

R·I·T Science+Math

MONTH IN REVIEW

Message from the Dean

I hope everyone in the College of Science had a relaxing and rejuvenating Thanksgiving holiday with your family and friends. As COS strives to constant improvement, it's a good time of the year to give thanks for the extraordinary efforts of our faculty, staff, and students.

I would like to thank each and every one of you for extending the reputation of our college through the national and international exposure of our research projects and for engaging our students in those projects. I am thankful to inspiring classroom professors and lecturers



Sophia Maggelakis, Dean

who bring science and math alive for
new generations of students.

RIT College of Science

I would also like to thank our dedicated support staff for facilitating the daily operation of our college. Finally, I offer thanks to our students, who bring curiosity, energy, and discipline to their work.

I wish you good luck as you wrap up another productive fall semester. If I don't have a chance to speak with you face-to-face beforehand, have a happy holiday break. I look forward to seeing you in the spring.

SOPHIA MAGGELAKIS
Dean, RIT College of Science

November 2016

Color Science Hall renamed 'Munsell Color Science Laboratory'

In November, the RIT Board of Trustees approved the renaming of Color Science Hall to "Munsell Color Science Laboratory." The name change recognizes that activities throughout the building were part of the Munsell lab and honors the Munsell family and foundation for their philanthropy that has created what has become the world's leading academic laboratory in color science.



RIT professor wins grants from the Moore Foundation

Dr. Moumita Das, an assistant professor of physics in the School of Physics and Astronomy, was mentioned in RIT University News for receiving seed funding for cutting-edge research that explores mitochondrial DNA and intercellular cargo transport.



Dr. Das is a Scialog Fellow on two research teams supported by the Gordon and Betty Moore Foundation. Das is a theoretical physicist who works in the field of biophysics. She is conducting computational modeling and analytical calculations to support hypotheses and predictions for both projects.

[University News >](#)

Dr. Das is also leading a National Science Foundation-funded study to explore properties critical to the function of the vitreous and the eye. Her team is investigating changes in the vitreous gel on structural and mechanical levels that result in vision impairment. [University News >](#) [RBJ >](#)

Future Stewards Program grows community of Native scholars

Dr. Roger Dube, professor of imaging science and member of the Mohawk tribe, was mentioned in a feature article about RIT's Future Stewards Program that targets Native American scholarship. Also mentioned was 2015 environmental science graduate Alicia Lazore.

[University News >](#)



RIT transitions to top-tier university

The increase in Ph.D. programs has grown so much that last year the Carnegie Classification of Institutions of Higher Education changed RIT from Masters-Comprehensive to Doctoral



University. This change occurs when a university graduates more than 20 Ph.D. degrees per year. In 2014-15, RIT awarded 33 doctoral degrees and in 2015-16, 35 people received Ph.Ds. Robert Loce '93, imaging science is featured in the story. The story also featured three graduate school alumni—[Yuta Asano](#) '15, color science; [Siddarth Khullar](#) '09, '13, Imaging Science; and [Grant Tremblay](#) '11, astrophysical sciences and technology. [University News >](#)

RIT researchers fix Landsat 8 imagery, measurements with 'innovative' algorithm

RIT imaging science researchers have solved a problem nagging NASA's Landsat 8 Earth-sensing satellite. Stray light in the thermal infrared sensor, or TIRS, reduces accurate temperature measurements of the Earth's surface. Software developed by Aaron Gerace and Matt Montanaro, senior scientists at RIT's Chester F. Carlson Center for Imaging Science, improves the accuracy of the Landsat 8 data. NASA funded their research with an \$86,000 grant.

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Imaging Science team included in \$300K USDA grant to Cornell

A team of RIT imaging scientists are contributing to a Cornell University research initiative entitled "Transforming White Mold Management in Snap Beans Using Remote Sensing Via Unmanned Aerial Systems." This project offers a unique multi-disciplinary approach to reducing crop loss from white mold in snap beans by improved detection of structural and



spectral signatures associated with phenological development to optimize the efficacy of tools currently available to growers. Drs. Jan van Aardt and Carl Salvaggio will provide spectral remote sensing expertise to assist and augment Cornell's expertise in risk modeling of this devastating disease.

RIT professor images David Livingstone diaries, gives talks in UK

Multispectral imaging technology continues to recover new insights from the field diaries of 19th-century explorer David Livingstone. A team of scholars and scientists who worked on the Livingstone Spectral Imaging project presented their research in public talks in the United Kingdom in November. "Because of the poor quality of the ink, the works probably had only been read by Livingstone himself," said Roger Easton, professor in the Chester F. Carlson Center for Imaging Science who imaged the Livingstone documents. [University News >](#)



Clean Energy Fuel Cells manual presented at Materials Research Society Meeting

A team of researchers from the RIT School of Chemistry and Materials Science have published a lab manual and DVD entitled "Clean Energy." The team consists of KSV Santhanam, Gerald Takacs, Massoud Miri, Alla Bailey, Thomas Allston, and Roman Press. The manual was on display at the Materials Research Society meeting in Boston, November 27-December 1, as part of the World Scientific Publishing booth in



the exhibition area.

RIT professor collaborates on new astronomical camera, teaches at University of Tokyo

Professor of astrophysical sciences and technology Michael Richmond is a visiting professor for the fall term at the University of Tokyo's Research Center for the Early Universe. He is teaching a graduate course called "A field guide to exoplanets" and collaborating with colleagues at the university. [University News >](#)



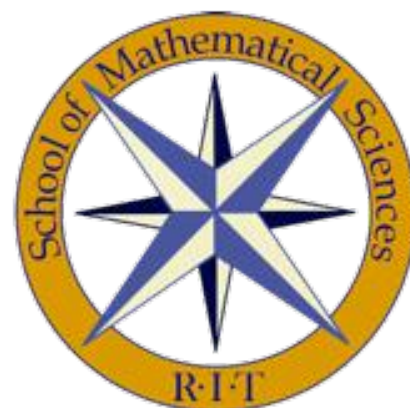
Precision Optical Transceivers partners with RIT's Future Photon Initiative

[Precision Optical Transceivers Inc.](#) has become the first member of the RIT's [Future Photon Initiative](#) Industry Partnerships Program. "We are pleased and excited to have an opportunity to take our association with the team at Precision OT to the next-level," said Don Figer, director of RIT's [Center for Detectors](#) and the Future Photon Initiative. "We are committed to being a go-to technical resource and difference-maker in support of Precision OT's enterprise plans and objectives." [University News >](#)



RIT Academic Senate approves proposal for MS in Data Science

The RIT Academic Senate has approved a proposed Data Science MS program, which would be a joint program with the Golisano College of Computing and Information Sciences. The proposal would create a 30 credit graduate degree that combines theory and application. The program will be offered initially on-campus. To



provide the right foundation for future data scientists, a curriculum was created with four core courses that will be augmented by elective courses in computing, statistics, and mathematics. The program will now be sent to the state for approval.

RIT professor wins Smithsonian, Carnegie and SAI fellowships

Professor of Imaging Science Joel Kastner is broadening and deepening his research program on the origins of our solar system and planetary systems orbiting other stars while on four consecutive fellowships and visiting positions during his sabbatical this academic year. Kastner, a professor in RIT's Chester F. Carlson Center for Imaging Science and the School of Physics and Astronomy, is the Study Abroad International Faculty Fellow for the month of November at the Arcetri Observatory in Florence, Italy.

[University News >](#)



CASTLE/WISe Journal Club discusses race and gender in STEM fields

The Center for the Advancement of STEM Teaching, Learning, and Evaluation, along with Women in Science, hosted a journal club meeting November 22 titled "STEM Experiences: The Impact of Race and Gender." On November 8, the club met to discuss "Toward Inclusive STEM Classrooms: What Personal Role Do Faculty Play?"

The club meets every other Tuesday at 9 a.m. to discuss a selection of academic articles.



Oak Ridge funds automated image processing proposal

Emmett Ientilucci, CIS, was recently awarded \$637,400 to assist Oak Ridge National Laboratory with fundamental image science research relating to their fully-automated image processing and photogrammetric registration solutions for manned and unmanned aerial systems (UAS).



Air Force funds solar cells proposal

Seth Hubbard, SoPA, will receive \$80,000 from the US Air Force Materiel Command / Applied Technology Associates for a project entitled "Radiative Coupling Techniques to Enhance End-of-Life Efficiency of Multijunction solar cells." RIT will partner with AFRL to incorporate defect tolerant radiative recombination centers into an InGaP solar cell. In this initial proof-of-concept project the project will focus on the more mature QW technology.



Lawrence Livermore National Lab funds imaging science grant proposal

John Kerekes, CIS, will receive \$66,104 from the US Department of Energy Lawrence Livermore National Lab for a project entitled "Spaceborn Imaging Sensor Modeling and Simulation." This project will focus on the construction of an end-to-end imaging system model using the DIRSIG simulation software. The first step will involve understanding the system design including data collection goals, system hardware concepts and designs, and the data processing



architecture.

NOHMs Technology funds spectroscopy proposal

Michael Pierce, SoPA, will receive \$14,319 from NOHMs Technology, a Rochester-based lithium battery materials firm, for a project entitled "UHV Surface Spectroscopy from LiF." Spectroscopic characterization of electrode surfaces will be conducted using an Ultra-High Vacuum surface spectroscopy system.



COS faculty members earn mentoring grants

The following College of Science faculty members earned Faculty Mentoring Grants from the RIT Provost's Office and Faculty Career Development Office:



- **Elizabeth Cherry**, SMS, will receive \$700 in partial funding to sponsor one speaker on the topic of "Effective strategies for teaching graduate-level mathematical modeling."
- **Chris Collison**, SCMS, will receive \$1,200 in partial funding for the project "Junior Faculty Success Club: Realizing Our Full Potential."
- **Sandra Connelly**, GSOLS, will receive \$600 in partial funding for the project "Using STEM Research as a Tool to Enhance 2+2 Curricula."
- **Paul Wenger**, SMS, will receive \$300 in partial funding for the project "Doceamus: The Pedagogical Mentorship Group in Mathematics."

Twenty attend retirees luncheon

Twenty retirees and their families attended a luncheon November 2 hosted by Dean Sophia Maggelakis. Dr. Maggelakis updated attendees with news about COS and introduced them to current students.



Tina Williams to fill SMS financial specialist position

Senior Staff Specialist Tina Williams will move into the role of handling the financial issues of the School of Mathematical Sciences. Williams has been managing the school head's office as well as financials since the position became vacant eight months ago. A search committee will begin the hiring process for Tina's former position.



External Advisory Board member contributes to RIT Women in Science

Laurie Axelrod, a member of the College of Science External Advisory Board, contributed \$5,000 to RIT Women in Science. Axelrod donates annually to WISE, a support and advocacy program for COS faculty, staff, and students.



Social Media



Applied mathematics major Renee Meinhold presents paper at MIT

Renee Meinhold, a third year applied mathematics major from Orchard Park, presented at the IEEE MIT Undergraduate Research Conference at the Massachusetts Institute of Technology on November 5. Her paper was titled "Efficiently Computing Piecewise Flat Embeddings for Data Clustering and Image Segmentation" and was part of the Machine Learning / Cloud Computing session.



Distinguished Lecturer Ralph Wise

Ralph Wise, Vice President of Operations at [Solidenergy Systems Corp.](#) was the COS Distinguished Lecturer in November. He presented a two part lecture about "How to leverage your BS degree in Chemistry: The Journey from Lab Researcher to Vice President."





Winter Celebration

The College of Science Student Advisory Board, Pi RIT, RIT's House of General Science, Alpha Chi Sigma - Beta Sigma and RIT Biotech Club joined forces for to host the annual COS Winter Celebration on November 30. Students gathered for free hot cocoa, snowflake arts and crafts, and an ugly sweater contest.



CASTLE Teacher Roundtable

The Center for Advancing STEM Teaching, Learning, and Evaluation, along with the Learning Assistants Program, hosted a Teacher's Roundtable November 30. Local teachers shared their experiences, why they went into teaching, and what challenges they face in the classroom.



Throwback Thursday

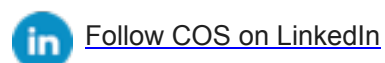
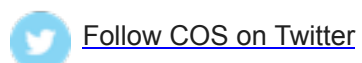
We asked Professor Patricia Clark of the School of Mathematical Sciences to help identify the faculty member in this photo of a complex variables class. "That's me!" she said.





Fall Open House

Associate Dean Laura Tubbs leads a student panel at the November 12 Fall Open House. Gosnell Hall's A300 lecture room was filled to capacity with prospective freshmen and their families.



Newsmakers

Carlos Lousto, CCRG, is one of three faculty members teaching an experimental graduate salon this spring called "World Making." The course addresses how people from different disciplines and "worlds" talk to one another and the challenges of crossing these academic boundaries to engage in acts of "translation." Other participating faculty are Timothy Engström, Professor of Philosophy; and Jennifer Schneider, Eugene H. Fram Chair of Applied Critical Thinking and Professor of Civil Engineering Technology, Environmental Management, and Safety.

Michael Savka and André Hudson, GSOLS, published a paper in the journal *PeerJ* on the bacterial communication system known as quorum sensing. They focused on a bacterium belonging to the Sphingomonadaceae family, which has potential use in bioremediation of polluted sites. Co-authors include Han Ming Gan '08 (biotechnology) and Lucas Dailey '16 (biotechnology and molecular bioscience).

Jie Qiao, CIS, along with Jun Qiao, and Lauren L. Taylor, published a paper entitled "Optimization of femtosecond laser processing of silicon via numerical modeling" in *Optical Materials Express*. The paper is one of the most

downloaded items on the publication's website.

Ernest Fokoué, SMS, visited the Math Circle middle school club club at the Harley School November 29. Dr. Fokoué did a presentation entitled "What is a statistical tie/"equality"?"

Chip Bachmann, CIS, was awarded a grant from the National Geospatial-Intelligence Agency for his proposal entitled "Hyperspectral Video Imaging Assessment and Mapping Littoral Connections."

Martin Gruber's fourth book, *Linear Models*, is now available in its second edition through Wiley Publishing.

Brian Koberlein, SoPA, was quoted expressing skepticism about the results of an electromagnetic propulsion system being developed by NASA's Eagleworks Laboratories.

[NYPost >](#) [National Geographic >](#)

