

risd

NASA FUNDS RISD SPACE DESIGN: PROPOSALS FOR DESIGN SOLUTIONS IN OUTER SPACE

Students in the recently launched RISD Space Design club are working on getting three separate projects into outer space



NASA's 2021 Big Idea Challenge focuses on protecting astronauts and their equipment from harmful regolith, or lunar dust. Courtesy Rhode Island School of Design.

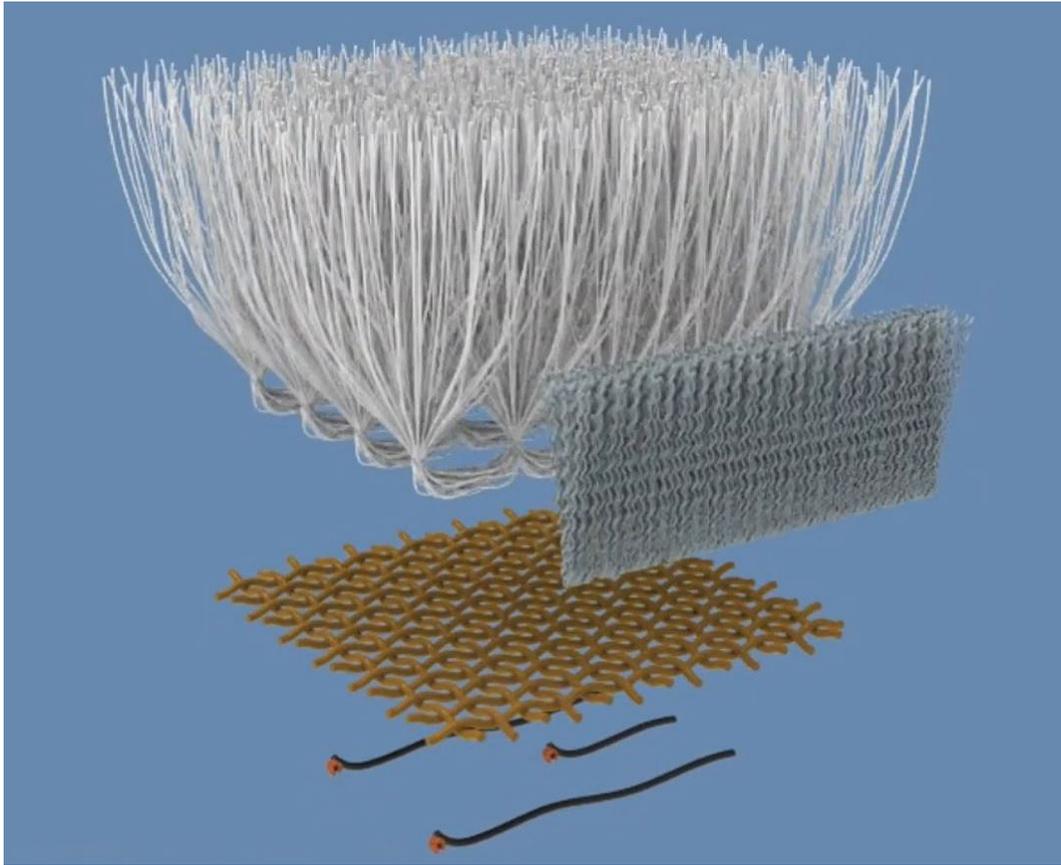
PROVIDENCE, RI (April 8, 2021) – [Rhode Island School of Design's](#) (RISD) recently launched [Space Design](#) club announces three proposed solutions to outer space design challenges that have been accepted by the [National Aeronautics and Space Administration](#) (NASA). Two projects have already received funding from the agency.

Created in Fall 2020, RISD Space Design grew out of the former RISD Rover club, a team of students led by then-NASA Coordinator **Michael Lye** 96 ID, that designed and raced human-powered vehicles capable of traversing the surfaces of other worlds as part of NASA's annual Human Exploration Rover Challenge. Students were ready to race the Rover in 2020, which was halted due to the COVID-19 pandemic.

RISD Space Design club submitted multiple applications, three of which were accepted by NASA. Part of the ideation process for this year's challenges was identifying projects that could be tackled digitally, since the club is only able to meet virtually during the pandemic and works around COVID testing schedules to keep everyone safe.

Two challenges have already received funding from NASA: [The BIG Idea Challenge](#), a collaboration with students in the Brown Space Engineering club, and [Micro-G Next](#), part of NASA's Artemis program, whose mission is to land the

next team of astronauts on the moon by 2024 and use innovative technologies to explore the lunar surface.



Courtesy Rhode Island School of Design.

A third Artemis-related proposal in development is headed up by club Vice Presidents **Bowen Zhou** 22 ID and **Selena Yang** 23 ID and is at the core of a paper the two will present at a virtual [MIT conference](#) on May 14. Industrial Design faculty member [Jerome Arul](#) 12 ID is providing manufacturing guidance as needed for all three projects.

The BIG Idea Challenge drew more than 100 proposals, primarily from graduate and PhD programs, and the RISD/Brown TEST-RAD proposal was one of seven selected by NASA for funding. TEST-RAD (Tufted Electrostatic Solution to Regolith Adhesion Dilemma) is intended to protect astronauts and their equipment from space dust (regolith), spiky particles similar in size to asbestos that cling to surfaces and damage the lungs.

“The technology we’re developing uses densely packed fibers that are electrostatically charged to repel the dust,” says club Vice President **Hannah Dunnigan** BRDD 23 ID. The original thought was to apply the technology to space suits, but early feedback from NASA engineers suggests that the tech would need to be tested in a lower-stakes arena first, perhaps as part of a camera lens or battery cover that traveled to space.

Also selected for funding by NASA, the RISD team’s Micro-G Next project is a dispenser that attaches to an astronaut’s space suit, making it easy to collect samples during space walks. “We should be done with the final prototype in about three weeks,” says Dunnigan. “The body of the dispenser is made out of folded aluminum, and we’re doing most of the work in the Industrial Design department’s metal shop.” NASA will test the completed prototype in the simulated microgravity environment of its Johnson Space Center Neutral Buoyancy Laboratory.



The RISD team's Micro-G Next project is a dispenser that attaches to an astronaut's space suit, making it easy to collect samples during space walks. Courtesy Rhode Island School of Design.

The third challenge, part of the [NASA SUITS](#) (Spacesuit User Interface Technologies for Students) Competition, is an Augmented Reality headset that would project data, maps and other mission-critical information inside the visor of an astronaut's helmet during spacewalks. "Our design will help astronauts navigate the lunar surface, take field notes, record geological samples and display telemetry data such as oxygen levels or pressure in the suit," Yang explains. The team is currently conducting research and gathering data from software engineers, designers and astronauts and hopes to present their ideas to NASA in the fall.

All three of the projects have potential applications here on Earth, Zhou adds. "A lot of new tech comes from space research, for example Velcro," she says. "Our TEST-RAD technology might also help miners, who have similar problems with harmful dust particles."

A selection of visuals can be accessed [here](#).

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