

The COSM Newsletter

Spring 2017

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The COSM Newsletter

Spring 2017



COSM News

Congratulations Allison Rainey and Michelle Tremblay



The 2017 Award of Merit Winners (L-R): **Allison Rainey (Senior Administrative Assistant, Military Science/ROTC)**, Charish Williams, Gwen Jackson, Jody Rushing, Kenneth West, Robert Hisey and Natadra Barr. (Not Pictured: Michelle Tremblay)



Ms. Michelle Tremblay, laboratory supervisor in the Department of Biology, received one of eight 2017 Merit Awards at the Staff Service and Awards of Excellence Ceremony in January! Michelle was co-instructor for a study abroad course to Ecuador last summer and is pictured on the far left, back row.

Grants

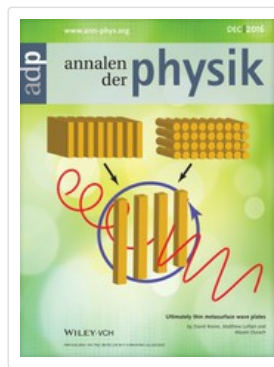
- Subhrajit Saha, Ph.D.**, Assistant Professor of Biology, has received the Georgia Research for Academic Partnership in Engineering (GRAPE) grant for the year 2016. The competitive and prestigious GRAPE grant is sponsored by the Georgia Power Company annually to support research in engineering and technology. Dr. Saha received this external grant (\$80,000) as a solo research investigator in the proposed project and his proposal was the only one from Georgia Southern to be funded by Georgia Power in the year 2016. His research proposal titled, '*Indoor agriculture: A comprehensive analysis of energy-use, environmental cost & benefits, production economy, and crop health, nutrition & yield*' would investigate a wide range of aspects in both the soil-based and soilless (hydroponics) crop production. With the changing climatic patterns, increasing population and shrinking land and water resources, indoor agriculture is gaining popularity widely. Dr. Saha's timely research may contribute to the promotion and improvement of indoor agricultural industry in the southeastern United States.
- Monique Aller, Ph.D.**, Assistant Professor in the Department of Physics, was awarded a NASA Astrophysical Data Analysis Program (ADAP) grant entitled *Connecting to the Distant Universe*, which will take place from May 2017-May 2020. This grant will extend Dr. Aller's studies of the role of interstellar dust and gas in the distant universe to more local galaxies.



Publications

- Maxim Durach, Ph.D.**, Assistant Professor in the Department of Physics, recently had a publication co-authored with two Physics Department graduate students **David**

Keene and **Matthew LePain**. It was also selected for the cover of December 2016 issue (issue #528) of one of the oldest physics journals *Annalen der Physik* (published since 1799; famous for Einstein's Annus Mirabilis papers). The cover picture was featured on the *Annalen der Physik* website for the entire month. The cover of *Annalen der Physik* is highly coveted. It is instantly recognizable and associated worldwide with the highest quality research from the top researchers in the field.



- **Lance Durden, Ph.D.**, Professor of Biology, was recently published, this making his **300th peer-reviewed publication!** Scott, J. D., Foley, J. E., Young, M. R., and **Durden, L. A.** 2017. First report of a blacklegged tick, *Ixodes scapularis* Say (Acari: Ixodidae), parasitizing a raptor in Canada. *Systematic and Applied Acarology*. 22: 208-216. doi.org/10.11158/saa.22.2.5
- **Stephen Greiman, Ph.D.**, Assistant Professor of Biology, along with colleagues from Kansas State University, University of North Dakota, University of New Mexico and the USDA, published an article in the [2016 NOAA Arctic Report Card: Shrews and Their Parasites: Small Species Indicate Big Changes](#).
- Faculty and former students in the Department of Chemistry and Biochemistry were also recently published: Ghosh, D.; Rhodes, S.; Winder, D.; Atkinson, A.; Gibson, J.; Ming, W.; Padgett, C.; Landge, S. M.* Aiken, K.* ["Spectroscopic Investigation of Bis-Appended 1,2,3-Triazole Probe for the Detection of Cu\(II\) Ion"](#) *J. Mol. Struct.*, **2017**, 1134, 638-648.
- A publication co-authored by Physics Major **Reed Hodges**, along with two Physics faculty titled "Optical Neutrality: Invisibility without Cloaking", was recently published by Optics Letters (<https://www.osapublishing.org/ol/abstract.cfm?uri=ol-42-4-691>, Reed Hodges, **Cleon Dean, Ph.D.**, and **Maxim Durach, Ph.D.**, "Optical neutrality: invisibility without cloaking," *Opt. Lett.* 42, 691-694 (2017)). The publication received 4 out of 4 positive reviews in the first round; citing one of the reviewers: *"The work presents interesting results and discussion with respect to optical neutrality as a viable route to invisibility. We believe these ideas should have an impact in the optical community in the area of invisibility; due to the elegant simplicity of the author's approach, experimental verification should be viable in the near future."*

Department of Biology

Biology Grad and Undergrad Student News

Students in the Department of Biology continue to make the department proud with their accomplishments and awards.

Graduate student **Ricky Orton** received a Society of Comparative Biology and a Sigma Xi grants-in-aid of research. Ricky is mentored by **Lance McBrayer, Ph.D.**

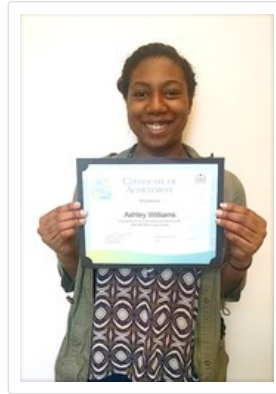
In January 2017, Georgia Southern was represented at the Annual Meeting of the Georgia Chapter of the American Fisheries Society, held in Statesboro. **Jackson Sibley** won the annual GA Chapter AFS Scholarship. **Rebecca Scott** and **Garret Strickland** won 1st and 2nd place, respectively, in the oral presentation competition. These graduate students are mentored by our Fisheries Biologist, **Jamie Roberts, Ph.D.**

Undergraduate student **Shamta Warang** received a second place award for her poster presentation on biomarkers of pesticide resistance and pathogen carriage by human head lice. **Shamta** and **Megan Mears** were part of a team who won third place in the Microbial Trivia competition. These students were mentored by Biology Adjunct **Professor Marina Eremeeva, Ph.D.** (Jiann-Ping Hsu College of Public Health).

Chandler Scholars

We are happy to announce our newest **Chandler Scholars: Bolanie Osi Efa, Mary Gregory, Reid Loveless, Madison Kelly, and Shonterious Williams**. These undergraduates receive salary and supply money that allows them to do a year of research in the lab of a faculty mentor. They also receive travel funds to present their research at a professional meeting.

Outgoing **Chandler Scholar Ashley Williams** won the award for outstanding presentation at the Annual Biomedical Research Conference for Minority Students in Tampa, FL. Ashley works in the lab of **Vinoth Sittaramane, Ph.D.**



Biology Alumni: Points of Pride

Graduate Student alumna **Alicia Reigel** is now a Ph.D. student at Louisiana State University. She was recently featured in *The Pursuit*, the LSU College of Science's official blog. Read the article [From the Caribbean to LSU, Alicia Reigel Dives for Science](#)



Undergraduate alumna **Devon Campbell** is working at the Maui Bird Conservation Center in Hawaii.

Graduate student alumna **Jan Mackinnon** (second from right) was recently recognized for research and innovation in coastal conservation by the nonprofit One Hundred Miles. Jan is currently Program Manager for the Coastal and Ocean Management Program for the Georgia Department of Natural Resources.



Undergraduate alumnus **Alex Troutman** is a long way from home and warm Georgia winters. He's working for the US Fish & Wildlife Service in New Richmond, Wisconsin. Congratulations Alex! Bundle up! Makes us glad that we skipped winter this year in Statesboro.

Biology Faculty News

Faculty were busy Fall Semester with teaching, research, service and outreach activities.

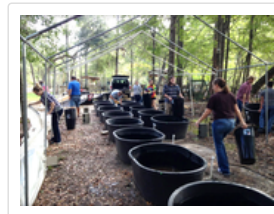
Alan Harvey, Ph.D.'s short film - "Tom: a Love/Hate Story" about a territorial Eastern Towhee that discovers his reflection was named Best Documentary at the recent Southern Shorts

award ceremony. This film is running on our large Christie Tile Display in the lobby of the building. Dr. Harvey does a great job making videos of the department's research programs and accomplishments.



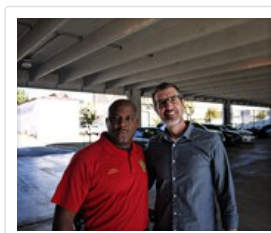
Members of the Biology Department are nearing the end of an intensive 2-year survey of vertebrate diversity on campus. Recently they were sampling an ephemeral pond on campus. In this photograph, **Christian Cox, Ph.D.**, shows off his catch of salamander larvae to graduate students **Rebecca Scott** and **Albert Chung**.

Hurricane Matthew was an unwelcome visitor in October. Students and faculty had to scramble to secure field experiments. In this photograph, students and COSM staff are tearing down a mesocosm experiment on the bank of the Ogeechee River.



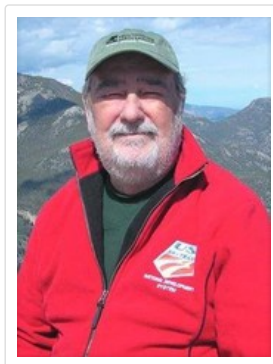
The Department of Biology also assisted other COSM departments and the Center for Wildlife Education in temporarily housing sea turtles and birds from the Georgia Sea Turtle Center. We appreciate all the faculty and students who came out to assist, and who continued to help out as the hurricane passed through our area.

Ms. Michelle Tremblay and **Ed Mondor, Ph.D.**, conducted a Forensic Entomology workshop at the Albany Police Department in Albany, GA over the Thanksgiving Break with funding from a Service Learning Grant that was sponsored by the Office of the Provost.



Remembering Dr. John E. Averett

John E. Averett, Ph.D., Professor Emeritus of Biology, was born on April 19, 1943 and passed away on January 1, 2017. He was a scientist, conservationist, scholar, husband, father, grandfather, Dallas Cowboy's fan, always a Texan (even in Omaha), and had a great sense of humor--a teller of stories. He received his B.S. and M.A. degrees from Sul Ross State University and his Ph.D. from the University of Texas. He held professorships and chair positions at the University of Missouri-St. Louis and Georgia Southern University. He held numerous guest and visiting professorships, including Guest Professor, Univ. of British Columbia, Guest Professor, Univ. Heidelberg, Visiting Professor, Univ. of Wyoming, and Research Associate, Missouri Botanical Garden. He was the Director of the National Wildflower Research Center (now the Lady Bird Johnson Wildflower Center) in Austin in 1988. His research specialty was on plant systematics and evolutionary biology, particularly for the family Solanaceae (nightshades), and he continued to publish after his retirement in June of 2009. He came to Georgia Southern during a period of tremendous growth and change and oversaw major changes to the curriculum and increased departmental assets. A partial list of awards includes: Editor of the journal *Wildflower*, Alexander von Humboldt Research Fellow, Visiting Scientist- Smithsonian Institution, and Vice President, Phytochemical Section, Botanical Society of America. We will miss John's wit and passion for science.



The Department of Chemistry and Biochemistry

NSF-REU CEMITURE Program represents at Fall 2016 NOBCChE



Front [l-r]: Karelle Aiken (PI, CEMITURE), Deanna Lazare (CEMITURE), Ria Ramoutar (Co-PI, CEMITURE), Sandra Njemo (GS Undergrad. Res.), Leah Bartel (CEMITURE), Richard Govan (GS MS-APS Candidate); Back [l-r]: Brittney Terry (CEMITURE), Daniel Hunter (GS MS-APS Candidate), Jacob Fussell (CEMITURE), Ryan Bujol (CEMITURE), Rochelle Prokupets (CEMITURE), Omniya Alomainy (GS MS-APS Candidate)

Once again, the Chemistry Department and its NSF-REU program, [CEMITURE](#), were well represented at the fall 2016 conference for the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers ([NOBCChE](#)). Distinguished recognitions were earned by Ms. Leah Bartel (2016 CEMITURE, mentor: Dr. Eric Gato) and Ms. Brittney Terry (2016 CEMITURE, mentor: Dr. Evans Afriyie-Gyawu). Ms. Terry received the American Chemical Society (ACS) Student Conference Award and Ms. Bartel obtained both the American Chemical Society (ACS) Student Conference Award and the Biophysical Society Award. All student-presenters received the NOBCChE Advancing Science Conference Grant from the national organization.

Ms. Bartel said of her experience, *"My overall impression was the NOBCChE conference was well organized and helped connect the attendees to valuable resources that would further their career. I also found it inspirational to be around people who were enthusiastic about their work and excited to share their experiences with others."* Dr. Ria Ramoutar (Co-PI, CEMITURE) also noted *"All our students attending the conference found it beneficial and enjoyable presenting and networking with the graduate school recruiters, exhibitors and other professionals. They made valuable connections."*

The CEMITURE program is in collaboration with i2STEMe and faculty from Chemistry, Biology and the College of Public Health. In summer 2016 the program hosted eight participants from across the US. These participants engaged in 10 weeks of intensive research and professional and social activities alongside Georgia Southern Chemistry's student researchers.



Chemistry and Biochemistry faculty and organizations (AXΣ, NOBCChE, SAACS) members

Science Olympiad Tournament 2016

Faculty in the Department of Chemistry and Biochemistry hosted three Science Olympiad challenges for middle school students. The Science Olympiad tournament was sponsored by i2STEMe on February 20th, 2016 at Georgia Southern University. Members from the three chemistry student organizations, NOBCChE, SAACS and AXΣ volunteered to work with faculty to coordinate the challenges. **Jim LoBue, Ph.D.**, led the Bottle Rocket competition while **Laxman Pandey, Ph.D.**, oversaw the Experimental Design challenge. **Ria Ramoutar, Ph.D.**, supervised the Crime Busters event with Jaliyah Holmes from NOBCChE who was instrumental in coordinating this challenge. AXΣ, NOBCChE and SAACS volunteers were responsible for recording completion times, monitoring the student competitors, scoring and ranking the teams for awards given out at the closing ceremony.

Middle-school students competing in Science Olympiad events



Bottle Rocket: Ready for take-off



Crime Busters: Catching the bad guys



Experimental Design: Fun with science

The Department of Geology and Geography

Geology and Geography prepares for New Graduate Program



Dolomite Alps in Italy

The Department of Geology and Geography is thrilled that the new Master of Science in Applied Geography program will commence in fall 2017. The Master of Science degree with a major in Applied Geography will prepare graduates for advanced study, meaningful employment, and life-long learning, provide students with hands-on learning opportunities, and help students from a variety of academic disciplines apply their classroom knowledge to real-world situations. Since the University System of Georgia's Board of Regents approved the program in spring 2016, Geography faculty have been hard at work preparing the curriculum and recruiting students to be part of its first cohort. With the increasing demand for readily available, consistent, accurate, complete, and current geographic information and the widespread availability and use of advanced geospatial technologies, myriad career opportunities exist for graduates of a Master's program in Geography with an applied focus. Indeed, the U.S. Bureau of Labor Statistics projects that overall employment demand for geospatial technologists will grow by a minimum of 20% over the next decade. The program will educate and train students for professional opportunities in a multitude of fields including: regional and transportation planning, the geospatial-intelligence industry, market analysis, meteorology/climatology, natural and human-made hazards, public health, logistics, resource

management, and sustainable development. Specifically, the M.S. in Applied Geography offers students a diverse array of field experiences including:

- Analyzing climate change impacts on barrier islands
- Utilizing geospatial data and methods to address urban and environmental issues
- Mapping and monitoring coastal habitats using remote sensing data
- Applying urban forestry to meet sustainable development goals
- Examining ecotourism, sustainability, and environmental change in Latin America
- Developing warning systems for hydrometeorologic hazards in the Dolomite Alps in Italy

Please share this fantastic news about the growth of the College of Science and Mathematics and have any interested parties contact: Rob Yarbrough, Ph.D., Graduate Director, M.S. in Applied Geography Program at ryarbrough@georgiasouthern.edu.

Geology and Geography Student News

Graduate student **Preston Pound** won the Outstanding Student Presentation Award at the American Geophysical Union's Fall meeting. AGU is the world's largest meeting of geoscientists and this award is earned by <5% of the student presentations. Preston presented the first estimate of how many microbes are washed from canopy surfaces into soils during rain storms using cutting-edge molecular counting techniques (flow cytometry). Based on storm samples (that even included tropical storms), he estimated 2.6 quadrillion cells per hectare are fluxed to soils from canopies by rainfall each year! If these cells are viable, this finding raises many questions, like: Could trees inoculate their soils with (beneficial or pathogenic) microbes? If dead, Preston's findings indicate that a major source of nutrients to soils has been absent from past nutrient budgeting in forest ecosystems. Preston is mentored by **John Van Stan, Ph.D.**



The Department of Mathematical Sciences

Math Faculty News

Alex Stokolos, Ph.D., (PI) and **Jiehua Zhu, Ph.D., (co-PI)** received a National Science Foundation grant to host an Approximation Theory conference in May. The conference will be held at the Coastal Georgia Center in Savannah and will feature sessions dedicated to our late colleague, **Yingkang Hu, Ph.D.**

A special session at the Croatian International Conference on Operations Research was held in honor of **Goran Lesaja, Ph.D.**'s 60th birthday.

Yan Wu, Ph.D., has been serving as an adjunct research professor at University of Manitoba. He visited **Nariman Sepehri, Ph.D.**'s robotic and hydraulic labs during the first two weeks of January to work on a number of projects with Dr. Sepehri and his research associates. These activities included fractional-order controller design for hydraulically powered actuators, ADRC mechanism applied to automatic steering for autonomous vehicles, fast algorithms for tuning controller parameters, and multiresolution analysis applied in the detection of internal leakage in electro-hydrostatic actuators. Dr. Wu is also co-supervising a master student and a Ph.D. student in their Mechanical Engineering program.

Five of our faculty (**Jimmy Dillies, Ph.D.**, **Alina Iacob, Ph.D.**, **Emil Iacob, Ph.D.**, **Enka Lakuriqi, Ph.D.**, and **Saeed Nasseh, Ph.D.**) attended the AMS Southeastern Fall Sectional Meeting in Raleigh, NC. Each of them organized a special session at the meeting.

Four faculty (**Yi Hu, Ph.D.**, **Drew Sills, Ph.D.**, **Alex Stokolos, Ph.D.**, and **Hua Wang, Ph.D.**) and two students (Moriah Gibson and Charles Lanning) attended the INTEGERS conference at the University of West Georgia in October.

Our faculty had 22 journal articles published in the fall. Many of these papers were authored with undergraduate and graduate students.

Math Student News

Eight students traveled to the Georgia Mathematics Conference in October. They were sponsored in part by the Student Government Association, the MAA Student Chapter, and the Department. These students had the opportunity to meet with current teachers around the state, some of whom are also former Georgia Southern students.

Four students competed in the annual Putnam Mathematical Competition in December and three students competed in the Mathematical Contest in Modeling in January. The results from these competitions will be announced later in the spring.

Two former graduate students are working toward Ph.D.'s. Nic Smoot is studying at Johannes Kepler University in Austria and James Diffenderfer is at the University of Florida.

Math Department News

The Fall CLEC Lecture was held in November. **Igor Belykh, Ph.D.**, from Georgia State University gave the talk "Our Brains From a Complex Network Perspective".

We look forward to hosting **Doron Zeilberger, Ph.D.** as our Distinguished Lecturer for the Spring semester. Dr. Jimmy Dillies and the Colloquium Committee are working on preparations for Dr. Zeilberger's talk on March 23rd.

The 29th Annual Invitational Mathematics Tournament will be held on February 25th. Approximately 800 middle and high school students will come to campus to compete in this event. In addition to the student test takers, there will be approximately 70 teacher sponsors, 150 Georgia Southern student workers, and most of the faculty in the department helping to make this event possible. Many thanks to Dr. Chasen Smith and his committee for their work on this event.

The Department of Military Science

Georgia Southern University hosts ribbon cutting ceremony for new Military Science building



Ranger Challenge takes 2nd Place at 6th BDE



The Department of Physics

Physics Student News

Over the past semester, the **Society of Physics Students** has maintained an active outreach program, including assisting with planetarium shows, the Georgia Southern University STEMfest, and the Majors Fair. The group will be visiting the Mill Creek Elementary and Julia P. Bryant Elementary Schools later this month to assist with their STEMfest events. The SPS members also participated in the homecoming parade and events, where Elizabeth Ashwood ran for homecoming queen, and the SPS was named 1st runner-up for the banner competition and 1st runner-up for the homecoming float.

In addition, the SPS members have continued to maintain a community garden plot, which last summer and fall provided a bounty of vegetables for the members. In the immediate future, the members will be going to Kennedy Space Center over Spring Break, and to the Vogtle Nuclear power plant in late April. They are also organizing a trip to view the August 2017 Total Solar Eclipse.



Undergraduate researchers **Reed Hodges, Michael Melvin** and **Kelvin Rosado** presented their work at the Georgia Undergraduate Research Conference (GURC) in Milledgeville, November 5, 2016. Michael Melvin received The Undergraduate Research Council Travel Award for his trip. Reed Hodges due to the "exceptional nature of his abstract" according to the GURC reviewers was invited to the conference as a session presenter.

Physics Faculty News

Monique Aller, Ph.D., attended the Multiple Faces of Interstellar Dust ISM-SPP Workshop which was held in September 2016 at the Max Planck Institutes for Astrophysics and Extraterrestrial Physics. In addition to giving a talk at this conference, Dr. Aller was asked to lead a discussion panel on extragalactic dust.



Maxim Durach, Ph.D., presented an invited talk titled "*Transformation of Fundamental Properties of Light via Interaction with Nanostructured Metal*" at the seminar at The International Research Centre for Nanophotonics and Metamaterials, at ITMO University in St.-Petersburg, Russia (<http://metalab.ifmo.ru/>), December 23, 2016.

Dragos Amarie, Ph.D., was awarded a new patent on "Compact Microfluidic Structures for Manipulating Fluids". Microfluidics, a multidisciplinary field that manipulates and controls minute amounts of fluids or reactants, typically in from thousandths of nanoliters (10-12 L) to thousands of nanoliters (10-6 L), is Dr. Amarie's research interest for over a decade. Applications of microfluidic technology spans from cell biology to biophysics, to cell behavior investigations, to clinical pathology and point-of-care diagnosis, all the way to inkjet printing. Microfluidic technology is used to integrate multiple assays and wet lab functions on one device called Lab-on-a-Chip technologies. Dr. Amarie's work in designing and experimenting with microfluidics to generate controlled chemical gradients to study single cell behavior was awarded with a new patent of invention. At the end of last year, on October 27th, 2016 Dr. Amarie of the Department of Physics and former mentors were awarded the US Patent 9,440,207. Among chief applications of this invention are the study of cellular chemotaxis and morphogenesis, critical in physiology and pathology of wound healing, inflammation, and tumorigenesis, cell migration, proliferation, differentiation during embryonic development, to name a few. The present microfluidics design is a flexible platform and Dr. Amarie is highly interested in establishing new collaborations and synergies across the Georgia Southern University campus and beyond.



About Us

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The College of Science and Mathematics at Georgia Southern University prepares students in baccalaureate majors and the Master of Science programs.

- Biology
- Chemistry and Biochemistry
- Geology and Geography
- Mathematical Sciences

- Military Science/ROTC
- Physics

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