Image: Space foam already bubbling as planned

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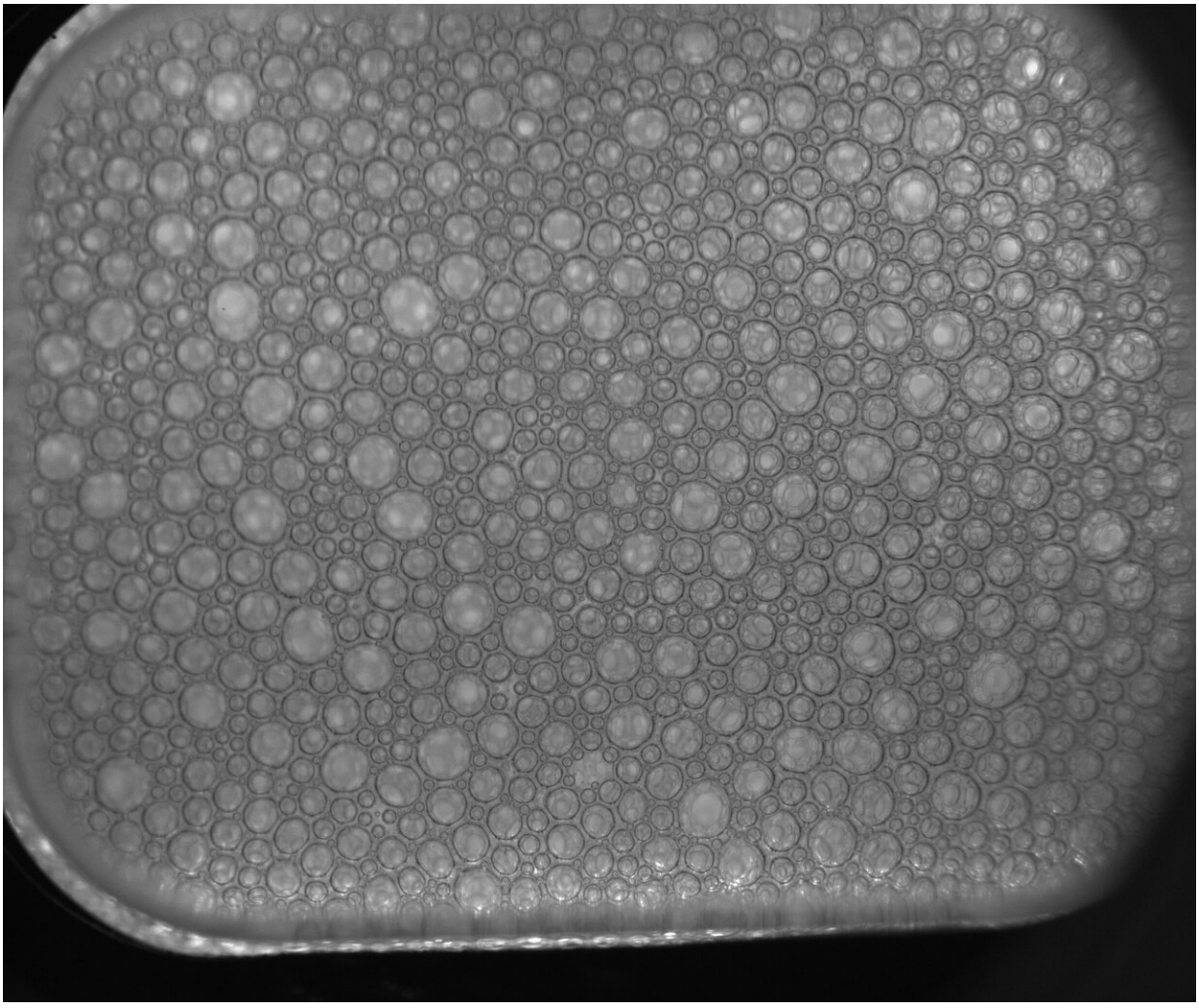

Credit: European Space Agency

Installed on Friday in the International Space Station and sending down images by Monday. This picture shows one of the first images of foam formed inside the Fluid Science Laboratory in Europe's space laboratory Columbus.

The Foam-Coarsening experiment, developed by Airbus for ESA, is set to be activated this month but this image shows that the liquids held in cells are already bubbling as planned.

The image will not be used by the scientists yet but is taken to allow the experiment operators at the Belgian User Operations Centre in Brussels, Belgium, to keep track of the experiment and set it up.

The foams come in self-contained cells and hold liquids that are shaken by pistons and analyzed with laser optics and high-resolution cameras for the scientists on Earth. Researchers are keen to observe how foams behave in microgravity.

On Earth, the mixture of gas and liquid that makes up a foam quickly starts to change. Gravity pulls the liquid between the bubbles downwards, and small bubbles shrink while the larger ones tend to grow at the expense of others. As the liquid is drawn downwards due to gravity the bubbles lose their strength and rupture, collapsing back to a liquid state.

This is annoying for researchers as it limits the time they can study foams and interferes with their experiments. But in space foams are more stable as the liquid does not drain to the bottom in weightlessness.

ESA astronaut Frank De Winne performed the Foam-Stability experiment in 2009 by shaking liquid solutions and recording what happened next. The samples ranged from pure water to protein-based fluids, like the ones used for chocolate foams, and antifoaming agents.

After just ten seconds, the fluids stabilized more quickly and produced more foam than on Earth. Scientists discovered that it was possible to create super-stable foams in zero gravity.

Building on this extensive foam research, Foam-Coarsening will investigate foam behaviour at different liquid stages, particularly as it transitions from a solid- to liquid-like state.

The results from this research will not just apply to the foam in your morning cappuccino. Foams are used in a wide range of areas from food production to cleaning and sealing products, cosmetics and personal hygiene products, and even construction.

NASA astronaut Jessica Meir installed the experiment in the Fluid Science Laboratory on 6 March after removing the Multiscale boiling experiment known as Rubi. The experiment is controlled and data collected by the Belgian User Operations Centre who processed this image on 9 March.

Provided by European Space Agency