

Prof gets messages from space

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(PhysOrg.com) -- Barbara Frisken received several messages from outer space this year on her answering machine.

Those were the times the Simon Fraser University physicist wasn't home when Canadian astronaut Robert Thirsk called her from the [International Space Station](#) (ISS) to discuss BCAT-5, an onboard experiment for which Frisken is the principal investigator.

"It was pretty cool," admits Frisken, who also spoke directly with Thirsk several times during his six-month stay on the station before he returned to Earth on Dec. 1. "He apparently didn't have my work number so he would call me at home to discuss the experiment rather than go through bureaucratic channels."

Frisken and her team are working with [NASA](#) through the [Canadian Space Agency](#) on BCAT-5, a project to investigate the behaviour of particle suspensions known as colloids in zero gravity.

Their work, as Thirsk observes in an essay published just before his return, "could improve the shelf life of certain products and refine the manufacturing of plastics."

Colloids are chemical mixtures in which [microscopic particles](#) of one substance are dispersed evenly throughout another.

Milk, for example, is a liquid [colloid](#) of minute particles of protein and butterfat suspended in another liquid, water, while hair sprays are liquid

colloids suspended in gas (air), and Styrofoam and gelatin desserts are solid colloids.

“We made three samples that have three phases coexisting together, which is unusual in nature,” explains Frisken.

“After you mix them so they’re uniform they start to separate into these three phases—one that’s diluted with just a few particles, one that’s a little more concentrated and another that’s concentrated enough that crystals start to grow.

“On Earth, the crystals and the more concentrated phase settle due to gravity long before the process is complete. The zero gravity environment of the ISS allows us to observe the process much longer.”

When Thirsk arrived at the space station last May, he set up the SFU team’s BCAT-5 apparatus, stirred their three colloid samples with a magnet to homogenize them, and then installed a camera to record images of the samples as they evolved. The images were downloaded to Frisken and her team who analyzed them to quantify the process of phase separation and crystal growth.

The BCAT-5 experiment is ongoing, and now that Thirsk is home the SFU scientists are working with ISS Expedition 22 commander, Jeff Williams.

But so far, quips Frisken, “he hasn’t called us.”

Provided by Simon Fraser University

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