

PRESS RELEASE --- For Immediate Release

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Can spaceplanes taste the rain on Saturn’s moon Titan? ...and other fairly difficult questions

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NASA has selected Planet Enterprises’ TitanAir project for a 2023 NASA Innovative Advanced Concepts (NIAC) Award. Officially known as “TitanAir: Leading-Edge Liquid Collection to Enable Cutting-Edge Science,” this high-risk, next-decade technology project focuses on a liquid ingestion system for an airplane that could one day fly on another planet.

Designed to “drink” condensed liquid through the front section of the wing, this high-tech spaceplane could fly through the rain clouds of Saturn’s moon Titan, sucking in liquid methane that forms on the cool wing surface. The plane could even land on lakes made of methane, but may sizzle as the heat from its nuclear battery liberates dissolved nitrogen from the sea as it floats along.

Once liquid is inside the wing, it could be collected into a continuous fluid stream via several competing methods, including one that uses biomimicry of water-collecting cacti on Earth. Another method uses a flexible membrane, and a third uses channels etched into the skin. The liquid will then be analyzed with science instruments, and the data transmitted back to Earth between flights.

The Principal Investigator for this Phase I effort is Quinn Morley, a two-time Fellow of the NIAC program and the first undergraduate Principal Investigator in the program’s history. “I’ve had a fascination with capillary effects in everyday life ever since I was a kid,” said Morley, “but what really got me was Don Pettit’s coffee cup on the International Space Station; just go on YouTube and search for ‘NASA one cup of coffee to go,’ it’ll blow your mind.” Morley brings 15 years of aerospace experience to the project, and plans to complete his undergrad at Washington State University this spring in the Mechanical Engineering program at the Olympic College Bremerton campus.

Dr. Narasimha Boddeti will serve as Co-Investigator. Dr. Boddeti is the Berry Family Assistant Professor in the School of Mechanical and Materials Engineering in the Voiland College of Engineering and Agriculture at Washington State University. He brings over 16 years of engineering expertise to the team, and enjoys challenging applications of material science in mechanical engineering, including soft robotics.

Dr. Steven Collicott is a collaborator for the capillary physics part of the project. Dr. Collicott has a distinguished career which includes working on fluid physics problems with NASA at Purdue University, where he is a Professor in the School of Aeronautics and Astronautics in the College of Engineering.

Laura Forczyk, M.Sc. is the science consultant for TitanAir, and has a years-long relationship with Planet Enterprises. Forczyk is the Executive Director of Astralytical, and brings an exceptional understanding of space science—and space science *communication*—to the team. Her new book, *Becoming Off-Worldly: Learning from Astronauts to Prepare for Your Spaceflight Journey*, came out in 2022.

Dr. Peter Buhler will serve as a consultant on Titan’s low atmospheric processes, leveraging his extensive expertise in planetary atmospheric processes on Mars and Pluto.

Planet Enterprises thanks the Space Technology Mission Directorate for the opportunity to investigate this novel next-generation technology. Stay tuned to <https://titanair.fyi/> for more.