

Space Drums: Reactions in suspense!

Visiting Professor in Physics, Jacques Guigne, leads a project team working on a reactor that enables mixing chemicals in space without using containers.

Named Space-DRUMS -Dynamically Responding Ultrasonic Matrix System - the device was originally developed to make sonar surveys of the sea floor. With Professor Nick Pace from the department of Physics, the system was adapted so that new materials could be produced in zero-gravity without a container. "Beams of sound energy work like invisible fingers. They gently push the sample to the centre of a container so that it doesn't touch the walls", explains Professor Guigne.

Space-DRUMS was launched into space in partnership with NASA and installed on the International Space Station on 14 November 2008. Final components were sent in July 2009."The most exciting part is that we can control the experiments from Earth", says Professor Nick Pace. "Our physics students will be able to use it as part of their final year projects – there aren't many universities that can offer their students a chance to conduct experiments in space!"

Professor Guigne has since developed space DRUMS technology using fine beams of sound to levitate and position objects. By doing this, it is possible to make them react without influence from their container and leaving dirty residues. Combined with microgravity, this powerful new tool has now been adopted by NASA. It recently installed Space-DRUMS on the International Space Station to create new materials and investigate their complex properties.

In addition to making new materials, Space-DRUMS will also be used to study the physics of turbulence, such as predicting paths of hurricanes and helping biopharmaceutical studies.

Deputy Director of the Centre for Space, Atmospheric & Oceanic Sciences (CSAOS) at Bath, Dr Philippe Blondel explained: "Even with large computer clusters, the understanding of complex weather patterns is still limited. Using Space-DRUMS will help us to better understand the behaviour of hurricanes, their interaction with the atmosphere and anticipate where one can go next".

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