



## EXPeriment for Liquid On-orbit REfueling

[www.explore-rexus.de](http://www.explore-rexus.de)

*Press Release, 17 March 2011*

### Students Test Refueling Station in Orbit

2010 has been a very successful year for EXPLORE: The student experiment went through a rapid and impressive development from the early concept to a flight-ready experiment module. On 22 February 2011, the project found its culmination with the successful sounding rocket flight of REXUS 9 from Esrange Space Center in Kiruna, Sweden.

#### *Getting Ready for Launch*

The “EXPeriment for Liquid On-orbit REfueling” (EXPLORE) was built by a team of eight German students of aerospace engineering, electrical and information technology and software engineering. Over the course of the last year and spending countless evenings and week-ends, the complex experiment setup to test refueling processes in microgravity was optimized and assembled by the team. Critical system tests such as vibration tests at DLR Stuttgart and Bremen, a thermal vacuum test at IRS in Stuttgart, a service simulator test at DLR Oberpfaffenhofen and a final integration week at DLR Bremen confirmed the readiness of EXPLORE for the rocket flight in December last year. Thus the experiment was shipped to Sweden in January 2011.



EXPLORE Team with its experiment module during pre-flight testing (f.l.t.r.): Juergen Schlutz, Andreas Fink, Johannes Wepler, Thorben Heinrichs, Robert Schelling, Christine Hill, Daniel Stoerk, Emil Nathanson

#### *Sending a Rocket to the Edge of Space*



REXUS 9 launch on 22 February 2011, 13:50 hrs from Kiruna

The team met again for an intensive launch campaign at Esrange Space Center between 14 and 25 February, together with eight other international student teams. The first week of this launch campaign was filled with careful preparation and thorough testing of all experiment modules together with their rocket service systems to ensure flawless flight operation. This included multiple test countdowns to check all procedures and potential glitches during the real “hot” countdown that was planned for the second week. On launch day, the tension was high with students and rocket experts. But after a first launch delay, everything went smoothly and the REXUS 9 launched from Kiruna on 22 February 2011 at 13:50 hrs towards the edge of space,

carrying EXPLORE and three more student experiments. Its sister rocket, REXUS 10, followed only one day after, with a successful flight on 23 February 2011, carrying another four student experiments. The flights of REXUS 9 and 10 reached altitudes of 80.6 and 82 km, respectively, lasting a little more than 13 minutes each, including about 3 minutes of microgravity. After parachute descent, it took the recovery team about two hours to locate the experiment modules from the helicopter and to take them back to the eagerly waiting students for the post-flight analysis.



EXPLORE Team in front of the REXUS rocket at roll-out



## EXPeriment for Liquid On-orbit REfueling

[www.explore-rexus.de](http://www.explore-rexus.de)

### Post-Flight Evaluation

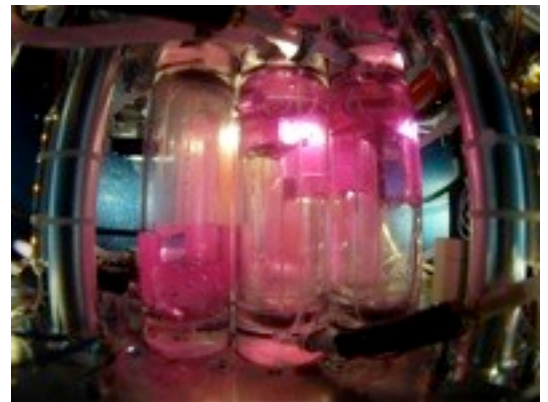


EXPLORE captured extraordinary video material from the rocket flight

During the flight EXPLORE showed perfect communication with the rocket and all housekeeping data, including temperature and pressure values, as well as the status of the experiment controllers were received. However, the greatest relief and pride came with the analysis of the video material EXPLORE captured during the flight. The experiment featured two cameras, one looking inside and one looking outside the rocket module, both recording impressive HD imagery. These videos fully rewarded the team for their hard work in getting the experiment ready for the flight. As a matter of fact, even the rocket experts were stunned by the quality and detail of the video material.

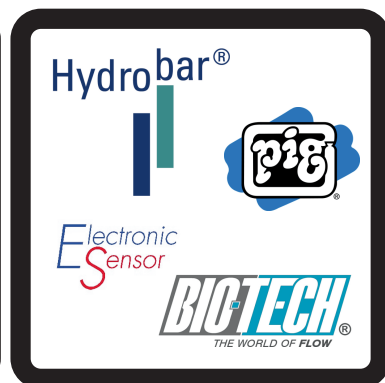
While detailed data analysis is still ongoing, the EXPLORE experiment can already now be stated

as a full success. The team is working on further evaluation and is looking forward to presenting their results and experiences at their home university in Stuttgart as well as at scientific and educational conferences throughout the year.



EXPLORE test chambers inside the module. Weightlessness is visible since some chambers are filled from the top!

EXPLORE wants to thank all its partners and sponsors, particularly the German Aerospace Center DLR, for their continuous support.



**WALTHER BLOHM STIFTUNG  
STUDENTENWERK STUTTGART e.V.  
ERICH-BECKER-STIFTUNG**

For more information on EXPLORE and the team, visit: [www.explore-rexus.de](http://www.explore-rexus.de)

For more information on the REXUS/BEXUS programme, visit: [www.rexusbexus.net](http://www.rexusbexus.net)