

University of Arizona and Lunar Helium-3 Mining Publish Breakthrough Helmet Design to Safeguard Astronaut Health

Innovative lunar helmet design addresses one of space's toughest challenges—protecting astronauts from toxic lunar dust exposure.

SCOTTSDALE, AZ, UNITED STATES, October 14, 2025 /EINPresswire.com/ -- Lunar Helium-3 Mining, LLC (LH3M) in partnership with the University of Arizona proudly announces the successful publication of a groundbreaking peer-reviewed article in Aerospace (MDPI).

The article, titled “Defying Lunar Dust: A Revolutionary Helmet Design to Safeguard Astronauts’ Health in Long-Term Lunar Habitats” (Manuscript ID: aerospace-3694429), presents a patent-protected system aimed at one of the most persistent and unresolved threats to lunar exploration: toxic lunar dust.

Full article available here:

<https://www.mdpi.com/2226-4310/12/10/888>



Lunar dust, composed of sharp, abrasive, and electrostatically charged particles, can infiltrate habitats and cause long-term respiratory and neurological harm. The new helmet concept—dubbed the “Lunar Baseball Hat”—offers a multi-layered protection system that combines HEPA filtration, ionization, mechanical airflow, and electrostatic repulsion. Unlike traditional sealed respirators, the open-face design allows astronauts to eat, communicate, and even sleep while maintaining continuous respiratory protection.

“This technology addresses a mission-critical health gap,” said Chris Salvino, CEO and Chief Engineer of LH3M and lead author of the paper. “Even with airlocks and central filtration, lunar dust will inevitably enter habitats. Our system provides the first targeted, point-of-inhalation protection for astronauts living and working on the Moon.”

The publication marks an important milestone at Technology Readiness Level 2 (TRL 2), with ongoing development to refine airflow dynamics, electrostatic fields, and usability for long-duration missions. The team emphasizes that this early publication is designed to spark collaboration across the aerospace community.

About Lunar Helium-3 Mining, LLC
US based space company, LH3M is pioneering technologies for sustainable lunar resource extraction, including helium-3 for clean fusion energy. With multiple issued U.S. patents, international pending and additional filings in progress, the company is building the foundations for long-term human presence on the Moon.



For more information, visit www.lh3m.com.

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