



INTERNATIONAL  
SPACE STATION



# EXPEDITION 63



Soyuz MS-16 Launch: April 9, 2020  
Landing: October 2020



**CHRIS CASSIDY (NASA)**  
Commander

**Born:** Salem Massachusetts  
**Interests:** Traveling, biking, camping,  
snow skiing, weight lifting, running  
**Spaceflights:** STS-127, Exp 35/36  
**Bio:** <https://go.nasa.gov/2NsLd0s>  
**Twitter:** @Astro\_SEAL



**ANATOLY IVANISHIN (Roscosmos)**  
Flight Engineer

**Born:** Irkutsk, Soviet Union  
**Spaceflights:** Exp 29/30, Exp 48/49  
**Bio:** <https://go.nasa.gov/2uy7DqK>



**IVAN VAGNER (Roscosmos)**  
Flight Engineer

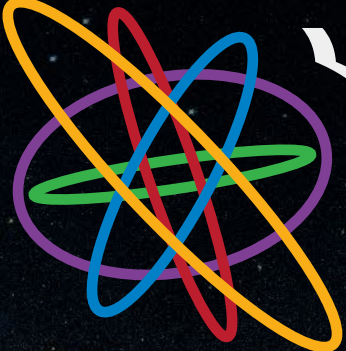
**Born:** Severoonezhsk, Russia  
**Spaceflights:** First flight  
**Bio:** <https://go.nasa.gov/2CgZD1h>  
**Twitter:** @ivan\_mks63



EXPEDITION  
**63**

Expedition 63 began in April 2020 and ends in October 2020. This expedition will include research investigations and technology demonstrations not possible on Earth to advance scientific knowledge of Earth, space, physical and biological sciences. Stay up to date with the mission at the following web page:

[https://www.nasa.gov/mission\\_pages/station/expeditions/expedition63/index.html](https://www.nasa.gov/mission_pages/station/expeditions/expedition63/index.html)



# SCIENCE ON THE

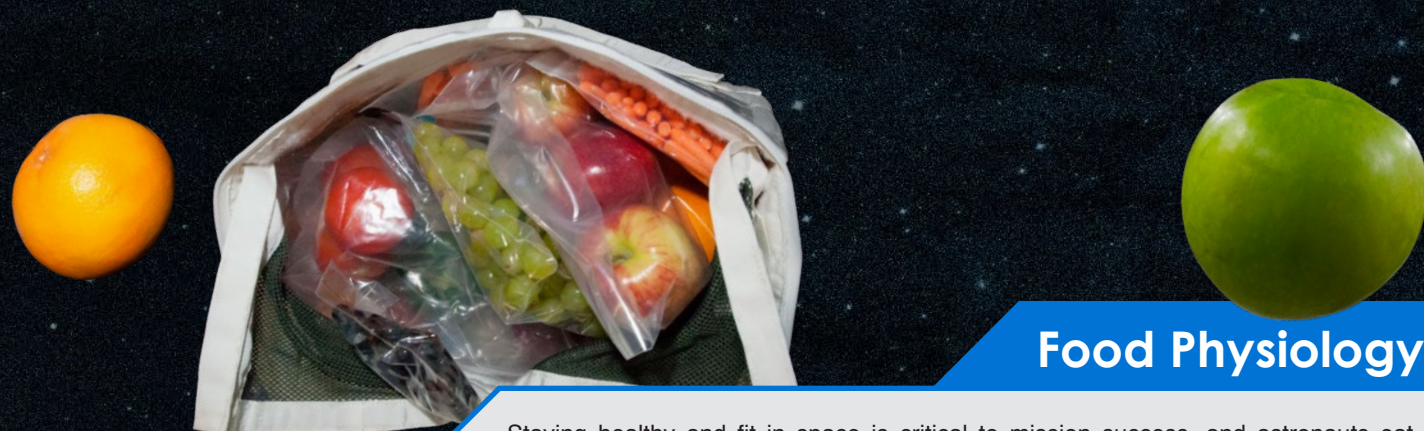
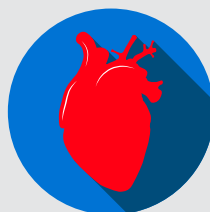


During Expedition 63, scientists will collect standardized data from crew members to continue expanding our understanding of how human physiology responds to long-duration life in microgravity, and will test life support technologies that will be vital to our continued exploration of deep space.

Follow the latest ISS Research and Technology news at: [www.nasa.gov/stationresearchnews](http://www.nasa.gov/stationresearchnews)

## Capillary Driven Microfluidics

On long space missions such as flights to Mars, crew members need to be able to diagnose and treat anyone who gets sick. Many medical diagnostic devices function by moving liquids around or separating liquids and solids, such as blood cells and plasma. To develop small and effective devices for use in space, researchers are looking at using something called capillary force, which acts even in the absence of gravity. Capillary force moves liquids up the sides of a narrow tube, much like how a paper towel soaks up liquid by just touching its edge. This investigation examines exactly how capillary forces work in small devices in microgravity.

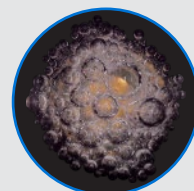


## Food Physiology

Staying healthy and fit in space is critical to mission success, and astronauts eat a special diet to help them stay in top condition. Immune function, diet and the microbiome are linked, but only diet can be easily and meaningfully changed on Earth or in orbit. Scientists want to figure out the best dietary changes for top astronaut health and performance, so crew members track their daily food intake before, during and after their flights, and discuss their diet with researchers every week during flight. This investigation documents the effects of dietary improvements on a person's immune function and gut microbiome and looks at whether those improvements support adaptation to spaceflight.

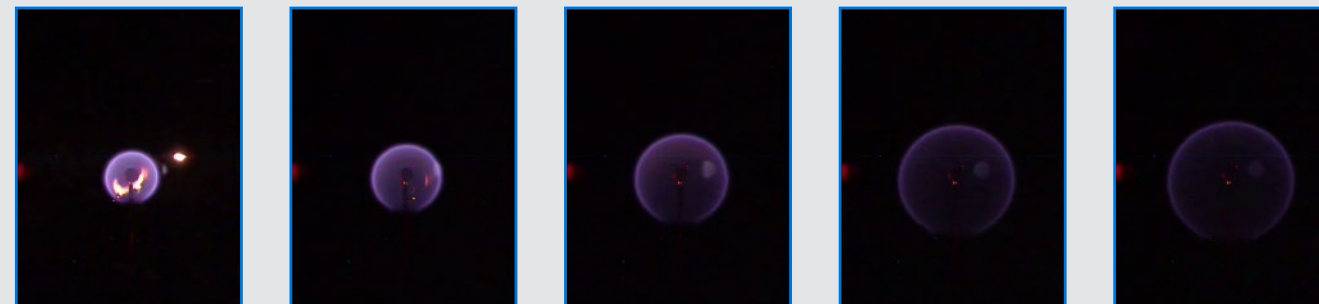
## Electrolysis Measurement

Electrolytic gas evolution or electrolysis is a complex process that passes an electric current through a liquid to separate out gas in the form of bubbles. This investigation examines how gravity affects this process. By better understanding exactly how bubbles form and grow, researchers may be able to accurately estimate the concentrations of what separates out. That would be important step in developing devices using microfluidics to produce oxygen in spacecraft or to deliver medications via skin patches.



## s-Flame

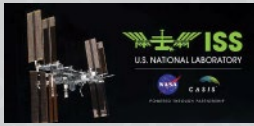
The Advanced Combustion via Microgravity Experiments (ACME) project is a series of independent studies of flames produced by burning gas. All are performed in the space station's Combustion Integrated Rack (CIR). One of these experiments, Structure and Response of Spherical Diffusion Flames or s-Flame, studies the shape and behavior of certain types of flames, including how to put them out. It could help make combustion engines on Earth cleaner and more fuel efficient, and lead to better fire prevention on spacecraft.



The Expedition 63 patch represents an intersection of the past and the beginning of a new dawn in human space flight as we continue to inhabit the International Space Station, aim towards returning to the Moon and plan for the journey to Mars.

Thirteen illuminated stars along the top of the patch commemorate the Apollo 13 mission celebrating its 50th anniversary during Expedition 63. The swoosh in the shape of the number "63" orbiting around the Earth and Moon honors the Apollo Program and the future missions to go beyond low Earth orbit.

The atom, shown overlaid on a vibrant sunrise, is the Expedition 63 crew's call sign symbolizing the energy to revolve, or orbit around a nucleus or in their case, the Earth. The international crew will continue to carry out the important mission of collaboration in preserving the space station as a microgravity and space environment research laboratory.

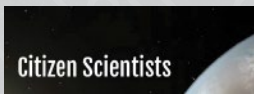


**ISS National Lab Space Station Research Explorer** At any given time aboard the space station, a large array of different experiments are underway within a wide range of disciplines. Here, you can search the database of experiments to learn more about each experiment's objectives, descriptions, results, and imagery, as well as find links to additional information beyond this database.

<https://www.spacestationexplorers.org/educational-programs/>

**STEMonstrations** STEMonstrations fit the need for students and educators to have high quality, informative videos that cover the wide range of topics outlined in the Next Generation Science Standards (NGSS). Astronauts film videos instructing students in biology, chemistry, physics, Earth science, and space science. The videos align to a "Try This" one- to two-page lesson plan where students and educators can make connections to topics they are working on in the classroom.

<https://www.nasa.gov/stemonstrations>



**Citizen Science Projects** For years, solar system and exploration have brought excitement and inspiration to people of all ages. This is especially true now, with new opportunities for students and citizen scientists to directly participate in expanding our knowledge of the solar system. Amateur astronomers and students with wide ranges of equipment and expertise are making valuable contributions to our growing understanding of our nearest celestial neighbor. Learn how you can become part of the adventure!

<https://science.nasa.gov/citizenscientists>

**Sally Ride EarthKAM** Sally Ride EarthKAM (Earth Knowledge Acquired by Middle school students) is a NASA educational outreach program that enables students, teachers, and the public to learn about Earth from the unique perspective of space. Students can "program" the camera to take pictures of the Earth from space and study the images they receive.

<https://www.earthkam.org/>



**Spot the Station** Watch the International Space Station pass overhead from several thousand worldwide locations. It is the third brightest object in the sky and easy to spot if you know when to look up. Visible to the naked eye, it looks like a fast-moving plane only much higher and traveling thousands of miles an hour faster!

<https://spotthestation.nasa.gov/>

**In-flight Education Downlinks** Wouldn't it be great if students could talk with an astronaut aboard the International Space Station about what it is like to live and work in space? Well, they can! Educational organizations located in the United States can host an in-flight education downlink with space station crew members. Students pose questions and watch as astronauts answer the questions and demonstrate science, technology, engineering and mathematics concepts in ways that are impossible on Earth.

<https://www.nasa.gov/audience/foreducators/stem-on-station/downlinks.html>



**Expeditionary Skills for Life** Expeditions are journeys made by people who share a definite purpose and specific experiences. To make their expeditions successful, NASA works with astronaut crews on skills that prepare them to live and work together during space missions. Some of these same skills are useful in everyday life here on Earth. This series of activities is designed to take you through various educational expeditions that will help you learn and practice skills that you can apply in almost every aspect of life.

<https://www.nasa.gov/education/4H>

**Space Station Research and Technology** To learn about all the different types of Science Research and Technology Demonstrations taking place on the International Space Station, or read about the results from some of those investigations, or maybe just watch cool video of the astronauts performing science visit:

<https://www.nasa.gov/iss-science>

