National Aeronautics and Space Administration

tech bytes

AMES' EMERGING TECHNOLOGIES

Breaking Through the Haze

AERACEPT Emerges from ECI to Tackle Aerosol Science

SUMMER 2025

In this issue:

Chief Technologist's Corner

The Ames Office of the Center Chief Technologist (OCCT) is excited to welcome you to the revival edition of TechBytes. After a temporary pause, we're pleased to return with fresh momentum to highlight the groundbreaking technologies emerging from Ames and their critical role in advancing NASA's mission.

This edition features inspiring concepts from the Center Innovation Fund (CIF) program, which fosters creativity, innovation, and collaboration—both within Ames and across NASA Centers. CIF supports high-risk, high-reward research, encouraging breakthrough ideas that can address the evolving technology needs of NASA and the Nation.

We're also proud to showcase AERACEPT (Aerosol Rapid Analysis Combined Entry Probe Technology), developed through the Early Career Initiative (ECI), along with success stories from the Internal Research and Development (IRAD) program—both highlighting the ingenuity and forward-thinking solutions being generated by our workforce to support future NASA missions.

We hope this renewed issue of TechBytes continues to serve as a platform for celebrating innovation, encouraging collaboration, and connecting the Ames community with the exciting work that's shaping the future of exploration. Please feel free to share this edition with colleagues across the Agency.

-Office of the Center Chief Technologist

ABOUT THE COVER

Diana Gentry leads the Ames Aerobiology Laboratory (ABL), which investigates the conditions for life to survive and thrive in planetary atmospheres. She also co-directs the Bioengineering & Instrumentation Group Laboratory, which develops tools to study microbe–environment interactions. Dr. Gentry received a 2023 NASA Early Career Initiative (ECI) award to develop technology for sampling planetary aerosols—supporting a potential Venus mission and other applications—and is completing this work in 2025.

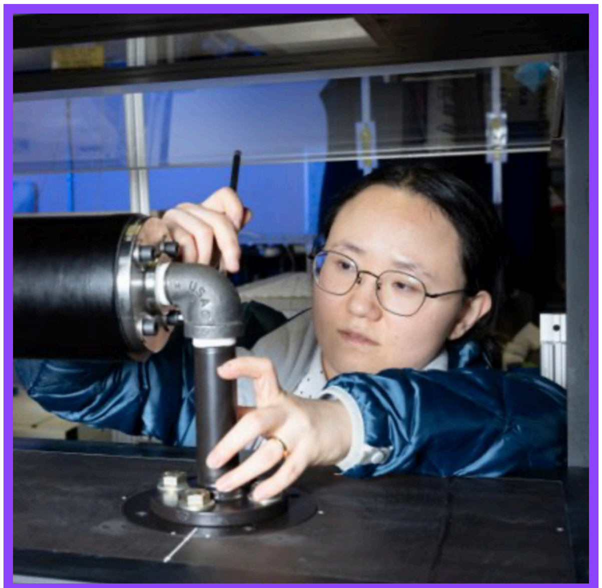
Breaking Through the Haze: **AERACEPT Emerges from ECI to Tackle Aerosol Science**

Imagine you live on Mars. Observing your nearest neighbor Earth, you see all kinds of clouds, hurricanes, plumes from volcanoes, dust storms, and more that clearly play a big role in the planet's surface and climate. How well could you study those interactions by sending one flagship mission every fifty years to take a single on-site measurement? A new technology concept, Aerosol Rapid Analysis Combined Entry Probe/sonde Technology (AERACEPT), fits the ability to capture and analyze aerosols in a small-spacecraft footprint for the first time, opening up the possibility of more frequent missions to study these systems on Venus, Mars, Uranus, Neptune, Titan, Triton, and more.

AERACEPT, led by PI Diana Gentry from NASA's Ames Research Center, was selected for the FY23 Early Career Initiative (ECI) program. The ECI is an annual call from STMD that supports teams of early career NASA scientists, engineers and technologists in a two-year effort to develop an early-stage technology. Each NASA center may submit up to two proposals through their Center Chief Technologists (CCT) to the STMD Program Executive in response to the call. Dr. Gentry's proposal for AERACEPT was one of two Ames finalists for the FY23 call, and one of just five selected proposals out of fourteen finalists across all NASA centers.

Atmospheric aerosols – which include clouds, hazes and dust – are a key part of how mass and energy move around worlds. Their planetary effects can be dramatic: Earth and Venus were likely similar early in their planetary histories, during the period when life on Earth arose, but modern-day Venus is surrounded by a thick veil of sulfuric acid clouds that keep its surface temperatures far above the boiling point of water. Understanding these kinds of interactions teaches us not only about the fate of the Earth-like worlds in our solar system, but also potentially habitable exoplanets.

However, aerosols are also notoriously difficult to study. Remote observation is limited by opaqueness (as the expression goes, the view is hazy). They are also relatively sparse – Earth clouds, on average, have just 0.1 teaspoon of water per cubic meter – so a robotic mission needs to carry either highly sensitive instruments to operate on the small sample volume accessible during descent through the atmosphere or include a glider, balloon, or aircraft system that allows it to spend more time sampling aloft. That complexity currently limits this kind of exploration to once-in-a-lifetime flagship missions. But aerosol systems are highly dynamic – think of how dramatically clouds on Earth can change in the span of a few hours! – so even a highly accurate set of measurements taken just once may still fail to capture key information.



Jimin Park (Code AOX) installs the 59% scale model for wind tunnel testing in the ARC Fluid Mechanics Lab. Credit: NASA

AERACEPT is a novel design for a small-footprint planetary entry probe that allows a small aeroshell to function as a combined entry vehicle, aerosol particle sampler, and analyzer. By combining the capabilities of new thermal protection materials with aerosol sampling designs long used in aircraft, it operates at a higher (and hotter) speed that removes the need for parachutes and other forms of active descent control. When combined with an analysis payload that uses modern optical analysis techniques to perform chemical analysis of the captured aerosols at a correspondingly rapid pace, the team hopes that AERACEPT will make aerosol science accessible to smaller mission envelopes.

AERACEPT is a cross-disciplinary innovation – the team combines expertise from NASA Ames's divisions on entry and landing systems, low-cost mission and payload development, Earth science, and astrobiology, as well as external partner in optical instrument development Impossible Sensing – and this reflects the background of the team's principal investigator. Dr. Gentry's first love, as a high school student, was biology, but when she got to college, she found the lack of a research track distinct from pre-medical studies frustrating. After a few semesters studying physics and applied mathematics, she was advised by a professor that she might enjoy more hands-on work, and ended up switching to mechanical engineering. After deciding to continue to graduate school, she circled halfway back to her original interests by specializing in bioengineering. Dr. Gentry first worked at NASA Ames as an undergraduate intern on the GeneSat project. A few years later, she successfully applied to the pilot program of the Ames Graduate Cooperative Program while pursuing her Ph.D. at Stanford University. At Ames, she joined a high-altitude ballooning and suborbital rocketry project studying the transport of microorganisms in Earth's atmosphere. The vagaries of graduate funding left her moving between that project and several others, including astrobiology, synthetic biology, instrumentation development, and others, for several years, until she finished her thesis work with an original project on 3D printing of synthetic biomaterials. Since then, she's been a member of the science teams for BioSentinel and LEIA while helping found Ames's new Aerobiology Laboratory.

Christopher Naughton (Code TSA) installs one of the nose inlet test models in the CO_2 plasma jet chamber at the University of Illinois Urbana-Champaign CHESS facility. Credit: NASA

The idea for AERACEPT was sparked nearly four years ago in a three-way conversation with one colleague in airborne science and one in astrobiology. That rough idea for a single-body aerosol sample-on-descent probe resulted in a CIF proposal (declined), an ECI pre-proposal (turned down at the center downselect stage), a PSTAR proposal (declined), a second CIF proposal (selected), a Mission Design Center mini-study, an internal Planetary Mission Concepts Development grant from the thermal systems division, and finally a second ECI proposal which went on to win. Dr. Gentry credits her unusual path through graduate school with teaching her persistence, the value of being on good terms with colleagues across projects and disciplines, and the importance of coming back to the table with something new.

The AERACEPT team features some of NASA Ames's most promising early-career civil servants in science, technology, and engineering. Over the past two years, they have successfully completed a thermal material response test campaign at the University of Illinois Urbana-Champaign Plasmatron X facility and a wind tunnel test campaign at NASA Ames's Fluid Mechanics Laboratory, and are working to complete a capstone demonstration showing imaging of captured aerosols in a partial prototype. ■

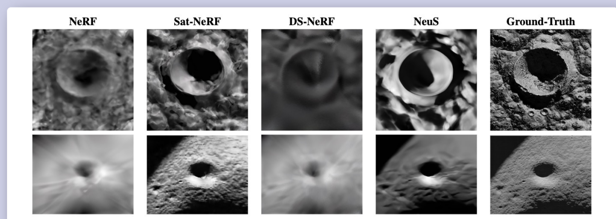
CONTACT diana.gentry@nasa.gov

Highlights **from the FY24 CIF Portfolio**

Robust 3D Terrain Modeling for Lunar Polar Operations and Science

PI: Caleb Adams, Code TI

This innovative terrain modeling project is advancing NASA's capabilities in mapping and understanding shadowed regions on the Moon through the development of Lunar Neural Radiance Methods (LunarN-RM). By integrating shadow-aware and depth-aware techniques into a Neural Radiance Fields (NeRF) pipeline, this technology enables accurate 3D reconstructions of topographic depressions, including permanently shadowed regions (PSRs)—key targets for Artemis missions. This work overcomes limitations of traditional photogrammetry and supports critical activities such as landing site selection and traverse planning. These methods are now being extended for Earth observation and subsurface mapping, directly contributing to NASA's exploration and science goals.

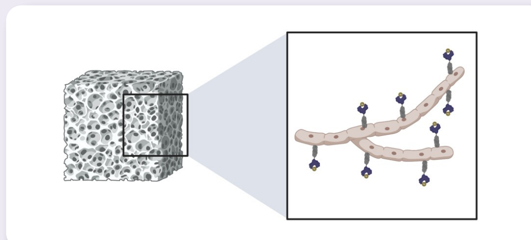


Qualitative results for each method using simulated (top) and real (bottom) orbital lunar imagery. Sat-NeRF with basic PE yielded the most visually accurate novel views, with mean PSNR/SSIM scores of 28.494/0.183 (simulated) and 28.934/0.472 (real-world).

Green Energy for the Red and Blue Planets

PI: Lynn Rothschild, Code SST

This pioneering project in green energy and sustainable exploration advanced NASA's goals in in-situ resource utilization (ISRU) by developing technologies to extract and recycle metals from extraterrestrial materials and electronic waste. The project enabled production of biomining proteins in microbial systems and proposed novel bio-based smart materials with high metal-binding efficiency. These breakthroughs support NASA's needs for on-demand manufacturing and logistics reduction in deep space missions. The work informs future efforts in ISRU and advanced manufacturing and has attracted interest from industry and scientific communities, including an upcoming presentation at the NASA/USGS Off-World Mining meeting in 2025.

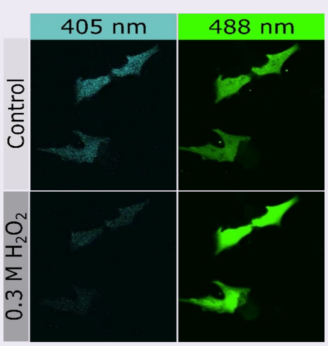


Filamentous fungi used for mycelium scaffolds can be engineered to produce and surface-display biomining proteins, enabling a single, integrated system for both structural material growth and metal-extracting protein production.

GenSens: Genetically Engineered Cellular Sensors for Biological Effects on Spaceflight

PI: Cekanaviciute, Code SC

To mitigate health risks from space radiation during long-duration missions, this project advances NASA's capacity to develop automated biological payloads. Researchers engineered a human induced pluripotent stem cell line to stably express HyPer7, a genetically encoded fluorescent sensor for reactive oxygen species—key indicators of radiation-induced cellular stress. The sensor demonstrated sufficient sensitivity to detect oxidative responses to deep space radiation, validating its use in spaceflight conditions. This work lays the foundation for creating self-reporting human organ models that enable autonomous detection of biological damage, supporting long-term monitoring and maintenance of astronaut health beyond low-Earth orbit.

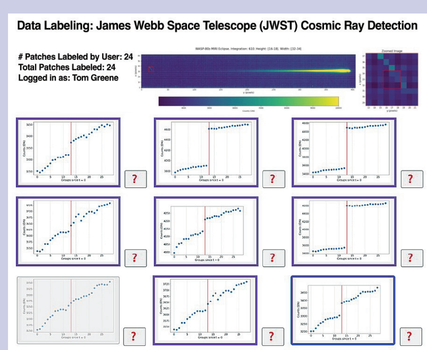


Differential fluorescence of HyPer7 in live human iPS cells shows clear responses to exogenous hydrogen peroxide. While 0.3 M is shown, detectable changes were observed at concentrations as low as 10 µM.

Fast and Accurate Detection of Cosmic Ray Contamination in JWST Data

PI: Thomas Greene, Code STA

Researchers developed a machine learning method to automatically detect cosmic ray contamination in astronomical data, significantly improving analysis accuracy for missions like the James Webb Space Telescope. The model outperformed traditional techniques in identifying affected pixels and demonstrated strong performance even with limited labeled data. While tested primarily on JWST datasets, the approach shows promise for broader application across future missions. This work has sparked interest within NASA and academic communities, leading to a proposal under the APRA program to expand its use. The technology aims to enhance the quality and reliability of scientific data in space exploration.



Web-based cosmic ray labeling tool.

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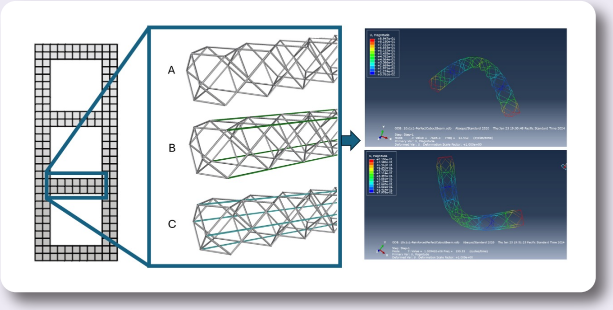
Robotic Construction of Hierarchical Truss Structures for Ultra-light Starshades

PI: Christine Gregg, Code TI

This project advanced robotic construction techniques for large, precise space structures like starshades, which could enable high-contrast imaging for exoplanet discovery without requiring larger telescopes. Researchers developed a reinforcement method for cuboctahedron lattice voxel structures that improves simulated structural efficiency by an order of magnitude—especially in slender, hierarchical designs. Experimental testing validated both the dynamic behavior and precision of these voxel assemblies, critical for space applications. These findings enhance the feasibility of autonomous, lightweight, and accurate structures for future in-space, lunar, and Martian construction, supporting NASA's goals in deep space exploration and next-generation astrophysics missions.

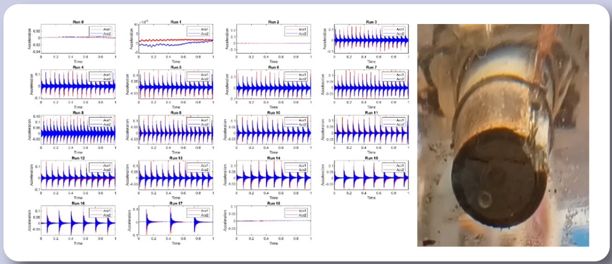


This work improved structural efficiency of hierarchical cuboctahedron lattices using a single reinforcement part, showing tenfold gains in simulation. Researchers validated vibration response and precision, evaluating integration with current robotic construction systems.

Acoustic Data-bases Characterization of Incipient Boiling for Space Applications

PI: Michael Khasin, Code TI

Researchers developed and demonstrated an experimental method to detect and characterize boiling behavior in cryogenic tank-like conditions using accelerometer-based acoustic sensing. The study simulated quasi-homogeneous boiling—key to cryogenic fuel management in space—and captured high-fidelity acoustic and visual data. Results revealed two distinct boiling patterns, random and rhythmic, and provided evidence for a transition from heterogeneous to quasi-homogeneous nucleation. This dataset lays the groundwork for applying machine learning to identify boiling onset and regimes. A collaboration with California Polytechnic State University will further analyze the data, supporting future advancements in cryogenic fuel system design for space applications.

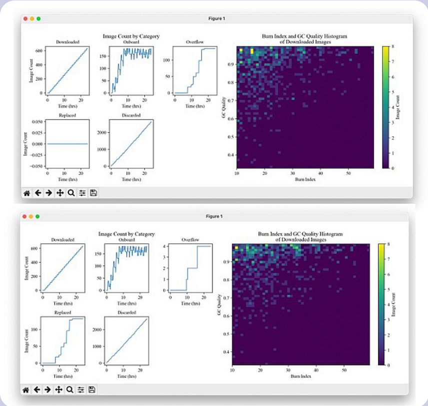


This work improved structural efficiency of hierarchical cuboctahedron lattices using a single reinforcement part, showing tenfold gains in simulation. Researchers validated vibration response and precision, evaluating integration with current robotic construction systems.

Enabling Early-Stage Simulation of Autonomous Space Missions

PI: Jeremy Frank, Code TI

Researchers developed a toolkit to support early-stage design of autonomous Earth science missions by simulating how different autonomy strategies affect mission performance. The tool combines existing orbit and coverage analysis with fast simulations of observing scenarios, incorporating both static data (e.g., surface features, sun angle) and variable conditions like cloud cover using Monte Carlo methods. It models two types of autonomy: image-based retention policies and onboard rescheduling algorithms. This approach enables mission designers to evaluate trade-offs between autonomy, instrument capability, onboard resources, and data return. A notional fire risk mission demonstrates the toolkit's ability to inform autonomy-driven mission design.

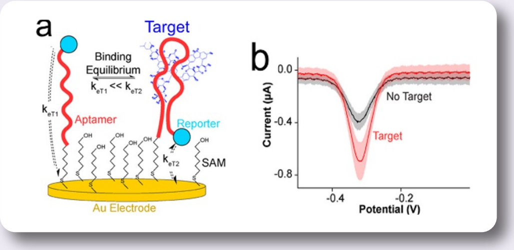


Results from different autonomy designs. Top: On-board Rescheduling and Smart Instrument. Bottom: Rescheduling, Smart Instrument and Smart Memory.

Wearable Microneedle Array for the Continuous, Electrochemical Monitoring of Biomarkers

PI: Jessica Koehne, Code RE

Researchers developed a wearable microneedle sensor that continuously monitors biomarkers, offering real-time health diagnostics without complex lab procedures—ideal for microgravity environments. The device supports behavioral health monitoring through electrochemical detection of cortisol and aligns with NASA's priorities in space biology, advanced habitation, and in-space manufacturing. Compatible with on-demand production, it addresses the challenge of limited resupply during sustained lunar or deep space missions. The team successfully prototyped the sensor using in-space manufacturing tools and advanced an electrochemical aptamer biosensor. Ongoing work focuses on optimizing aptamer selection and integrating the biosensor into the wireless microneedle platform.

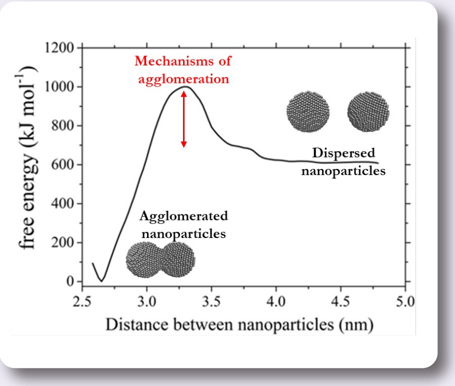


Electrochemical Aptamer Biosensor (EAB): a) Schematic shows aptamer bringing redox reporter closer to the electrode. b) Electrochemical data confirms signal response from aptamer-induced proximity of redox reporter to electrode surface.

Modeling Liquid Mirror Properties for Fluidic Telescope (FLUTE) Experiments

PI: John Lawson, Code TI

Researchers are advancing low-cost, large-scale space telescope technology by developing reflective liquid mirrors made from nanoparticle-infused fluids. This approach offers a lightweight alternative to traditional solid mirrors. The team focused on preventing nanoparticle aggregation, which degrades reflectivity. Using computational models, they predicted molecular interactions that influence particle stability and identified key physicochemical properties of the liquid that improve performance. These insights guide ongoing experiments aimed at refining formulations for stable, high-reflectivity mirrors. The work supports future space observatories by enabling scalable, efficient mirror systems that could transform optical performance in orbit.

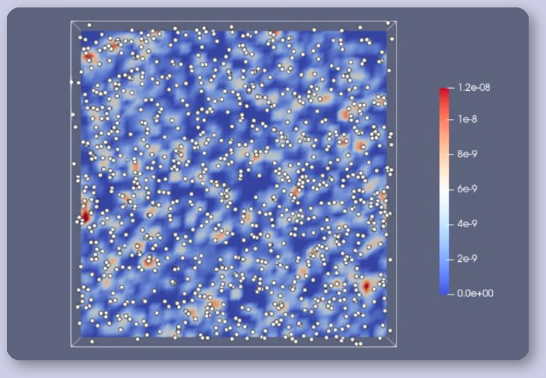


Free energy calculations show that nanoparticle aggregation resistance depends on barrier height (red arrow), which can be tuned through liquid, nanoparticle, and interface chemistry—critical for maintaining dispersion and achieving high mirror reflectivity.

CAMDLES: A Computational Platform for Microbial Systems Simulations Under

PI: Jessica Lee, Code SCR

Researchers enhanced the CAMDLES computational platform to better simulate microbial dynamics in spaceflight environments. By integrating a Brownian motion model, the tool more accurately represents microbial mobility, growth, nutrient distribution, and interspecies interactions in microgravity. This advancement supports predictive modeling for bioregenerative life support systems, crucial for long-duration missions. The improved platform reduces the need for costly spaceflight experiments by enabling optimized experimental design and data collection. Recent progress includes improved computational efficiency and validated microbial growth predictions under various conditions. These developments provide critical insights into microbial behavior, supporting sustainable exploration and crew health in future space missions.

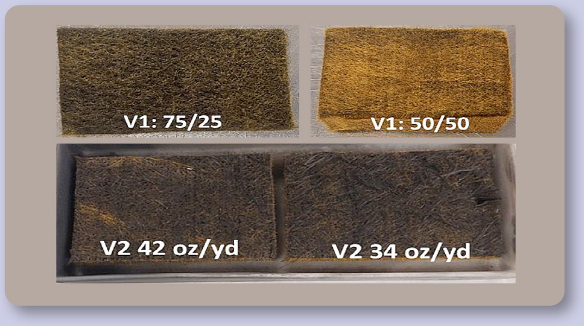


Snapshot of simulation showing heterogeneous distribution of metabolite (concentration notated in cell equivalents).

Materials Engineered for RE-Entry Using Innovative Needling Operations (MERINO)

PI: Keith Peterson, Code TSM

Researchers developed and evaluated PICA-Flex, a next-generation thermal protection material designed to reduce cost, production time, and system mass for atmospheric entry missions across the solar system. The team produced and tested multiple PICA-Flex variants, identifying a top-performing blend of carbon fibers and phenolic materials that successfully withstood arc-jet testing at 140 W/cm². This advancement supports NASA's goal of enabling science missions with efficient, scalable TPS solutions. Now selected for continued development under the Mars Exploration Program, PICA-Flex is also gaining commercial interest, with upcoming tests planned by ULA and on Varda's STRATFI mission and the second KREPE flight.

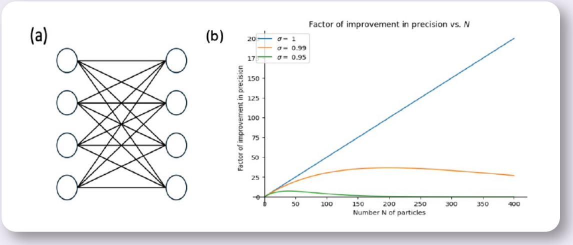


Variants tested different densities, carbon/phenolic ratios, and fiber types. The most promising, Variant 2, used a 75/25 PAN/Kynol blend by weight. Variant 1 used OPAN/Kynol blends at 75/25 and 50/50 ratios.

Photonic Quantum States for Earth Science Mass Changes

PI: Jason Saied, Code TI

Researchers evaluated the practical potential of quantum sensing (QS) technologies, which use entangled quantum states to improve measurement precision for applications like atomic clocks and Earth science gravimetry. The team assessed a promising family of quantum states under realistic noise models such as photon loss and amplitude damping. Results showed that, contrary to noise-free predictions, these states offer limited advantages under practical conditions. Larger systems did not always perform better; instead, intermediate-size states provided the most benefit. The findings highlight the need to explore alternative QS approaches and prioritize realistic performance assessments for future mission applications.



(a) The optimal states under particle loss are complete bipartite graphs with N/2 nodes per part; shown here for N=8.
(b) For different particle loss rates (1–σ), the plot shows the maximum precision improvement factor, Q(ρ)/N, using N-node bipartite graph states. At σ=1 (no loss), improvement scales with N. However, even small losses (e.g., σ=0.99) significantly reduce this advantage, and larger N no longer guarantees better performance.

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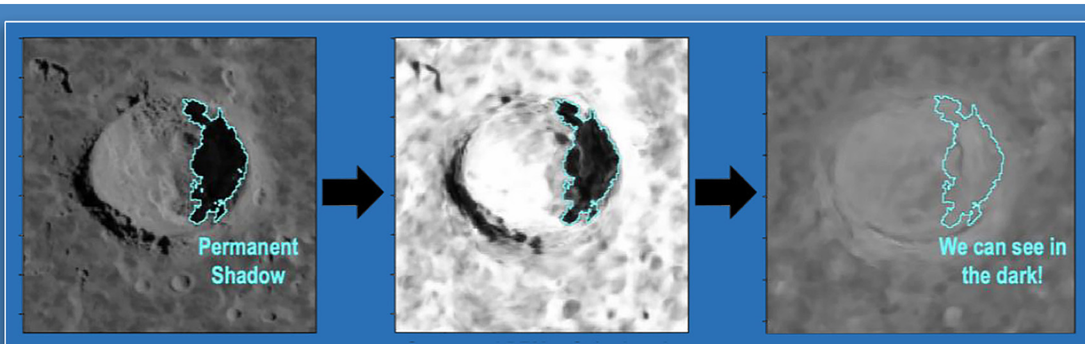
Bright Ideas in Dark Places: **Ames Team Wins ECI with LUMEN Innovation!**

We're proud to spotlight the winning Early Career Initiative (ECI) proposal: *Low-light Universal Mapping for Extreme eNvironments (LUMEN)*. This cutting-edge technology enables 3D mapping in extremely low-light conditions, unlocking access to some of the most scientifically valuable—but nearly visually inaccessible—regions of our Solar System.

By advancing computational imaging, LUMEN addresses NASA's urgent need for high-resolution mapping in permanently shadowed regions, such as cold traps on the Moon, to support Artemis, Commercial Lunar Payload Services (CLPS), Lunar Small Spacecraft Resource Mapping Missions, and the Volatiles Investigating Polar Exploration Rover (VIPER) missions.

LUMEN is led by Principal Investigator and Project Manager Caleb Adams, with key contributions from Molly O'Connor, Aaron Woodard, Ellemieke Van Kints, Dr. Ariel Deutsch, Dr. Antony Gillette, and Ignacio Lopez-Francos. Their interdisciplinary expertise spans optics, computer vision, remote sensing, embedded systems, and artificial intelligence. Congratulations to Caleb and his team for developing a transformative technology that will improve the safety, efficacy, and science return of future NASA missions! ■

CONTACT caleb.a.adams@nasa.gov



A prototype method of a ~700-m diameter crater, using simulated LROC data (left) to generate a terrain model (middle) and shadow-free rendering (right).

Smarter Entry, Deeper Insights: **IRAD Successes Shaping the Future of Planetary Missions**

NASA's Internal Research and Development (IRAD) program empowers innovation from within, enabling early-stage technologies to mature into mission-enabling capabilities. By investing in high-risk, high-reward ideas led by NASA experts, IRAD advances the Agency's strategic goals. Two recent successes are helping shape the future of planetary exploration—delivering smarter entry systems and deeper atmospheric insights.

Advancing Entry Technology for Mars Sample Return and Beyond

As NASA's Science Mission Directorate (SMD) advances planetary exploration, reliable entry systems are critical for mission success. An IRAD effort titled Highly Reliable 3-Dimensional Woven Thermal Protection System for Mars Sample Return, led by PI Ethiraj Venkatapathy, focused on developing a next-generation heatshield for the Mars Sample Return (MSR) Earth Entry System—supporting the safe return of Martian samples and advancing NASA's astrobiology and planetary science goals.

Using a risk-informed decision process, the team evaluated multiple 3D-woven TPS architectures and collaborated closely with experts from the Heatshield for Extreme Entry Environment Technology (HEEET) project. A seamless, single-layer 3D-woven TPS was identified as the most viable solution, offering superior thermal performance, structural robustness, and manufacturability. This led to NASA's adoption and investment in a 3D Woven Mid-Density Carbon Phenolic (3MDCP) heatshield for MSR.

This innovation also enabled the rapid selection and delivery of a HEEET-based heatshield for the Rocket Lab Venus mission. Keith Peterson, the Technical Lead for the IRAD, also led the Venus aeroshell hardware design and delivery, demonstrating the system's adaptability across planetary environments.

By advancing high-reliability entry systems, this IRAD effort supports not only MSR, but future Venus, outer planet, and human exploration missions—reinforcing NASA's commitment to transformative science and pioneering exploration across the solar system.

Flight-Ready Tech for Saturn Probe and Beyond

NASA's Science Mission Directorate (SMD) continues to prioritize in-situ exploration of giant planet atmospheres. The Atmospheric Structure Investigation (ASI), developed under the FY23 IRAD effort led by PI Anthony Colaprete, is a sensor suite designed to meet the core science goals of a future New Frontiers-class Saturn Probe mission. This includes measuring temperature, pressure, winds, and cloud properties with high fidelity—capabilities highlighted in the latest Planetary Science Decadal Survey.

Eli Hiss (left) and Bohdan Wesely (right), associate with the Thermal Protection Materials Branch at NASA Ames, holding the HEEET seamless, single-layer heatshield for Rocket Lab's Venus mission.

At the heart of ASI is NephEx, a dual-laser nephelometer designed to characterize Saturn's complex cloud layers. Initially matured under a 2018 IRAD and successfully flown on a prototype mission in 2020, NephEx has since been miniaturized and refined through a NASA FireTech balloon campaign. The FY23 IRAD supported its integration with the ASI suite and final flight readiness.

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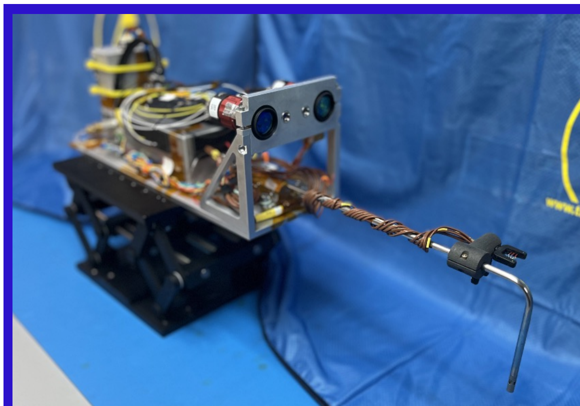
Now fully integrated and flight-qualified, the ASI + NephEx payload is scheduled to launch in April 2025—significantly reducing technical and schedule risk for upcoming planetary missions.

Beyond Saturn, this innovation directly supports atmospheric probes for Venus, Mars, and Uranus, aligning with long-term SMD goals. Through ASI and NephEx, NASA advances transformative sensing capabilities that will deepen our understanding of planetary atmospheres across the solar system. ■

CONTACT jill.bauman@nasa.gov



NephEx Gen 2 + ASI - The completed integrated balloon payload, minus thermal insolation housing, prior to thermal vacuum testing. The boom with Kiel probe and temperature sensors are visible along with the two laser exits and receive optics.

Meet the FY25 CIF Innovators
Turning Concepts into Capability

The FY25 Center Innovation Fund (CIF) portfolio reflects Ames' ongoing commitment to advancing bold, early-stage technologies through creativity and collaboration. Now in mid-cycle, several projects are already showing promising progress, with early results contributing to NASA's mission needs both now and into the future. Focused on low Technology Readiness Levels, CIF projects serve as "seedlings" for breakthrough innovations, leveraging Ames' unique capabilities while often reaching beyond traditional core competencies. Ames innovators are truly turning concepts into capability as they explore transformative ideas that may shape the future of aerospace technology. ■

FY25 CIF Innovators

- **Caleb Adams**
  NeuralGPR: Neural Radiance Tomography for Subsurface Lunar Ice Detection with Ground Penetrating Radar
- **Edward Balaban**
  SHERPA: Robust Precomputed Autonomy (RPA) Module
- **Egle Cekanaviciute**
  GEAR3: Genetically Engineered Automatable Real-time cell Radiation Reporters
- **Jason Cornelius**
  Surrogate-based Design Optimization for a Long-Range Mars Rotorcraft
- **Lara Lash**
  Unsteady Pressure-Sensitive Paint (uPSP) for Evaluating Capsule Dynamic Stability
- **Joseph Schulz**
  Enhancing TPS Material Characterization for Improved Margin Quantification

Continued on Pg 10

Meet the FY25 CIF Innovators Turning Concepts into Capability **(cont.)**

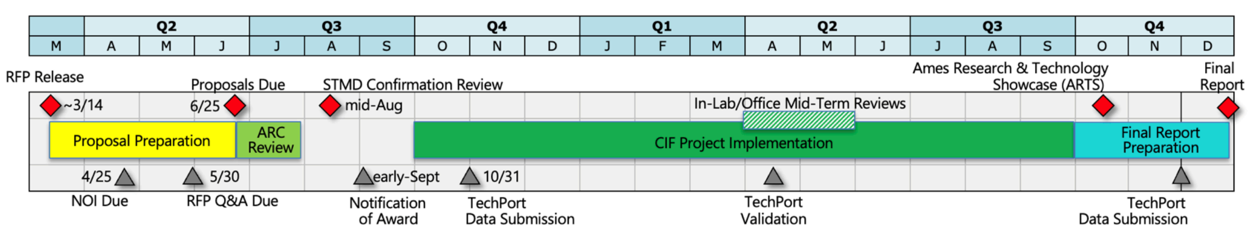
FY25 CIF Innovators (cont.)

- **Michael Khasin**
  Dynamic Model Reduction for Battery Repurposing in Human Space Flights
- **Jessica Lee**
  Luminescent Module Integrating Novel Analytes (LUMINA): A Computational Platform for Tunable Biomolecule Detection
- **Apsara Mitra**
  Lunar Operations Coordination (LOC) to enable Lunar Traffic Management and Surface Exploration
- **Jeremy Frank**
  Autonomous Distributed Mars Position, Navigation, and Timing
- **Jason Saied**
  Photonic Quantum Computing for Autonomous Navigation and Planning
- **Morgan Gilmour**
  Windybird: Animal-borne Wind Velocity Measurements at the Planetary Boundary Layer
- **Daniel Rasky**
  Strong Thermoset Regolith UV-Curable Composite Technology (STRUCT)
- **Lynn Rothschild**
  An Off Planet Laundromat
- **Marcus Murbach**
  BrainStack-2: Orbital Lab for AI/ML Processors – first flight of the NASA High Performance Spacecraft Computing (HPSC) Platform

Calling All Innovators: **FY26 CIF RFP Now Open**

The FY26 CIF Request for Proposals (RFP) was released in March, with proposals due 5:00 p.m. (PST), **June 25, 2025**. Further information regarding the CIF Program, including the RFP, all supporting documents, and instructions for submittal can be found at the following link. This year, proposers are encouraged to submit a Notice of Intent (NOI) to propose to support cross-center collaboration and an effective review process. All NOI's must be received no later than 5:00 p.m. (PST), **April 25, 2025**. ■

https://www.nasa.gov/ames-cct/cif/fy26-cif-rfp/



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