Polstra explains. "This little device that I can build compares to a $600 commercial device that is not as flexible or powerful."

Polstra has made this creative side of his work his primary focus over the last couple of years. Sitting in his office is what appears to be a child's metal lunchbox.

"You can use this as a control console for over a dozen of those hacking drones," he says, opening the lunchbox to reveal a hidden computer and keyboard inside. "I like to build electronics for fun, but 'for fun' doesn't mean it can't be useful as well."

Instructional Technology celebrates 30 years

BU'S INSTRUCTIONAL Technology Program is celebrating its 30th anniversary this year.

Founded within the mathematics department 30 years ago by Hank Bailey, former director and professor of instructional technology, the program utilizes innovative technology to train students to become instructional designers and developers. It is a master's program that can be completed in 12 months, followed by an internship. The program was under the direction of professor emeritus Timothy L. Phillips until January 2015.

Today, the Department of Instructional Technology enrolls students from Pennsylvania and other states in on-campus and online courses. Students work with the professors and collaborate with fellow students on class projects to give them practical, employment-oriented educational experience. Collaborative tools make the online classes very interactive.

Graduates find employment with companies such as Merck & Co., Kellogg's and Strayer University, where they create training programs and online courses for employees.

The anniversary celebration starts with activities during Homecoming weekend. During a Friday open house on the second floor of Sutliff Hall, attendees will see the lab where projects are created, meet professors to learn more about the program, and view some student projects. The program will also participate in this year's Homecoming parade and the COST Tailgate Party. For additional activities throughout the year and other information, see *http://iit.bloomu.edu.*

Chemistry professor and mentor win Nobel recognition



FLORIDA STATE Gregory R. Choppin Professor Thomas Albrecht-Schmitt and his former graduate student Matthew Polinski, now an assistant professor of chemistry at BU, received the Nobel Laureate Signature Award for Graduate Education in Chemistry from the American Chemical Society (ACS) in recognition of Polinski's doctoral dissertation research under Albrecht-Schmitt's supervision. That thesis work became a major part of a paper Albrecht-Schmitt and Polinski co-authored in *Nature Chemistry* on the element californium.

Californium (Cf) is a man-made, radioactive element and part of the actinide series on the periodic table. It is wildly unstable, but Albrecht-Schmitt's team was able to show that it had unusual chemistry, marking the beginning of a new type of chemistry not previously observed. They also found it was extremely resistant to radiation damage, which could lead to further research on how to develop materials for storing radioactive elements.

Polinski's work was a key part of that discovery.

"Our research uncovered significant differences in the chemical behavior of mid- to late-actinides that we hope can be exploited both in the development of new recycling methods and advanced materials for storing radionuclides," Polinski says. "Our findings also directly challenge many longstanding models of chemistry deep in the periodic table."

The ACS announced the award in *Chemical & Engineering News,* and will recognize Albrecht-Schmitt and Polinski during a ceremony next spring. The award is one of a few nationally that honor both a student and his or her mentor for work they collaborated on leading to the student's dissertation. Most awards for research are given only to professors.

Polinski said he was "honored and humbled" to be recognized by the ACS.

"Without the support and guidance of a top-notch research adviser and the help of an astute research team, none of this would have been possible," he said. "I am very fortunate to have worked alongside a world-class group of colleagues."

Safeguarding athlete's brains



A HOT TOPIC in athletics today, at all levels, is the matter of concussions and their effect on the brain. BU's new Institute for Concussion Research and Service is a collaboration between interdisciplinary faculty and students working to better understand concussions.

Under the supervision of Joseph Hazzard, assistant professor of exercise science, the institute has two main goals: to give medical professionals a better understanding of concussions, symptoms and their outcomes, and to provide a service to the medical community that will assist them in making better return-to-play decisions. The two-part portable testing system, which is unique to BU, gives Hazzard and his team the ability to travel to the athletes.

"We are working with the Berwick High School football and girls soccer teams," Hazzard says. "We are also testing players from Danville Area High School, along with athletes from Bloomsburg University."

COST welcomes Dean Aronstam



ROBERT S. ARONSTAM became dean of the College of Science and Technology on July 1, arriving from Missouri University of Science and Technology where he was professor and chair of the department of biological sciences. He also was director of a non-profit service that provides clones of human proteins, Missouri S&T cDNA Resource Center, an entrepreneurial venture he brought to BU.

Aronstam's varied experience includes research director and senior scientist with Guthrie Research Institute, Sayre, and faculty member at the Medical College of Georgia. He holds a bachelor's degree from Columbia University and completed graduate education at the University of Rochester, Center for Brain Research. His post-doctoral training was conducted at the University of Maryland, Department of Pharmacology and Experimental Therapeutics.

"Bloomsburg University is filled with creative, productive and caring people," Aronstam says. "Bloomsburg offers a challenging and supportive academic community that values learning, discovery and service, and is vitally concerned with the success of its students, faculty and staff. I am very, very happy to be here, and proud to be a member of this community."

Exercise science major works with top athletes



ANAS MAHMOUD, an exercise science major focused on strength and conditioning, worked closely with top athletes from around the country this past summer. As an intern at Cornell University, he gained knowledge and helped with training programs for athletes within 13 Division I sports.

After his adviser, Swapan Mookerjee, informed him about internship opportunities, Mahmoud chose Cornell because it directly correlated with his desired career path.

"I want to be a strength and conditioning coach for a university with top Division I athletes, and Cornell knows exactly how to produce those caliber type of athletes in the most efficient way possible," he says.

Helping instructional design students become entrepreneurs



INSTRUCTIONAL TECHNOLOGY students attended a two day camp this summer where they applied thinking skills to tackle the "big idea" of how to disrupt the traditional instructional design process and start impactful businesses in their field. During the Entrepreneurial Workshop for Instructional Designers, conducted by education professional Mark Burke '99M, students had discussions with entrepreneurs and professionals in the instructional technology field, including Jan Bakker, co-founder of Quizworks; Connie Malamed, founder of eLearningCoach; Deborah Thomas of SillyMonkey; Jim Kiggens of 2KLearning; and Will Thalheimer, founder of Work-Learning Research.

Students gained insights into both the creative and business aspects of being an entrepreneur of instructional design and technology, learning the ins and outs of starting and operating a business, working with clients and responding to their needs, as well as product development and the importance of creativity and innovation in the field.

EGGS research gets most views

CYNTHIA VENN, professor of environmental, geographical and geological sciences, had the most-viewed article from BU on the popular website *ResearchGate*. Venn's research is related to the gooseneck barnacle, a sea animal that was found on the flaperon of downed Malaysia Flight 370 when it washed ashore over the summer.

Venn believes that this connection is what led her article, *Evaluation of the floating time of a corpse found in a marine environment using the barnacle Lepas anatifera L. (Crustacea: Cirripedia: Pedunculata)*, to become so popular recently.

ResearchGate is a social media website with over 7 million members that allows scientists and researchers to share their research and connect with and follow other researchers with similar research interests.

Clinical supervisor named HearStrong Champion



CHRISTI MONCAVAGE, clinical supervisor of audiology, was named the Hearstrong Foundation's Champion of the Month for August 2015. The Hearstrong Foundation celebrates individuals worldwide who have conquered hearing loss with a determined spirit, focused mind and unwavering heart.

The foundation describes Moncavage as "an accomplished doctor of audiology, an engaged supervisor of graduate students, and a passionate hearing healthcare provider." A graduate of the Arizona School of Health Sciences, she uses her talents and experiences as someone with hearing loss to help her students better understand unique hearing needs and to relate with her patients and better communicate with them about their treatment.

Kapp gives keynote



KARL KAPP, professor of instructional technology, delivered the closing keynote at the Allen Experience in Denver on Oct. 6. The Allen Experience is a premier instructional design training event co-located with Training magazine's Online Learning Conference.

Kapp, whose main focus is on interactive learning and gamification, spoke about what instructional designers need to do to think like game designers and create epic learning experiences.

He also completed his third Lynda.com course, *Core Strategies for Teaching in Higher Ed,* which focuses on what it takes to be a successful professor in an institution of higher education.

CoST Career Day

THIS FALL'S College of Science and Technology Career Day gives students access to professionals in their chosen fields. Career Day provides students with exposure to career, internship and research opportunities as well as a variety of graduate study programs. They are given the chance to interact directly with alumni, business representatives and other professionals in science, technology, engineering and math (STEM) fields.

Career Day includes a job fair that features a variety of business and organizational booths. Professional panels and discussion sessions allow students to ask career-related questions, and a free networking lunch is provided.

Sparking an international radiation safety discussion

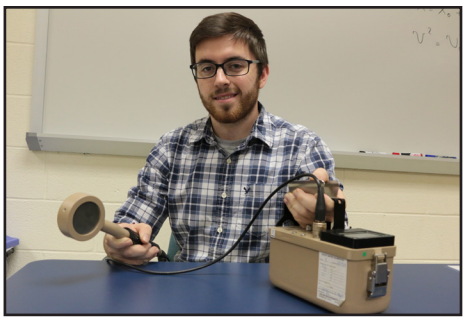
AUSTIN OLSON, a senior health physics student, traveled to Indianapolis this summer to present his findings at a meeting of the Health Physics Society (HPS), attended by health physics professionals from around the world. He also recently presented his research at the 14th annual Penn State Radiation Safety Roundtable. Olson looked at how effective damaged lead aprons could be in protecting medical personnel from dangerous radiation.

Lead aprons protect both doctors and patients from radiation, but current research on the protective abilities of damaged aprons is limited. For this reason, the inspection process for aprons is strict to the point where even aprons with only very small amounts of damage are simply disposed of to avoid risk, he says.

"If someone's wearing an apron with damage, how much radiation are they actually getting, and is that enough to cause any sort of harm to them or even get close to the legal limit?" These are the questions Olson wanted to answer with his research. If the need for disposal is removed, hospitals could save a lot of time and money, he believes.

"We want to show that if the damage is not big enough to be seen by examining it quickly, then it's not big enough to worry about," says Olson.

Olson's experiment involved cutting and punching holes in an apron, then using small devices that detect radiation exposure to measure "scatter," X-ray radiation a doctor may be exposed to after it bounces off of a patient. The devices measured the amount



of radiation allowed through holes of various sizes.

"We want this presentation to spark discussions," he says. "That way, people can start thinking of real ways to fix this problem."

Olson's research is set to be published in the *Operational Radiation Safety Journal,* one of two major health physics safety journals sent to members of the HPS, by the end of 2015.

COST BRIEFS

EGGS Student Presenters

A number of undergraduate students in the department of environmental, geographical and geological sciences will present their research in November at the annual meeting of the Geological Society of America in Baltimore. They are:

- Zach Maza, "Not Just Fool's Gold: XRF and SEM Analysis of the Effects of Pyrite on a K-PG Outcrop"
- Frank Napkora and Audra I. Mitchell, "A sedimentological assessment of the Effectiveness of the Pine Forest acid mine drainage treatment system, St. Clair, Schuylkill County, Pa."
- Audra I. Mitchell and Frank Napkora, "Anoxic Limestone Drain – Remediation of Pine Forest Mine in St. Clair, Pa."
- Matthew M. Mattesini, "Using Water Levels and Salinity to Characterize the Flow Regime in a Tidally Restricted Mid-Atlantic Salt Marsh in Greenbackville, Va."
- Dan Tompkins, "Anthropogenic Effects on Soil and Stream Chemistry in the Middle Schuylkill River Watershed"

Mattesini will also present a talk, "Vegetation cover and groundwater monitoring of a tidally restricted salt marsh in Greenbackville, Va.," at the biennial meeting of the Coastal and Estuarine Research Federation held in Portland, Ore., from Nov. 9 to 12.

URSCA Research

These COST students participated in Undergraduate Research, Scholarship and Creative Activity (URSCA) funded research this summer: Tyler Behrent, Kira England, Olivia Fry, Hovanes Gulasarian, Angela Hess, Rachel Johnson, Timothy Keiper, Dean Kolb, Devyn Lesher, Morgan Lewis, Matthew Mattesini, Lexie Mendall, Katherine Mullen, Daniel Pany, Jean-Nicole Place, Bryan Semon, Eric Thompson, Daniel Tompkins, Stephan Vajdic, Tyler Walter, Owen Wickenheiser, Jennifer Young. These students also presented on Aug. 4 at the fifth annual Susquehanna Valley Undergraduate Research Symposium at Bucknell University.

Kaminski Scholarship

Alana O'Rourke, an environmental geoscience student, was awarded the $500 John Kaminski Memorial Scholarship by the Penn-Anthracite section of the Society for Mining Engineers. She attended a dinner in Conyngham at which she spoke about what led her to pursue a degree in environmental geoscience.

Water Education Day

Jennifer and Christopher Whisner, both professors of environmental, geographical and geological sciences, participated in the Columbia County Water Education Day at Briar Creek Lake in September. More than 500 area middle school students learned about the source of their water and actions they can take to help keep it clean and plentiful for future generations. The event was sponsored by the Columbia-Montour Coalition for Source Water Protection.

Bermuda Research Experience

Jenni Tuomisto, an environmental geoscience student, was accepted for National Science Foundation Research Experience for Undergraduates at the Bermuda Institute for Ocean Sciences. She is spending 10 weeks of the fall semester in Bermuda working with scientists from the Woods Hole Oceanographic Institution studying open ocean zooplankton.

For news about research, presentations and publications, see bloomu.edu/research_scholars.

Bloomsburg UNIVERSITY

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