ITD Innovation Grant catalyst for new research using X-ray Crystallography

“It’s a complex thing with lots of moving parts.”

That is how MTSU Chemistry Assistant Professor Justin Miller might describe some of the molecular structures that he studies and teaches about. Recently, that is also how he describes an ongoing collaborative effort to improve the University’s status as a regional science research institution. And a recent ITD Innovation Grant is a key component in that process, he said.

“This is part of a larger effort to grow our research capabilities with regard to X-ray Crystallography,” Miller said.

“It is also geared toward bringing in populations of students who might not otherwise have access or exposure to research. This particular grant will expand our access to data that is already out there.”

The MTSU Chemistry Department has been building a program around X-ray crystallography that promises increased research and improved education in the field of biochemistry. Key to that effort is access to the Cambridge Crystallographic Structure Database (CCSD) in courses and programs. The grant will purchase access to this database for one year.

“In the past, we worked with the free educational version that does not give access to the research database, but instead provides limited software access and examples for class use,” Miller wrote in his grant application.

In 2016, a team of faculty members obtained funding from the National Science Foundation Major Research Instrumentation program (NSF-MRI) to buy

Start new year with upgrade to Windows 10

If the computer assigned to you is still running Windows 7, you have begun to see a warning that Microsoft is dropping support for that version.

All primary machines assigned to employees should have already been either upgraded or replaced through the computer replacement process.

Any additional machines running Windows 7 will be extremely vulnerable to malware.

It is your responsibility to place an ITD work order or call the ITD Help Desk at 615-898-5345 immediately to address this issue. For a very brief period of time, ITD will take the necessary steps to protect the vulnerability while continuing to run Windows 7.

Once you let us know, it will be imperative that ITD evaluate your machine to determine if it is upgradeable to Windows 10, if you can purchase components that will make it upgradeable, if you need to purchase a new machine, or if it needs permanent removal from the campus network.

If you have any questions, contact the ITD Help Desk at 615-898-5345 or at help@mtsu.edu.

See Miller, page 3
Resolve to use FITC multimedia studio in 2020

MTSU faculty and staff are getting some big benefits from the small multimedia studio available at the Faculty Instructional Technology Center (FITC).

The FITC offers use of the studio that features Lightboard and green-screen capabilities for creating fresh new audiovisual content. Kourtney Smith, ITD learning multimedia developer, said it has been busy this winter with people taking advantage of that opportunity.

The new multimedia lab is part of the instruction redesign initiative, featuring three levels of service for faculty:

- **Level I: Self-service.** Provides instruction in the use of software/hardware/equipment and/or scheduling of time in the multimedia studio (TCM 210) for faculty to create multimedia resources for instructional use. Level I studio products will be self-service, including any post-production work such as editing.

  Faculty must complete studio training before booking the studio. A minimum of one month prior to the requested date is required for training and/or scheduling.

- **Level II: Project-based.** Provides professional services in the creation of a multimedia product (i.e., a video, audio clip, podcast, graphic, animation, simulation, etc.)

  It also features a small green-screen studio for creating video tutorials and presentations directly via screencast, or via a direct recording plug-in to Microsoft PowerPoint, Smith said.

  Many of the recent projects are examples of Level I and utilize Camtasia, a software suite for creating video tutorials and presentations directly via screencast, or via a direct recording plug-in to Microsoft PowerPoint, Smith said.

  “I’ve had several staff members come in to create training videos for faculty and a faculty member who created videos of her lectures to put them online,” Smith said.

  “When someone comes in to use it, I first book a training session—‘Here is how the microphone works, here’s how to use Camtasia, here’s how to upload a video to YouTube and do captioning.’

  “The goal is for them to be able to just book a session after that training and come in and work on their project. . . . It was interesting to see that faculty member do a series of five videos, to see her progress. Some of her students had asked her, ‘Hey would you be able to put your content online so we can review it later?’”

  The Lightboard allows users to write notes or annotate graphics on a large glass wall, creating a video that shows faculty and their writing visible from the front.

- **Level III: Course design/redesign via an Instructional Design Team (IDT).** Involves the creation of a team of professionals—faculty member(s), instructional designer/technologist, learning multimedia, accessibility specialist, educational assessment expert—to redesign/design a course including multimedia. (Level III projects accepted by IDT proposal only).

  “If they need to train the entire faculty in their department, I ask ‘What type of video do you want to use?’ It is usually either a lecture capture video or a training category,” Smith said. “A lot of times it’s either, ‘I’m looking for help in making a video of a lecture, or just looking for a quiet place to record. . . . Faculty can purchase a Camtasia license to use but it’s kind of nice that if they don’t want to do that and want a resource to use they can come here.”

  Anyone interested in using the studio can start by contacting the LT&ITC at itdacad@mtsu.edu or 615-904-8189.

Editor: Craig Myers
Managing Editor: Robin Jones
Publications Committee: Barbara Draude, Emily Harper, Jeff McManan, Dave Munson, Tyree Nelson, Sandy Petty, and Jeremy Stanley
Other contributors to this issue: John Peden, Kourtney Smith, and Photographic Services

**Communicator** is a publication of the Information Technology Division, 3 Cope Administration Building, Middle Tennessee State University, Murfreesboro, TN 37132, 615-904-8392.

**Communicator** is published five times a year and is distributed free of charge. Portions of **Communicator** may be reproduced in nonprofit publications without written permission if proper acknowledgment is included and a copy of the reproduction is sent to the editors.

0120-8601—Middle Tennessee State University does not discriminate against students, employees or applicants for admission or employment on the basis of race, color, religion, creed, national origin, sex, sexual orientation, gender identity/expression, disability, age, status as a protected veteran, genetic information, and any other legally protected class with respect to all employment, programs and activities sponsored by Middle Tennessee State University. The following person has been designated to handle inquiries regarding non-discrimination policies for MTSU: Marian V. Wilson, PhD, Assistant to the President for Institutional Equity and Compliance and Title IX Coordinator, Middle Tennessee State University, Cope Administration Building 116, 1301 East Main Street, Murfreesboro, TN 37132; marian.wilson@mtsu.edu or call 615-898-2185. MTSU’s policy on non-discrimination can be found at mtsu.edu/policies/general-policies/I-01-10.php.
Faculty Profile: Justin Miller

Miller, continued from Page 1

a single crystal X-ray diffractometer (SCXRD). Within six months, a Rigaku SuperNova instrument was installed in the Davis Science Building.

"X-ray crystallography is a method where you take a small molecule like sodium chloride, or salt like you use on your food, or giant protein complexes . . . you can encourage those molecules to adopt a crystalline lattice," Miller said.

"Once you have your molecules in an ordered array like this, you can take your crystal and hit it with X-rays and . . . you can determine the structure of your molecule. "So this is a very, very useful method because it allows us to determine experimentally the structures of molecules," he added. "It has opened up avenues of study that were previously not accessible. If you don't know what the protein or the molecule looks like, you're not in a position to ask the same sorts of questions."

Then, in 2018, two of the faculty involved in the X-ray proposal convinced the Tennessee Board of Regents (TBR) to fund an X-ray themed summer research program for low-income and under-represented minority Chemistry and Biochemistry majors, he said.

That led to a three-year NSF Research Experiences for Undergraduates program (REU) that will bring in groups of 8–10 students for the summer, starting this year, to learn about X-ray methods and conduct research.

"This is a program where you bring in students from all over the country and internationally ... and you connect them with a mentor. I may bring someone interested in doing biochemistry into my lab, and through the course of that summer they are receiving training from myself and my graduate students and gaining hands-on experience in how to do science," Miller said.

Meanwhile, the group collaborated with the University of Alabama–Huntsville, University of Georgia, and North Carolina State to design a hybrid course in X-ray methods for graduate students. The online course, coupled with a three-week summer workshop targeting students in the Southeast, will result in a certificate in crystallography for both large and small molecules over the course of a year.

Also as part of developing this program, MTSU in August brought in a research faculty member to do full-time crystallography—Assistant Professor Oleksandr Hietsoi. He is in charge of maintaining the single crystal X-ray diffractometer, choosing appropriate crystals, collecting data, interpreting the data, and preparing it for publication. Hietsoi plans to train users to do some of this work themselves and advise them in sample preparation, Miller said.

“He is dedicated to maintaining and operating our X-ray machine,” Miller said.

But key to bringing all this together is the Cambridge Crystallographic Structure Database (CCSD), because it allows users to do structure- and literature-searching, obtain molecular and unit cell data, and create figures for manuscripts. The CCSD software provides six user licenses each year.

“You can use that for a lot of different purposes,” Miller said of the database. “It allows us access to structural data we otherwise would not have access to.”

The database will be used in Organic Spectroscopy, Biochemistry, and Physical Chemistry courses, along with the summer REU program. The goal is to test how many seats of CCSD software are needed for effective teaching, training, and research utilizing X-ray crystallography.

And the ITD grant was vital in obtaining this missing piece of the puzzle, he said.

“It's fairly expensive. Developing our research presence and abilities requires financial input, and this (grant) really helps us do things we otherwise couldn't do," Miller said. "This directly supports the research and teaching activities."

More information on Innovation Grants

The Teaching with Technology Committee (TWTC)—formerly the Instructional Technologies Development Committee—accepts applications for projects related to the exploration of new technologies and/or the innovative and effective integration of existing technologies into teaching and learning.

Projects considered are those that demonstrate improved and more effective course instruction in meeting instructional objectives with technology, thus supporting student success.

Get more information at mtsu.edu/ait/faculty.php.
New systems administrator came to U.S. to fight Y2K bug

Pieter Engelbrecht joined ITD in fall 2019 as Systems Administrator 2.

Engelbrecht, of Spring Hill, completed an Electrical Engineering degree in Cape Town (South Africa) Technical College and began earning certificates and experience in the IT field, starting with Novell Inc. in 1990.

He came to the U.S. in 1999 to help companies prepare for the Y2K bug.

"Since then I’ve worked on many contracts for government and private companies and my last stint was with Asurion," he said.

Coming from an engineering background, he recalled his first project was building radio transceivers.

That later led him to a hobby as a ham radio operator.

At MTSU, his main responsibility is the upkeep of the Linux environment, focusing on the stability and security.

"Parallel to that, I’m looking at ways to future-proof the current environment to better service the users of it," he said.

"It is great to be back in the Linux hemisphere where the ‘simplicity’ of the command line tests your knowledge and gives you immediate feedback on what you are doing."  

Senior engineer has been in role of home-school principal for children

Jeremy Winfrey began working for the division in December as Senior Network Engineer.

Winfrey, from Morrison in Warren County, now lives in Readyville.

He earned an associate’s degree in electronics engineering from ITT Technical Institute. From 1998 to 2017 he was a network administrator for the Metro Nashville Airport Authority.

Then from 2017-2019 he was technical architect for Ryman Hospitality.

At MTSU he is responsible for helping operate and maintain the campus network.

"I like the large campus and relatively short commute. The biggest challenge has been adjusting from a corporate mindset and structure," he said.

Winfrey and his wife, Sherri, have been married for 22 years and have four children between the ages of 15 and 20. Their daughter is a junior in the Nursing program at MTSU and the oldest son is transferring this fall from Motlow State to study history or archaeology.

The other two boys are still in high school. Winfrey said Sherri has been home-schooling the children since their kindergarten years.

"I have been more of the traditional home-school principal and from time to time helped with group events like having our homeschool group out for 'Bee Day,' when I had bees," he said.

Away from work, Winfrey enjoys watching favorite shows "The Office" and "Seinfeld," doing metal fabrication, and raising sheep on their nearly 2-acre property. Right now they have seven ewes and a ram, he said.

"It is just a hobby now," he said. "We typically sell them at 2-3 months old after the fun of the new lamb has worn off."

Workshops great way to start semester

Workshops are free and available to faculty, staff (classified, professional, and administrative), and graduate assistants (except where noted).

Some workshop offerings include:

- Small Teaching Online: Applying Learning Science in Online Classes (FBG)
- New Faculty Professional Development Series
- Creating a Faculty Development Plan for Yourself
- Developing or Updating your "Teaching Philosophy Statement" (TPS)
- Effective Teaching Philosophy Statements: A Hands-On Workshop
- Using ePortfolios in Courses and Degree Programs
- Establishing Student Learning Outcomes: Stage 1 of Effective Course Design
- 2019: D2L Gradebook - Have you switched to using an online gradebook?
- 2019: D2L Dropbox - Student Work: Collecting, Grading, Feedback and More!

For information and registration visit [www.mtsu.edu/itd/workshops.php](http://www.mtsu.edu/itd/workshops.php)
PETTY finds outdoor activities keep her out of 'empty nest'

Sandy Petty and her husband, Wesley, are “empty-nesters,” and like many parents in that situation, have asked themselves “What do we do now?”

Petty said they have found one answer is: Don’t hang around that nest too long.

With the Pettys’ daughter, Sarah, attending college the past three years, they have tried to find more time for their outdoor hobbies such as kayaking and hiking.

“We try to go on weekends,” she said, adding that their favorite spots are Tims Ford, on the Duck River, and Rutledge Falls.

Her husband is an avid golfer—another activity she is trying to learn.

“That’s something we can do together too,” she said, adding that it has not been easy.

Petty began working for ITD in 2017 as a systems analyst 2. Originally from Lynchburg, Tennessee, where she played fast-pitch softball, she and her family now live in Tullahoma.

Petty graduated from Motlow State Community College with an associate’s degree in May 1996 and from MTSU in 2013 with a bachelor’s degree in Information Technology. She earned a master’s in Computer Science and Quantitative Methods from Austin Peay State University in 2017.

Petty worked for Motlow State Community College for 16 years in the Business and Financial Aid departments. She left there in 2000 and worked as IT systems coordinator for Alliance–Rock Tenn Co.

She returned to Motlow in 2008 and began to work in the IT department as a programmer analyst 2 and then moved into the position of director of Administrative Computing.

At MTSU, Petty supports and maintains systems and upgrades running on Banner and working to resolve issues and programming requests from users. Her main focus is in the area of finance.

Her favorite part of the job and its major challenge are one and the same, she said.

“There is something new every day, which can be a challenge but also a fun thing,” she said.

“There is something new every day, which can be a challenge but also a fun thing. It definitely keeps your brain active.”

Sandy Petty, ITD systems analyst 2
Tech Tips & Tricks: How to avoid Internet Access Anxiety

Few people would disagree that access to the Internet is essential in our modern age. Like electricity, water, and good coffee we notice when we don't have access to our social media feeds, cat memes, and email.

Internet Access Anxiety is further heightened when you are on the go and need that connection right away. Knowledge is the best defense against these sort of frustrations so below we have listed tips to getting on the wireless network here at MTSU.

**Tip 1: Expect to register the device.**

Every device you try to connect to the network will want you to register it. The username and password it will ask for will be your PipelineMT or FSA credentials.

For students, the username will be the first part of their email address—usually their initials with a number or a letter. For faculty and staff, it will be their username—typically their first initial and last name, though there are some variations.

For both types of accounts, your email password is expected in the second field. You will then need to provide your name and an email address to register. MTSU currently has a limit of six devices. If you get a notice that you can't register any more, contact the Help Desk at 615-898-5345.

**Tip 2: Expect to be assessed.**

Depending on your computer, you may be asked to download the NAC agent. The NAC agent is a piece of software provided by the University that makes sure your computer meets the minimum of security threshold to be on the network.

In brief, the NAC agent is a watchdog that ensures that your computer has an anti-virus and has downloaded Windows updates recently.

It keeps the network and others on it safe. If your computer does not have anti-virus software or needs Windows updates, the computer will go into remediation and suggest means to fix the problem.

**Tip 3: Watch for WLAN.**

For most areas on campus, wireless access will come through the WLAN. You will see WLAN in classrooms and offices and some public areas. It does not blanket the entire campus. There are places on campus with no internet at all. You will find another access point called RESNET around student housing. You can use either of these access points as needed, depending on which one is the strongest at your location.

**Tip 4: Avoid crowds for better access.**

High-volume areas such as the Student Union lobby or the KUC Grill are the places we want to settle down with a salad and check Instagram. They also will be the hardest places to register the first time particularly at the first of the semester. Lots of people in a location means the routers there are working their hardest and you will have the slowest connection.

**Tip 5: Disconnect and reconnect.**

With mobile devices in particular, you can have situations when the connection does not seem just right.

Apple devices especially don’t like to leave a particularly good access point if you move.

If you are having trouble, forget the network or turn off Wi-Fi and then turn it back on. It may seem pretty basic, but doing so can resolve a lot of issues.

Finally, it is important to know that you are not alone if you are having problems. Contact the ITD Help Desk if you are having internet connection trouble.

You can bring your device in to the Keathley University Center (KUC) room 320 any time between 8 a.m. and 9 p.m. Monday–Thursday and 8 a.m.–4:30 p.m. on Fridays to be evaluated and helped.

The ITD Help Desk also has weekend hours from 8 a.m. to 4 p.m. on Saturday and 2 p.m. to 9 p.m. on Sundays if that is more convenient.

The Help Desk can be reached at the number listed above or by email at help@mtsu.edu.
What's on my screen? Don't panic, it's new Alertus system

Alertus Desktop Notifications are being introduced as an enhancement to the University’s Alert4U (aka Rave) critical notification system.

The Alertus system was deployed to computers on campus in December. The desktop notification system is in addition to other current modes of communication through Alert4U, such as text messages, phone calls, and emails. Alertus notifications will be sent to computers on campus and will take over their screens.

You will want to pay attention to any message that pops up, follow any instructions, and then click “Acknowledge” to remove the alert.

Once the client is installed, you may notice the following new icon in your campus computer’s lower right system tray (PC) or in the top menu bar (Mac):

When an alert is sent, campus computers with the Alertus client installed will see this message displayed on the screen (see below example). The message will fill the entire screen, so please do not panic.

A reboot was required to complete the installation. If you have any questions, contact the ITD Help Desk at 615-898-5345 or at help@mtsu.edu.

Self-Service Password Reset coming to MTSU in February

Starting the week of Feb. 17, 2020, ITD will begin implementing the Self-Service Password Reset (SSPR) feature within Microsoft Office 365 for faculty and staff to improve users’ ability to manage their MTSU password.

This means that in addition to using a recovery email address to verify your identity prior to resetting your password, you will have the option to verify your identity using either:

- Security questions
- A phone number to receive a call or text message
- A code generated by the Microsoft Authenticator app if you configured it for use with multi-factor authentication.

This also means the “Forgot my password” option on MTSU’s single sign-on screen will begin working for all students, faculty, and staff.

Once enabled for SSPR, the next time you log into an SSO service such as PipelineMT, Desire2Learn (D2L), Office 365, etc., you will be required to complete the enrollment process. The enrollment process includes completing your security questions, verifying your phone number, and verifying your recovery email address.

Read more about Self-Service Password Reset in the online FAQs at mtsu.edu/security/sspr-faq.php. Also, you can read the instructions for the enrollment process online at mtsu.edu/security/sspr.php.

If you have any questions, contact the ITD Help Desk at 615-898-5345 or at help@mtsu.edu.
Practice some etiquette when using S4B Instant Messaging

As many of you have discovered, using the Skype for Business instant messaging feature is a great way to collaborate at work.

IM is a quick and efficient way to check a user’s availability and connect in real time, because it is less formal than email and less intrusive than a phone call. However, it is important to remember that instant messaging is a business application and should be treated with the same professionalism as other methods of communication.

Here is some IM etiquette advice to keep in mind when reaching out via S4B Instant Messaging:

- **Check user’s presence/status prior to sending an instant message.** If their status is set to “available,” they are most likely ready to communicate. If their status is set to “busy,” they may or may not be available. However, if their status is set to “away,” “in a meeting,” “do not disturb,” or if the user is unavailable, you should not begin a conversation. As a reminder, you should always set your status to let others know your availability.

Even if their presence is “available,” and especially if they’re set to “busy,” you should ask for permission prior to beginning a conversation—just as you would over the telephone or if you were stopping by their office.

- **When initiating an IM conversation, you should ask whether it’s a good time to chat.** Starting the conversation with something similar to, “Hi, do you have a minute? I have a quick question about our upcoming meeting.”

This is a professional and helpful way to ask for permission to continue the conversation and lets the user know what the conversation is in reference to. Including whether or not it’s a time-sensitive matter is also very helpful. If the user states they’re busy, ask when would be a better time to chat or if there is a preferred means of communication. If the recipient does not reply, the conversation should stop.

- **Keep messages and conversations concise.** IM isn’t the best place for lengthy descriptions or complex ideas. If your IM session starts to become too long or unproductive, suggest adding audio and/or video to the chat to continue discussing the matter.

- **Ask before bringing another user into a group chat or a virtual meeting.** This is based on the same principle as asking permission before initiating a one-on-one chat.

- **Keep messages business-appropriate.** All business communication should be professional. Never communicate something in chat that you wouldn’t send in email or say in person. The same goes for your profile picture. When uploading a picture, keep in mind that your profile picture is visible to anyone on MTSU’s S4B infrastructure and anyone you communicate with.

- **Officially end the chat.** It’s not always clear when an IM conversation is over, so it’s helpful to end with a “thank you” or “good-bye.”

Silvia C. Fernandes, UC systems administrator, can be reached at 615-904-8368 or silvia.fernandes@mtsu.edu.

---

Access Success

Aira app will provide descriptions for visually impaired on campus

A new app coming to campus soon will assist the visually impaired on campus by using their smart phone camera to allow someone to see and describe their surroundings.

The app called Aira will be available some time during the spring semester, said Lance Alexis, MTSU director of ADA compliance.

“Users will download the app to connect to an Aira agent, use the internal camera on the device, and an agent can describe what is in the camera’s view,” Alexis said.

“For people with limited to no vision, this product will assist with navigating campus, describing performances at Tucker, describing exhibits at Todd Art Gallery and the Baldwin Photography Gallery, describing athletic events that don’t have a radio accompaniment, describe classroom visuals, and use vending machines.”

Alexis said the new app “is a game-changer that will increase the safety and comprehensive campus experience for people with limited to no vision.

“The accessibility of areas that are basically entirely visual like gallery exhibits will now be accessible and areas that have a strong visual component like a play at Tucker will now be able to be much more fully experienced,” he said.

According to the Aira website, users can just open the app and call the company.

“You’ll connect with real, highly trained people who can see your surroundings through your phone’s camera,” the website states.

“Protecting your privacy and ensuring you feel secure using Aira are our top priorities. Anyone you connect with will have passed robust background checks, signed strict privacy clauses, and undergone weeks of rigorous training.”

For more information on the app visit [aira.io/](http://aira.io/).

For questions about usage at MTSU, contact Alexis at 615-898-2185 or lance.alexis@mtsu.edu.