100 days of the Minerva mission

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Samantha Cristoforetti prepares for spacewalk. Credit: ESA / NASA / Roscosmos

ESA astronaut Samantha Cristoforetti was launched to the International Space Station on 27 April as a part of Crew-4 for her second mission, Minerva. One hundred days in, mission Minerva is still going strong. From completing cutting-edge research in the world's only orbiting

laboratory to sharing daily life on the Space Station via TikTok, it's all in a day's work for an ESA astronaut.

Inspired by the Roman goddess of wisdom, the handicrafts and the arts, the name Minerva is a homage to the competence and sophisticated craftmanship of the women and men all over the world who make human spaceflight possible. It also embodies the toughness and discipline that is required of us, and the wisdom we wish to demonstrate, as we consolidate and expand human presence in space. All these qualities and more have been on display during these first 100 days of the mission.

Making strides in health

Throughout mission Minerva, Samantha has played a vital role in a large number of scientific experiments on the Space Station, both from European states and international partners.

Her participation in audiology investigations during the Acoustic Diagnostics experiment, for example, help us understand how background noise exposure—such as that found on the Space Station—may contribute to hearing difficulties.

Similarly, Samantha is taking part in the Myotones experiment, which investigates the regulation of muscle tone in microgravity and will also provide useful findings to improve medical approaches to muscle rehabilitation.

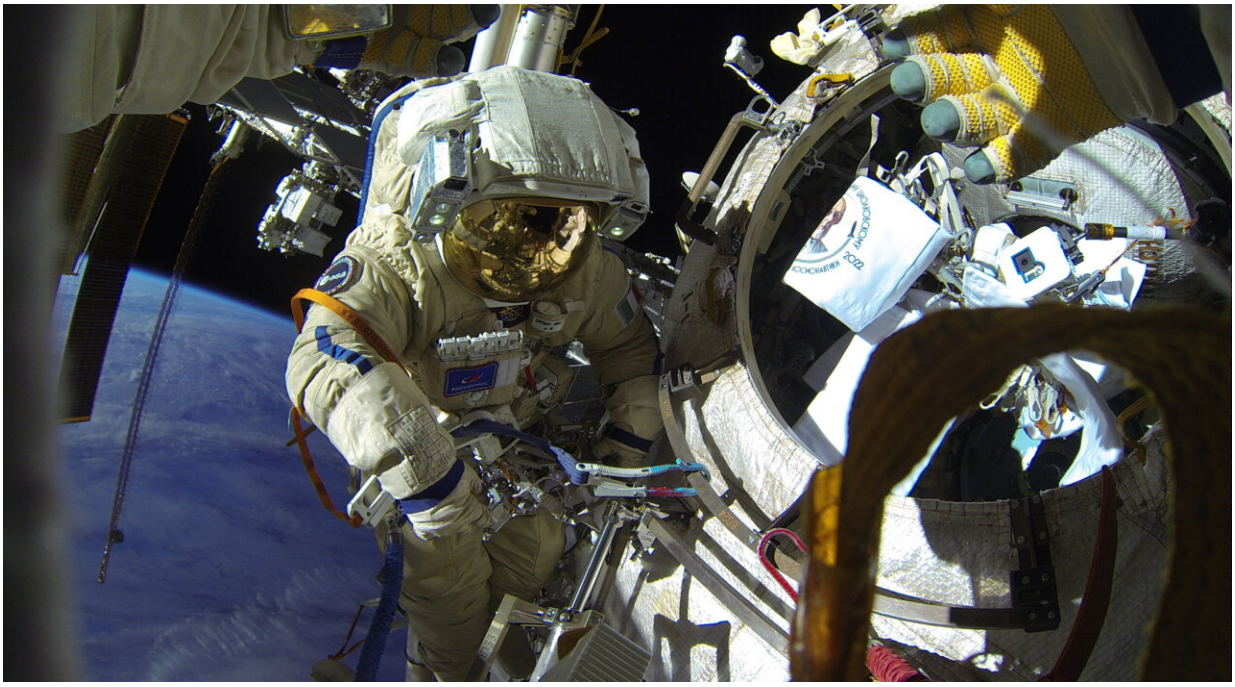
Research studies like these will not only inform medical considerations for future spaceflight, but be translated to health care back here in Earth, impacting patients around the globe.

Samantha's contribution to our understanding of health doesn't stop at

providing data, however. As a passionate advocate for women's health, she has also conducted outreach alongside the International Osteoporosis Foundation, filming videos on the importance of taking care of our bones—both in space and on the ground—and acting as a role model on how to do that with weightlifting.

Engineering the future

In the first 100 days of Mission Minerva, Samantha has also carried out several investigations that will inform the design of future space vehicles and habitats, as well as provide new materials for use on Earth.



Samantha Cristoforetti on her first spacewalk. Credit: ESA / NASA / Roscosmos

For example, she has carried out experiments which explore the

antimicrobial properties of metals and hydrophobic (or water repelling) surfaces in space. The antibacterial materials that result from these investigations will not only keep future space vehicles sanitary and safe for astronauts, but will also be useful in making it easier to maintain sterile medical environments around the world.

In the same vein, results from experiments into the formation and properties of alloy materials—such as Transparent Alloys—will help us understand just what gives alloys their strength, flexibility and longevity.

Samantha has also undertaken experiments such as the Fluid Science Laboratory Soft Matter Dynamics PASTA experiment, which looks at the behavior of emulsions in microgravity. Emulsions are used in a wide variety of industries on Earth, including food, cosmetics and even medicines; understanding how they form and their dynamics will allow us to develop better, greener and healthier emulsion-based products and processes.

Stepping out

Samantha completed her first spacewalk in the first 100 days of Minerva. Not only was this a first for her, but it was also both the first for a European woman and the first made by a European in an Orlan spacesuit from the International Space Station.

Samantha worked alongside cosmonaut Oleg Artemyev on a number of tasks, including releasing nanosatellites into orbit and preparatory installations to the European Robotic Arm.

Inspiring Earthlings

Treading new ground isn't an unusual task for an astronaut, and that's

exactly what Samantha has done online. With a hefty following on Tiktok, she is the first astronaut to communicate on the platform, providing thousands of viewers around the world intimate insights into life on the Space Station.

Her Twitter account also reaches far and wide, bringing new interest to space endeavors through her stunning Earth photography and playful videos. Combined with her contributions to ESA's kids outreach program, Paxi, Samantha is inspiring people of all ages into science, engineering and more, as well as educating on the valuable scientific resource that is microgravity.

Mission Minerva continues, and with it will come more valuable data and findings, more inspirational outreach, and more exciting firsts for Europeans in space.

Congratulations on 100 days of Minerva, Samantha.

Provided by European Space Agency

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