ISS and Human Research Project Office Highlights
September 10, 2010

ISS Research Program

Smoke Aerosol Measurement Experiment–Re-flight (SAME–R) on-orbit operations complete 55 of 61 samples on International Space Station

All SAME-R on-orbit operations will be completed by Friday, September 10, 2010. To date, 55 of 61 samples have been processed, with the additional six samples to be run by operation completion. If time and resources permit, a few additional samples will be run beyond the total of 61. Samples will be returned on ULF-5 for further analysis using the transmission electron microscope (TEM). (POC: MAH/J. Mark Hickman, (216) 977-7105)

FLEX-2 hardware shipped to KSC for launch on ULF-5.

Flame Extinguishment Experiment-2 (FLEX-2) hardware, for launch on ULF-5, was shipped to Kennedy Space Center (KSC) for packing and stowage into the Multi-Purpose Logistics Module (MPLM). A Systems Acceptance Review, Engineering Review Board (SAR/ERB) is scheduled with the Fluids and Combustion Facility (FCF) Chief Engineer to assess the readiness for the Multi-user Droplet Combustion Apparatus (MDCA) fuel reservoirs for FLEX-2, and other FCF sustaining hardware (POC: MAH/J. Mark Hickman, (216) 977-7105)

Twelve FLEX test points completed on ISS with installation of new deployment needles.

Since the new fuel deployment needles were installed in the Flame Extinguishment Experiment (FLEX) on August 25, 2010, 12 test points have been accomplished, with an additional four test points scheduled for the evening/morning of September 8-9, 2010. Another eight test points are scheduled for the week of September 12th. All of the burns were very clean, which means no disruptive burning and/or droplet explosions were observed.
POC: J. Mark Hickman, (216) 977-7105

CFE-2 Interior Corner Flow 1 module operated on ISS.

The Capillary Flow Experiment-2 (CFE-2) Interior Corner Flow 1 (ICF1) module was operated by Increment 24 flight engineer Shannon Walker on the International Space Station on Wednesday September 8, 2010. Shannon performed the ISS operations for the ICF1 module pre-wet tests with real-time video down-linked to the CFE team in the Telescience Support Center (TSC) in Bldg 333. The ICF1 module consists of a tapered isosceles triangle cross-section test chamber; the test fluid is 20 centistokes silicone oil. The tapered geometry of the chamber provides the capillary driving force for moving the liquid from the bottom to the top of the chamber. Shannon was able to complete the pre-wet runs on the Interior Corner Flow 1 module.

The PI for this experiment is Prof. Mark Weislogel (Portland State University). CFE-2 ICF1 was developed to investigate critical wetting phenomena under conditions where capillary forces dominate. Such wetting conditions commonly occur in vanes, screens, and other devices used to position fluids in spacecraft propellant tanks under low gravity conditions. (POC: MAH/Robert Hawersaat, (216) 433-8157, RET/Robert D. Green, (216) 433-5402)

ARIS undergoing characterization testing on ISS by FIR/LMM team

The Fluid Integrated Rack/Light Microscopy Module (FIR/LMM) team is testing the Active Rack Isolation System (ARIS). The ARIS surrounds the FIR on the ISS and holds open the possibility of opening the operational window for high magnification (above 50x) experiments during times of disturbances on ISS. Present operations with CVB have proven operations up to 50x. The Pre-Advanced Colloids Experiment (PACE) will perform testing with and without ARIS up to 100x magnification to characterize LMM for Advanced Colloids experiments. The PACE testing is planned for late September. (POC: MAH/Ronald Sicker, (216) 433-6498)