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AeroSpace FRONTIERS

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Safely Delivering our **Mission, Virtually** and On-Site

The successful Saffire IV experiment exemplifies our ability to deliver on our missions while operating virtually. Recently, a limited number of mission-critical projects have returned to on-site work. With the recent upsurge in local COVID-19 cases, we continue to be mindful of maintaining health and safety. Due to your diligence in practicing social distancing, wearing face coverings, and hand washing, we are able to continue to deliver on our commitments while keeping everyone safe and healthy.

Thank you for your continued focus on your health and safety!

AeroSpace Frontiers

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Submit short articles and calendar items to the editor at doreen.b.zudell@nasa.gov.

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GRC-2020-CN-00042

Photo by University Hospitals

NASA Glenn and University Hospitals (UH) have collaborated on new methods and technologies for decontaminating personal protective equipment (PPE) for workers caring for patients with coronavirus (COVID-19).

A team of researchers recently developed and tested two new approaches that could enable health care professionals to sanitize masks on-site and safely reuse them. These approaches also may be useful to the aerospace community when traditional sterilization techniques might not be available.

Atomic Oxygen Method

Glenn Environmental Effects and Coatings Branch members—Sharon Miller, research engineer, and Bruce Banks, physicist-developed a process and hardware to decontaminate masks using atomic oxygen. Prevalent in low-Earth orbit, these single oxygen atoms can remove organic materials that cannot easily be cleaned by other methods.



GRC-2020-CN-0004

Photo by University Hospitals

Drs. John and Raju at UH Cleveland Medical Center with the device that decontaminates masks using atomic oxygen.

Glenn, University Hospitals Develop PPE Decontamination Methods

"On Earth, we create atomic oxygen by putting ozone (O3) in a chamber and heating it," Miller said. "As the ozone decomposes into atomic oxygen, it can kill organisms like viruses."

Further testing is needed to verify the method can be used to perform multiple decontamination cycles without damaging the PPE. Recent filtration tests performed at an independent testing laboratory showed N95 masks filter well and pass acceptance testing after 20 minutes of atomic oxygen treatment. In early May, NASA provided a prototype for UH to test on N95 masks. Early results confirm the method deactivates the virus, and continued testing will determine the minimum ozone concentration and exposure time needed for disinfection.

"Ozone diffuses easily through and around objects, which makes it promising for sterilizing inside an N95 mask filter or loosely stacked masks, and it could potentially sterilize without leaving a residue," Banks said. "The process could be scaled up to treat multiple batches of PPE or made portable for small hospitals in rural areas. No liquid chemicals would be needed, just oxygen and nitrogen gas."

Peracetic Acid Method

UH doctors Amrita John and Shine Raju, infectious disease and critical care physicians, are examining peracetic acid as an option for decontaminating PPE. Peracetic acid is a chemical disinfectant commonly used in the health care, food and water treatment industries.

"We found that the peracetic acid disinfection method is very effective in killing 99.9999% of viruses and even highly resistant bacterial spores from contaminated N95 masks without any detectable loss of filtration, structural integrity and strap elasticity for up to five decontamination cycles," Raju said. "We believe that the peracetic acid disinfection



The ozone sterilization system undergoing checkout tests at Glenn prior to delivery to UH for virus testing. Pictured, left to right: Miller, Banks and Frank Lam.

method is the fastest method of mass-decontamination of N95 respirators currently available."

The U.S. Department of Veterans Affairs (VA), Case Western Reserve University and Glenn are participants in this multiinstitutional study.

"We have been honored to join forces with the NASA team, as well as researchers at the VA and Case, to promote innovation discovery in this new frontier," said Kipum Lee, managing director of the UH Ventures Innovation Center and co-lead of the alternative PPE strategy team.

For more details on this collaborative research, go to https://go.nasa.gov/3gi2Trx.

By Jan Wittry

Check Out These Ergonomic Tips for Teleworking

Are you feeling uncomfortable in your home office? You can increase your comfort by applying ergonomic principles! They will help you wherever you are working—in your NASA office, home office, garage, kitchen, or garden! The two major issues observed during assessments are lack of movement and incorrect posture. Here are some important factors from Glenn's Occupational Health Branch to keep in mind while working from home.



Movement

After 20 minutes of inactivity, the body and brain begin to fatigue and the discs in the spinal vertebrae begin to settle.

- Take a microbreak—20-second to 2-minute walk and/or stretch/exercise session—every 20 minutes.
- Move as much as possible throughout the day.
- Stand up (using a countertop or homemade stand up desk). No more than 20 minutes at a time; stand 2 4 hours per day.

Posture

Maintain good posture throughout the day.

Workstation

- Body should be relaxed and remain in a straight and forward-facing position.
- Ears should be directly above the shoulders and nose should be aligned with the bellybutton.
- Upper arms should be close to your body and elbows should be next to your waist.
- Forearms should be parallel to the floor and aligned with wrists/hands while typing.
- Work surface should be just below elbow height.
- Avoid awkward or static positions, reaching or twisting.
- Do not rest arms/wrists/hands on any surface.





Chair comfort

- Use a folded blanket to increase height and to add seat padding. Use a rolled-up towel behind the lower back for lumbar support.
- Use a footrest while sitting and standing; make one out of a sturdy box or a rolled-up blanket.
- Alternate each foot on the footrest every 10 minutes.

Monitors

- Position them approximately an arm's length from face.
- Do not lean—if you have trouble seeing the information on your screen, move your monitor closer or increase the size of the text on your screen.
- The top of the monitor should be below eye-level.
- Follow the 20/20/20 rule—every 20 minutes, look 20 feet away from the monitor for 20 seconds.

You can find more information on Glenn's Ergonomics website: https://www.grc.nasa.gov/smad/office-pedestrian-safety/ergonomics/

Center Welcomes New Deputy Director

Center Director Dr. Marla Pérez-Davis has appointed **Susan Motil** as the next deputy director of NASA Glenn. Motil, a 31-year veteran of NASA, most recently managed the Orion Program's European Service Module Integration Office (EIO). She succeeds Pérez-Davis, who was named center director in January.

"Sue is a solutions-oriented leader with outstanding communication skills, a track record of successful technical leadership and the institutional knowledge needed to meet the demands of the center director's office. Her distinguished career at Glenn has demonstrated her work ethic, passion and commitment to NASA. I look forward to working with Sue as we move forward with Artemis and continue to change the way we fly," said Pérez-Davis.



Motil

Glenn Announces Three Senior Staff Promotions

Yvette Harris has been selected Director of Glenn's Office of Diversity and Equal Opportunity, effective June 21. She previously served as director of Equal Employment Opportunity (EEO) for the Defense Logistics Agency, under the Department of Defense, New Cumberland, Pennsylvania. She has served in several EEO positions for government agencies throughout her career. Harris has a bachelor's degree in Labor Studies from Indiana University and Master of Science degrees in Human Resource Management and Counseling and Psychology from Troy University.





Lobo

Mary Lobo has been selected Director of Glenn's Technology and Innovation Office (TIO), effective June 21. She served as acting deputy director and acting director for the past 19 months. Prior to joining TIO, Lobo was the chief of the Test Facility Management Branch where she was responsible for the management of all the major research and development ground test facilities at Lewis Field. Lobo has worked as a test engineer and a space simulation facility manager. She holds a bachelor's degree in mechanical engineering from Case Western Reserve University.

Konstantinos (Gus) Martzaklis has been selected director of Glenn's Safety and Mission Assurance Directorate (SMAD), effective July 20. Martzaklis has been serving as acting director of SMAD since January 6. Prior to being appointed as the acting director, he served in several official management capacities within the SMAD, including associate director and chief of Glenn's Program and Project Assurance Division. Martzaklis holds a bachelor's degree from the University of Akron in electrical engineering and a Master of Science degree in engineering from Case Western Reserve University.



Martzaklis

Students Find Benefits Through Virtual Internships

NASA Glenn is holding its first-ever virtual internship session this summer with over 100 interns joining the center remotely to provide socially distanced support. While teleworking is an adjustment from traditional on-site experiences, many interns are discovering advantages to interning remotely. Here are a few comments from 2020 summer students interning through Glenn's Office of STEM Engagement.



GRC-2020-CN-00049

Carnell W. Bolden, University of Miami Air-Breathing Propulsion Branch Mentor: Dr. Arman Mirhashemi

Interning remotely at Glenn this summer has not stopped Bolden from making meaningful connections with other engineers and employees at NASA. Bolden's work involves an ultrasound tomography temperature technique to measure temperature fields.

"Working remotely also has the unique advantage of teaching myself and others to be adaptable," said Bolden, "so that when the adversities of life may come, we can respond and progress to be stronger, smarter and more resilient than ever."



GRC-2020-CN-00050

Jason E. Fantl, University of Wyoming Secure Networks, Systems Integration and Test Branch Mentor: Rachel Dudukovich

Fantl is working on the architecture of high-speed delay-tolerant networking. While he wishes he could have seen Glenn's facilities in person this summer, he's thankful that his work translates well into teleworking.

"The bulk of what I'm doing is programming," said Fantl, "and luckily computer science is set up nicely to be done remotely."



GRC-2020-CN-00051

Nicole J. Swatton, Arizona State University Photovoltaic and Electrochemical Systems Branch

Mentor: Jeremiah McNatt

As a way of staying connected, interns have been placed into groups led by peer leaders who organize weekly meetings for everyone to "check in and talk." Nicole Swatton, a returning NASA intern, is one of the peer leaders, and so far, she's found her experience to be a rewarding one.

"The interns are really receptive and understanding to the peer groups," said Swatton. "It's nice that they are willing to talk and put in the effort to meet up."



On the Cover:

While teleworking from home, intern Cynthia Zhang sometimes finds herself accompanied by an unlikely office mate: her little brother, Benjamin. This article was written by Cynthia Zhang, Northwestern University, interning in the Office of Communications. Mentor: Jan Wittry

Photos were taken by interns with guidance from ITC Photographer Bridget Caswell.



GRC-2020-CN-00052

Letizia Moro, Boise State University System Architectures and Analytical Studies Branch Mentor: Michael A. Marsden

Moro is working with image processing and artificial intelligence. Her project deals specifically with using technology on airplanes at airports to accomplish tasks such as recognizing and matching tail numbers to flight information and camera tracking.

"I'm so thankful that NASA offers this internship program! A lot of my friends had their internships cancelled," said Moro.



GRC-2020-CN-00053

Josh K. Smith, University of Arizona Intelligent Control and Autonomy Branch Mentor: Dr. Jonathan Litt

Smith is helping model power propulsion systems for autonomous vehicles. When he is not working on this project, he is attending virtual events organized by the Office of STEM Engagement for interns, which include presentations from employees and guided virtual tours.

"Through this virtual internship, I've been able to network with many other centers and many other people," said Smith, a first-time intern from Phoenix, Arizona. "I'm talking to people across the country right now."



GRC-2020-CN-00054

Conner E. Stevons, University of Michigan Space Communications & Spectrum Management Office Mentors: Ian Nemitz, Evan Katz and Brian Vyhnalek

Along with the work he is doing in quantum communications, Stevons said his assigned group of interns has been helpful in making new connections at Glenn this summer, albeit virtually.

"The unexpected friendships I've built so far are great. I thought it'd be much more difficult," said Stevons. "Hopefully we'll meet up in the future when the pandemic is over or contained a little bit better."



GRC-2020-CN-00055

Mónica A. Santiago, Polytechnic University of Puerto Rico Aviation Test Branch Mentor: Dr. Waldo J. Acosta

For Santiago, who is teleworking from her home in Puerto Rico, NASA's decision to hold internships virtually this summer provides more accessibility for interns living far away. She is working with the lcing Research Tunnel and relocating heating systems to minimize heat losses and reduce the time required for them to heat up again.

"Remotely interning gives students the opportunity to work from home and still be a part of the whole process," said Santiago. "There are no barriers."

Perseverance Rover Launched! Looks for Signs of Life

The Mars 2020 mission—with its Perseverance Rover launched on an Atlas V–541 rocket from Cape Canaveral Air Force Station, Florida, on July 30. The mission seeks out signs of ancient microbial life on what was once a river delta 3.5 billion years ago. The SUV-sized vehicle will collect and store rock and soil samples to be retrieved by a future mission and brought back to Earth.

The rover is powered by a multimission radioisotope thermoelectric generator provided by the Department of Energy (DOE). This is a type of Radioisotope Power Systems (RPS). NASA Glenn manages the RPS program for NASA's Science Mission Directorate. Glenn also manages the relationship with DOE.

The Mars Perseverance rover mission is part of NASA's Mars Exploration Program, a long-term effort of robotic exploration of the Red Planet.



GRC-2020-CN-00045 Photo by NASA Johnson On the Perseverance Rover, the multi-mission radioisotope thermoelectric generator, designed by DOE, was provided to NASA as part of the space agency's Radioisotope Power Systems Program.

NEWS AND EVENTS

Return to On-Site Work, COVID–19 Information Website

Glenn's Return to On-Site Work and COVID-19 Information website is up and running! Please visit the site for the latest information on Return to On-Site Work guidance, COVID-19 information, N95 masks, FAQs and much more! There is also an "Ask the Team" button employees can use to submit questions to the Industrial Hygiene Team. https://www.grc. nasa.gov/smad/rtow-covid/

Additionally, the agency has updated the NASA People Coronavirus website to make it a better resource for employees. The redesign contains important information to navigate through these difficult times, including the status of each NASA center, health and safety, teleworking, information technology, travel, leave and pay, and the agency's approach to increasing on-site work. https:// nasapeople.nasa.gov/coronavirus/



NASA Startup Studio Kicks Off in Cleveland



Small business owners and aspiring entrepreneurs participated in a virtual kickoff to the NASA Startup Studio, hosted in Cleveland this year. This 8-week startup program pairs NASA-developed

technology with business and technical talent who hope to launch the next big NASA spinoff. FedTech, a Washington, D.C.-based Startup Accelerator, runs the program on behalf of NASA. From July 9 through Sept. 2, FedTech builds teams around nine cutting-edge NASA technologies selected for this session, ranging from advanced sensors to aircraft propulsion systems, including six invented at NASA Glenn. Expert mentors will counsel teams to explore markets, build a business model, validate their technology and spin off a business to create a commercial product. At the conclusion of the NASA Startup Studio session, Sept. 2, FedTech will host a virtual public event to

showcase team presentations of their final business plans. For more information, visit https://go.nasa.gov/2Chamsz.

NASA Leaders Participate in Virtual Glenn Memorial Symposium

The American Astronautical Society, in conjunction with NASA Glenn, virtually hosted the 2nd Annual John H. Glenn Memorial Symposium, July 15–17. The theme of the symposium "Powering Innovation From the Sky to the Stars," brought together leaders in government, space and aeronautic industries, and academia. A full range of topics were discussed, such as progress on the Artemis and the Space Launch System (SLS) and Orion programs; advancements in aerospace technology, including power, electric propulsion and communications for air and space; low boom technology; space policy; workforce development and more.

Center Director Dr. Marla Pérez-Davis provided welcoming remarks and shared a video on the center's world-class facilities and the work supporting the themes and various topics of this year's symposium. Administrator Jim Bridenstine gave the keynote address, which focused on two priorities: Gateway and the Artemis/Human Landing System. NASA leadership and Glenn managers were among the session panelists on the agenda for the 3-day symposium.



Dr. Pérez-Davis and Bridenstine participate in the symposium.

NOAA Honors NASA Spectrum Team

The National Oceanic and Atmospheric Administration (NOAA) has recognized three members of the NASA Spectrum Management Office in Glenn's Space Flight Directorate. **Michael Evans, Glenn Feldhake** and **Jacquelynne Houts** will receive NOAA's Bronze Medal in Scientific/Engineering Achievement.

The Bronze Medal is NOAA's highest honorary award presented by the Under Secretary of Commerce for

Oceans and Atmosphere to an individual or group for significant contributions. The team evaluated the potential effects of 5G interference on the 24-GHz remotesensing band and worked closely with the NOAA Acting Administrator and Department of Commerce leadership to communicate the risks to satellite remote sensing and weather prediction if safeguards are not in place.

A ceremony is planned in Washington, D.C., at a later date. The Glenn employees, along with team members from NASA Goddard and Headquarters, will receive a framed certificate and a medal.





Feldhake



Houts

PROMOTIONS

RETIREMENTS

Carmela Bynum, Facilities Infrastructure Division, Facilities, Test and Manufacturing Directorate, retired July 3, 2020, with 42 years of service.

Dr. Marv E. Goldstein, senior scientist, Aeroacoustics Research in the Propulsion Division, Research and Engineering Directorate, retired May 1, 2020, with 53 years of service.



DeFelice

David M. DeFelice has been

selected deputy chief of the Office of Communications, Center Operations Directorate. DeFelice most recently served as Public Engagement Team lead, with previous experience as the organization's acting chief. He has led several large center and agency-level communications projects. Sean R. Currie has been selected deputy chief of the Aviation Test Branch in the Testing Division, Facilities, Test and Manufacturing Directorate. He most recently served a detail as lead electrical engineer in the 10- by 10-Foot Supersonic Wind Tunnel.



Currie

MORE THAN A MEMORY



Richard (Mac) B. McEntee, 87, a 1995 retiree with 20 years of NASA service, died June 26. McEntee was a U.S. Air Force veteran. He joined NASA in 1975 and graduated from the Apprentice Program to begin a career in the Research Instrumentation Branch, Fabrication Division. He earned a Cost Reduction Award for a new, more efficient thermocouple alignment technique using a magnet and a ball bearing. In 1990, McEntee relocated to the Management and Project Support Office, where he remained until retirement.

McEntee

Upcoming Center Events



2020 Virtual Center Picnic Tuesday, August 18 11 a.m. to 2 p.m.

This year's event will feature special presentations, games and activities, and a Virtual Vehicle show all available online! See Today@Glenn for more details on how to participate.

POC: Betsy Lavelle, 216–433–3198 or betsy.e.lavelle@nasa.gov

Save the Date! Virtual Safety and Health Awareness Event Tuesday, Sept. 22

Listen to exciting speakers, visit virtual vendors and participate in the Virtual Health Walk. You won't want to miss it!

POC: Steve Herron, 216–433–2917 or steven.l.herron@nasa.gov



BE SAFE and HEALTHY because YOU MATTER

VIRTUAL COFFEE AND CONVERSATION

The Glenn Science and Engineering Library will host a virtual Coffee and Conversation with Chief of Aircraft Operations James "JD" Demers. Join them in Microsoft Teams on Wednesday, Aug. 19, from 11 a.m. to 12 p.m. to hear about Demers' career path and his advice for future aviators. See Today@Glenn under Upcoming Events for the link.

POC: Robin Pertz, 3-5776

OUTDOOR SIREN TESTING

The Emergency Management Office staff will conduct a mass notification noise test at bldg. 15 on Wednesday, Sept. 2, at Lewis Field. They will conduct an audible siren test on the "tornado" tone on Saturday, Sept. 5.

POC: Allen Turner, 3-6826

AEROSPACE TOASTMASTERS MEET

Improve communication and leadership skills through Aerospace Toastmasters. The group meets on Microsoft Teams on Thursdays from 12:05 p.m. to 12:50 p.m. Contact john.wang-1@ nasa.gov, extension 3–3613, for more information. https://aerospace. toastmastersclubs.org/

TELEMEDICINE CONSULT SERVICES

Glenn's Medical Services Clinic staff is available to provide telephonic medical consultations for all Glenn employees during the current center telework stage. Contact their staff for a consult today by sending an email to grcmedicalservices@mail.nasa.org.

VIRTUAL FITNESS FUN

Join Glenn's Fitness Center staff and your co-workers for daily workouts via Microsoft Teams or exercise on your own with specially designed workouts. For information, visit https://www.grc. nasa.gov/smad/fitness/.

POC: Bob Laws, 3-6313

Stay tuned to Today@Glenn for updates on these activities

Deadline for next calendar section is **Aug. 19, noon**. News and feature stories require additional time. National Aeronautics and Space Administration

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www.nasa.gov

Read AeroSpace Frontiers online at https://www.nasa.gov/glenn/aerospacefrontiers.

Student-Built Lockers Fly on NASA's Historic Mission

People around the world celebrated the safe arrival of NASA's SpaceX Demo-2 crew and cargo to the International Space Station, May 31.

For Glenn scientist Nancy Hall, seeing four HUNCH storage lockers among the cargo on the historic flight represented a victory. It meant that students, possibly some that Hall mentors, in the High School Students United with NASA to Create Hardware (HUNCH) Program designed and built parts that went into these four lockers.

HUNCH is an innovative school-based program that partners NASA centers with over 277 high schools across the nation to develop items that will ease living conditions aboard the space station. The projects vary from hardware to personal soft goods and culinary requests from the astronauts or NASA Flight Crew Systems and Operational groups.

These HUNCH single stowage lockers (SSLs) carried liquid cooling ventilation garments, crew shoes and an exercise harness for the astronauts.



GRC-2020-CN-00047 Photo by Nancy Hall Screen shot of four HUNCH lockers that were part of the cargo brought onboard the space station from the historic SpaceX Crew Dragon Demo-2 spacecraft.



GRC-2020-CN-00046 Photo by NASA JSC One of the HUNCH lockers with signatures on the space station.

"Over 1,300 items designed and built by students have flown to the space station and NASA Johnson tracks all the individual products that go up, just like these four lockers," Hall said. "We also allow the students, teachers and mentors to sign the lockers. I know one of the lockers that my students and I signed, made it to the space station."

In addition to mentoring students from 13 design and prototype schools, Hall also worked with five HUNCH culinary schools/academies, three hardware schools, and two soft goods schools for the 2019-2020 school year.

For more information on mentoring or referring your schools to the NASA HUNCH program, visit https://nasahunch.com

By S. Jenise Veris

Emergency and Inclement Weather Lines

Lewis Field: 216–433–9328 (WEAT) Plum Brook Station: 419–621–3333

Connect With Glenn

