R·I·T Science+Math

MONTH IN REVIEW

Message from the Dean

Finally, it's spring, and the weather is warming up. It's possible to enjoy some outdoor activities, including preparations for our own community garden. It's an especially busy time of year for our college as well, as a semester's work takes root and begins to flourish.

Students have been preparing lab projects for their classes or independent work. A new group of prospected students and families just visited our college for spring open houses. Imagine RIT will be upon us May 6, and participants are busy at work preparing their public demonstrations for this important annual event.

Sophia Maggelakis, Dean

RIT College of Science

Before we continue further into our spring activities, let's take a moment to reflect upon our many successes for the month of March. Our faculty and students do remarkable work and help us build our stellar reputation as an innovative place of learning.

SOPHIA MAGGELAKIS
Dean, RIT College of Science

March 2017

RIT alumnus wins national award for undergraduate physics research

Ryan Scott, who earned his BS in physics from RIT in 2016, has won the AAPT-ALPhA Award for developing a new experiment for the upper-level undergraduate physics lab at RIT. The award also recognizes Scott's faculty advisers Edwin Hach III, assistant professor of physics, and Stefan Preble, associate professor of microsystems engineering and electrical and microelectronic engineering at RIT. Hach and Preble are both members of the university's Future Photon Initiative, an RIT signature research area.

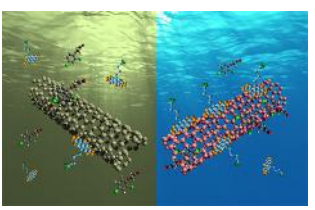
University News >

Sukanya Chakrabarti and Andrew Lipnicky publish paper on dark matter and dwarf galaxies

In a new study accepted for publication in the *Monthly Notices for the Royal Astronomical Society* and funded by a grant from the National Science Foundation, authors Sukanya Chakrabarti, SoPA, and RIT student Andrew Lipnicky explore whether the current orientation of satellite galaxies around the Milky Way upholds or challenges the accepted model of dark matter.

University News >
Astronomy.com >

Researchers study carbon nanotubes as water filters

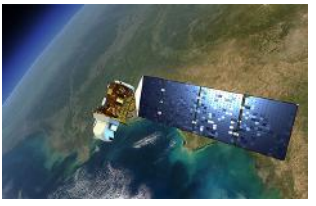


Enhanced single-walled carbon nanotubes offer a more effective and sustainable approach to water treatment and remediation than the standard

industry materials—silicon gels and activated carbon—according to a paper by RIT researchers John-David Rocha and Reginald Rogers.

PHYS.org >
R&D Magazine >
The Science Times >

RIT researchers win USGS grant to improve Landsat 8 data



RIT researchers have won funding from the U.S. Geological Survey to ensure accurate temperature data from NASA's Landsat 8 satellite. Climate researchers depend on public data from the Earth-sensing satellite to measure surface changes over time. The agency awarded Aaron Gerace and Matthew Montanaro, senior scientists in RIT's Chester F. Carlson Center for Imaging Science, a five-year, $500,000 grant to continue monitoring improvements they made to Landsat 8's Thermal Infrared Sensor, or TIRS.

University News >

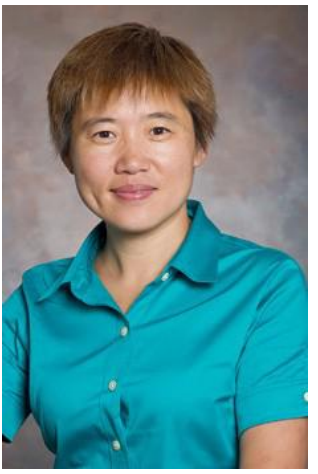
RIT helps advance space camera being tested on ISS

Imaging technology advanced by researchers at RIT and Florida Institute of Technology is being tested on the International Space Station and could someday be used on future space telescopes. A new twist on the charge injection device camera, originally developed in 1972 by General Electric Co., fine tunes the array of pixels for improved exposure control in low light conditions. The enhanced technology could give scientists a new method for imaging planets around other stars and improve the search for habitable Earth-like planets.

University News >

RIT centers receive grants to improve additive manufacturing, high tech optics and photonic fabrication systems

Awards were given to RIT's AMPrint Center—the New York State Center for Additive Manufacturing and Multifunctional Printing, and the university's Chester F. Carlson Center for Imaging Science to purchase equipment for use in center laboratories focused on advanced manufacturing research and new product development as well as the development of ultra-fast, laser-based technology for optics fabrication within university-corporate partnerships.



University News >

Carlos Lousto awarded RIT Trustees Scholarship Award

Dr. Carlos Lousto, CCRG, is one of the 2016-17 Trustees Scholarship Award recipients. The award recognizes faculty members who:

- Demonstrated record of excellent scholarship at RIT over a sustained period.
- Scholarship must be integral to, and not separated from all aspects of a student's education experience at RIT.
- Scholarship that fits within one or more of the following classifications: teaching/pedagogy, application, integration, or discovery.

Dr. Lousto will be honored at an April 25 ceremony in the Gordon Field House.

Scott Franklin selected as Isaac L. Jordan Senior Faculty Pluralism winner

Dr. Scott Franklin, SoPA, is the 2016-17 Isaac L. Jordan Sr. Pluralism Award–winner. The Isaac L. Jordan Sr. Faculty Pluralism Award is a university-wide award program that recognizes faculty members for their significant contributions to enhance diversity at RIT. He will be honored at an April 25 ceremony in the Gordon Field House.

RIT researcher wins IEEE grant to host drone conference

RIT researcher Emmett Ientilucci won a grant from the IEEE Geoscience and Remote Sensing

Society to host a workshop on unmanned aerial systems at RIT in fall 2017. Ientilucci was awarded $2,700 to organize the second annual workshop on Systems and Technologies for Remote Sensing Applications Through Unmanned Aerial Systems, or STRATUS. The IEEE Geoscience and Remote Sensing Society is sponsoring the event with initial co-sponsorship from RIT's Chester F. Carlson Center for Imaging Science Digital and Remote Sensing Lab.

University News >

University of Kentucky's Brent Seales presented John Wiley Jones Distinguished Lecture on digital restoration of Biblical documents

A leading expert on digital restoration of historical documents spoke about his research and new methods for digitally preserving manuscripts, scrolls and other cultural artifacts for the March 6 John Wiley Jones Distinguished Lecture. His talk was titled "Digital Unwrapping: Homer, Herculaneum and the Scroll from En-Gedi." He appeared on WXXI's "Connections with Evan Dawson" along with Dr. Roger Easton, CIS.

University News >
WXXI >

Five named John Wiley Jones Outstanding Students in Science

Each COS Academic Unit named a student for the John Wiley Jones Outstanding Student in Science Award presented at a ceremony on March 6. The award was named for the late founder and president of Jones Chemicals to help encourage young people preparing for careers in science.

The 2017 awardees are as follows:

- **Brooke D'Arcy, SCMS**
- **Tyler Kuhns, CIS**
- **Ali Cala, GSOLS**
- **Renee Meinhold, SMS**

- **Christian Cammarota, SOPA**

Machine learning guru Robert Schapire presented public talk at RIT on March 31

A leading figure in artificial intelligence talked about machine learning as part of the RIT Data Science Research Group Seminar Series. Robert Schapire, senior research scientist at Microsoft Research, presented “The Contextual Bandits Problem: A Fast, Simple and Optimal Algorithm."

University News >
WXXI >

Chemist turns hobby into full-time business

Amanda Preske has three things that are almost as hard to come by individually as they are when put together: an expertise in chemistry, a knack for jewelry making, and a confidence and poise that have allowed her to excel in both.

University News >

RIT Observatory focuses on moon, star clusters and Jupiter

An open house at the Rochester Institute of Technology Observatory featured the crescent moon, the Pleiades star cluster, the Orion Nebula and Jupiter. “The Pleiades is one of the closest clusters of stars that we can see, and many cultures mention it in their legends,” said Stacey Davis, senior lecturer of physics and astronomy at the National Technical Institute for the Deaf and interim director of the RIT Observatory.

University News >

COS participates in AI systems seminars

RIT has a growing artificial intelligence (AI) community, and a new seminar series has been developed to strengthen interactions among

researchers from across campus involved in the growing technology field. Faculty in the Kate Gleason College of Engineering, B. Thomas Golisano College of Computing and Information Sciences, Saunders College of Business, the College of Science and the College of Liberal Arts are looking to develop an organizational structure that encourages cross-college and corporate collaborations in AI and cognitive technologies.

University News >
Campus Technology >

COS hosts ASA DataFest for competitive data science teams

RIT held its first DataFest hackathon this spring, joining a growing list of colleges and universities participating in the American Statistical Association-sponsored event. Competitors showcased their data science skills on real data sets and network with a community of peers, said conference director Ernest Fokoué, associate professor in RIT's School of Mathematical Sciences and founder of the Data Science Research Group.

University News >
Democrat and Chronicle >

BS/MS in Chemistry approved by NYS Department of Education

A dual degree program in chemistry has been approved by the New York State Education Department. The program will allow an RIT student to earn both a bachelor's degree and master's degree in chemistry in as little as one additional year beyond the undergraduate program.

Academic Senate election results announced

The following COS faculty members have been elected to positions on the Academic Senate and its committees:

ACADEMIC SENATORS

- **Chris Collison, SCMS**
- **Carol Marchetti, SMS**
- **Carl Lutzer, SMS**

ACADEMIC AFFAIRS COMMITTEE

- **Kate Wright, GSoLS**

FACULTY AFFAIRS COMMITTEE

- **Lea Michel, SCMS**

GRADUATE COUNCIL

- **Elizabeth Cherry, SMS**

INTERCOLLEGE CURRICULUM COMMITTEE

- **Elizabeth Hane, GSoLS**

INSTITUTE WRITING COMMITTEE

- **Seshavadhani Kumar, SMS**

TENURE AT-LARGE REPRESENTATIVE

- **George Thurston, COS Tenure Committee, SoPA**
- **Anurag Agarwal, Outside Tenure Committee, SMS**

Principal Investigator 'Millionaires' include COS faculty; RIT names Seed Fund awardees

R·I·T College of Science

The following COS faculty members have earned more than $1 million in research grants since 2000. They were honored at an April 5 event.

- **Elizabeth Cherry,** SMS
- **Christopher Collison,** SCMS
- **Roger Dube,** CIS and SEP
- **Emmett Ientilucci,** CIS
- **Robert Krzacek,** CIS
- **Casey Miller,** SCMS
- **Andrew Robinson,** SOPA

Also recognized were the 2017 Seed Fund award recipients. These faculty members received a $5,000 grant for proposals written over the fall semester and refined in a two-day Grant Writer's Boot Camp. Proposals are reviewed by a teem of peers and revised to better position awardees for external funding.

- **Michael Gleghorn,** SCMS, for “Developing Tools to Identify Polyriboadenylic Parallel Double-Helix Binding Proteins in Nature”

- **Jeyhan Kartaltepe,** SOPA, for “Kinematics of Distant Starburst Galaxies – Evidence for Galaxy Mergers?”

COS faculty awarded with research grants

The following COS faculty have been notified in March 2017 of awards from various research grant agencies.

- **John Kerekes, CIS—**$132,534 anticipated from NASA for "Support to MLIS Instrument Development and Demonstration." This project will provide research support to DRS for the development of an advanced imaging payload called the Multispectral LWIR Imaging Sensor (MLIS). The key research activities include providing input to the sensor requirements, demonstration test plan to enable the evaluation of imaging performance, technical support for sensor integration And data collection, analysis of collected data, and end-to-end modeling of the sensor system.

- **Roger Dube, CIS —** $267,467 from the National Science Foundation for "REU Site: Imaging in the Physical Science." Students from underrepresented groups face a variety of hurdles in pursuit of a STEM degree, including poor foundational preparation, low self-confidence, financial pressures at home, and mistrust of higher education by their communities. These attitudes lead to further cultural and economic isolation, and the cycle is perpetuated. This program has focused on providing opportunities to students who might not otherwise have research opportunities before graduate school. Due to RIT's access to the Iroquois Six Nations Confederacy communities, we have focused initially on recruiting Native

American students, with good success. The program has engaged eight Native students in research programs over the past the years alone, and our national reach has been growing. The project seeks support to further grow our success with the Native communities, extend the program to other underrepresented groups, and further engage the deaf and hard-of-hearing communities with a goal of extending successes to underrepresented groups at other universities.

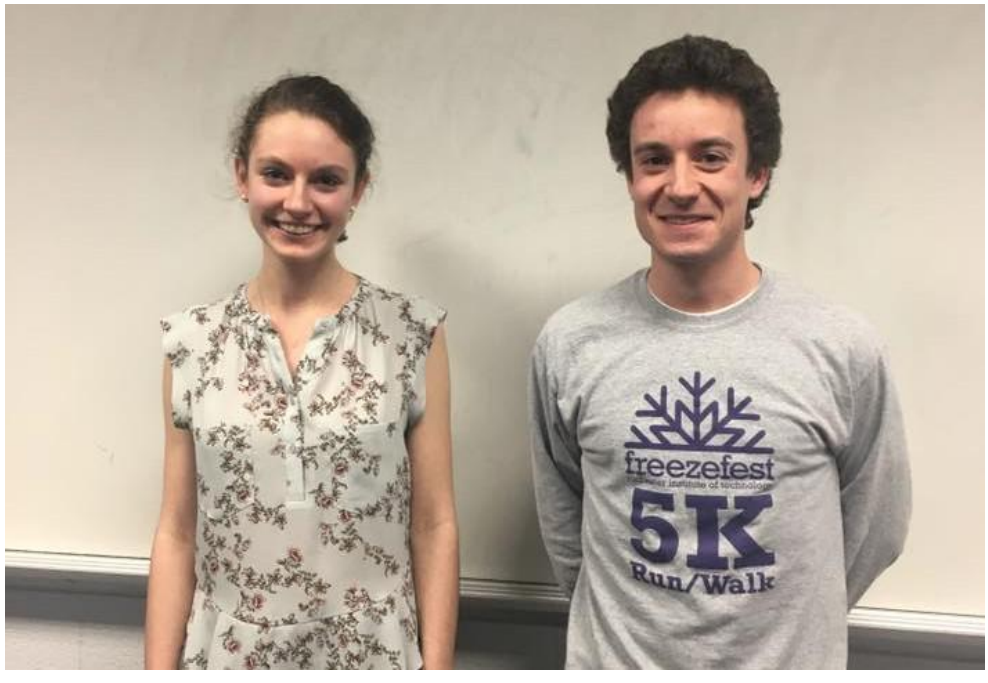
- **Joshua Faber, SoPA —** $244,789 from the National Science Foundation for "REU Site: Multimessenger Astrophysics." The first observations of gravitational waves by LIGO have opened up the dawn of the gravitational wave astronomy age. Soon, we will see the birth of multimessenger astronomy, as gravitational wave and electromagnetic observations are combined with theoretical models to give us new insights into astrophysical phenomena that were previously unavailable to science. A key step in moving this project forward will be the training of students that will form the next generation of scientific leaders. An REU site dedicated to the study of multimessenger astrophysics will help groom the next generation of scientists in the many and diverse skills that will allow them to pursue careers in this growing field as well as many others.

- **Darren Narayan, SMS —** $109,311 from the National Science Foundation for "REU Site in Extremal Graph Theory and Dynamical Systems." The project seeks to actively engage ten students in mathematical research in each of the summers 2017, 2018, and 2019. Students will work closely with faculty mentors on projects in the areas of extremal graph theory and dynamical systems. Students will be involved in all stages of the research from working on the research to presenting

and publishing their research. Students will present their research at a national conference, the annual Joint Mathematics Meetings.

- **Mishkat Bhattacharya,** SoPA — $549,968 from the Office of Naval Research, for a project titled "Theory of Precision Quantum Sensing with Levitated Optomechanics: Hybrid, Multimode and Mie systems." This proposal aims to meet the current pressing demand for precision quantum sensing of weak forces and electromagnetic fields with optically trapped nanoparticles. Since these particles are not in material contact with any substrates, they can act as very sensitive probes of electric and magnetic fields and gravitational forces.

Social Media



Individual Integral Competition

Emily Kiesel and John Mooney were first and second place winners in pi RIT's Individual Integral Competition on March 29.

Throwback Thursday

March 30's Throwback Thursday on the COS Facebook page features the front entrance of Gosnell Hall before construction of Bates Study Center. This photo was provided by the RIT Archives Collection at The Wallace Center.

Community Garden information session

The RIT Community Garden hosted their first information meeting. All faculty, staff, students, alumni or retirees of RIT are welcome to join. Want to get involved in the Community Garden? Contact the garden coordinators, Dawn Carter and Jennifer Horak.

Career Week

Career Week featured an Alumni Panel March 21 with RIT alumni from KJR Materials Technology Consulting, Carestream, Optimax Systems Inc, Barton & Loguidice and BioWorks.

Today in COS

Spotted in an instrument lab, Nuzhet Nihaar is conducting an experiment called Thermogravimetric Analysis which is used to study of thermal behavior of a material by subjecting the material to really high temperatures.

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Newsmakers

Jie Qiao, associate professor in the Chester F. Carlson Center for Imaging Science, presented her talk "Femtosecond Lasers for Photonics and Optics Fabrication and WiSTEE (Women in Science, Technology, Engineering and Entrepreneurship) Connect" to scientists and engineers at Corning Inc. on March 3.

Jan van Aardt, was interviewed by WHEC-TV March 30 for a story titled "Drones to Replace Pollinating Bees?" WHEC >

Brian Koberlein, senior lecturer of physics, and Roger Dube, research professor and director, science exploration program, were featured on *WXXI.org*, March 20 for an episode of Connections with Evan Dawson called "Examining the fascinating discovery of the Trappist-1 exoplanets." WXXI >

Brian Koberlein also appeared on WHAM-TV to discuss the Trappist-1 discovery. WHAM >

Michael Cross, SCMS Academic Services Coordinator, has been named the COS advocate to the Multicultural Center for Academic Success.