

The **CREST-1 University Student Spaceflight Program (CUSSP)** is a new U.S. national STEM university education initiative designed to inspire the next generation of space scientists. Reservations are being taken now for a February 26 launch aboard STS-134, the historic last scheduled flight of the Space Shuttle.

About CREST-1

American Aerospace has developed the **Commercial Reusable Experiments for Science & Technology (CREST)** program (www.american-aerospace.net/crest1.html) to begin offering to academic and industrial communities routine, standardized and continuously available access to the space environment for experimentation and commercial development. The **CREST-1 mission** provides investigators with several flight-proven, miniature laboratories that are capable of simultaneously accommodating up to 120 separate investigations. This modular approach radically reduces the cost for scientists and engineers from academia, government and industry, as well as for student investigators.

This on-orbit research opportunity is enabled through NanoRacks LLC (www.nanoracksllc.com), which has a Space Act Agreement with NASA to develop utilization of the International Space Station as a National Laboratory. **CREST-1** utilizes the flight-proven Materials Dispersion Apparatus (MDA) from Instrumentation Technology Associates, Inc., which has flown on six prior Space Shuttle missions and six sounding rocket flights. Details of the operation and experiment possibilities of the MDA can be found on the website of another CREST-1 team member, the Student Spaceflight Experiments Program (<http://ssep.ncesse.org/sts134-flight-experiment/mda/>). The CREST-1 team is dedicated to creating routine, standardized access to the space environment, so that the promise of space commercialization can begin to be realized.

CUSSP Overview

CUSSP is a unique opportunity for university students to conduct microgravity research utilizing equipment that has been successfully used to perform research in areas such as protein crystal growth, cell biology, zeolite crystallization, collagen polymerization, ceramic and polymer thin film membrane casting, and a variety of fluid physics studies, among other potential applications.

Because of the nature and design of the **CREST-1** mission, **CUSSP** participants are free to concentrate on performing effective scientific experiments. The CREST-1 team handles the hardware, integration, interfacing with NASA, and all the other aspects of managing such a program. Experiments must be delivered to the CREST-1 laboratory near Kennedy Space Center one month prior to launch. This late loading feature, along with early retrieval of experimental materials upon Shuttle landing, removes many program management difficulties from experimenters, and increases the value of the results. Researchers retain 100% rights to experimental materials and data from the CREST-1 mission.

How to Participate in CUSSP – Time Critical

Through **CUSSP**, university student investigators are being offered an opportunity to fly experiments at the discounted price of **\$6,750.00 per experiment slot**. This cost includes late integration, safety review, launch, sample return and early post-landing sample recovery.

Critical Deadline: American Aerospace will accommodate all university student experimenters that reserve their launch opportunity by **August 2, 2010**, and as many as possible thereafter.

For more information, please contact:

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**SPACE SHUTTLE EXPERIMENT OPPORTUNITY –
TIME CRITICAL**

Reservations are now being taken for cell biology and protein crystal growth experiments, among others, on the first **Commercial Reusable Experiments for Science & Technology (CREST-1)** mission, scheduled to fly aboard the historic last scheduled **Space Shuttle flight STS-134, launching 26 February 2011**. This is a time-critical opportunity; early reservation pricing is being maintained only until August 2nd.

American Aerospace Advisors, Inc. (American Aerospace) has developed the CREST program (www.american-aerospace.net/crest1.html) to provide academic, government and industrial research communities with routine, low cost access to the space environment for experimentation and commercial development.

The CREST-1 mission provides investigators with several flight-proven, miniature laboratories that are capable of simultaneously accommodating up to 120 separate investigations. By dividing the cost of the mission across numerous experiments, meaningful scientific research can be performed at exceptionally low prices. This on-orbit research opportunity is provided by American Aerospace through NanoRacks LLC (www.nanoracksllc.com), which has signed a **Space Act Agreement** with NASA to develop utilization of the International Space Station as a National Laboratory.

CREST-1 utilizes the flight-proven **Materials Dispersion Apparatus (MDA)** from Instrumentation Technology Associates, Inc., which was successfully flown on six prior Space Shuttle missions. The MDA has been used for applications such as protein crystal growth, cell biology, zeolite crystal growth, collagen assembly, fluid sciences, thin film membrane casting, micro-encapsulation of drugs, industrial processes, and other applications.

Another device included on the mission is the **Liquids Mixing Apparatus (LMA)**, which provides a 2nd proven platform for microgravity research, having flown successfully on five prior shuttle missions. By accommodating up to 16 separate experiments in each of several LMA units being launched, the LMA significantly reduces the cost to each participant.

CREST-1 also provides for late loading of samples, launch, sample return and early retrieval from our laboratory near Kennedy Space Center.

Apart from offering experimental slots to industry researchers, American Aerospace is interested in maximizing participation by university and Grade 5-12 students through two education-oriented programs.

The **Student Spaceflight Experiments Program (SSEP)** is a new U.S. national STEM initiative for grades 5-12, developed in cooperation with the National Center for Earth and Space Science Education, designed to inspire the next generation of spaceflight engineers and space scientists. More information can be found on the program's website: ssep.ncesse.org/.

The **CREST-1 University Student Spaceflight Program (CUSSP)** is aimed at fostering participation of university student teams, assisted by a faculty advisor. More information can be found in the CUSSP announcement: [CREST-1 CUSSP program.pdf](#).

Act now to participate in this historic opportunity to be part of the last Space Shuttle flight. For more information, including pricing, or to reserve your experiment opportunity, please contact Alex Howerton before August 2nd :

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The **CREST-1 Student Spaceflight Experiments Program (SSEP)** is a new U.S. national STEM initiative for grades 5-12, developed in cooperation with the **National Center for Earth and Space Science Education (NCESSSE)**, designed to inspire the next generation of space scientists. Reservations are being taken now for a February 26 launch aboard STS-134, the historic last scheduled flight of the Space Shuttle.

About CREST-1

American Aerospace Advisors, Inc. (American Aerospace) has developed the **Commercial Reusable Experiments for Science & Technology (CREST)** program (www.american-aerospace.net/crest1.html) to begin offering to academic and industrial communities routine, standardized and continuously available access to the space environment for experimentation and commercial development. The **CREST-1 mission** provides investigators with several flight-proven, miniature laboratories that are capable of simultaneously accommodating up to 120 separate investigations. By dividing the cost of the mission across numerous experiments, meaningful scientific research and education can be performed at exceptionally low prices.

This on-orbit research opportunity is enabled by American Aerospace through NanoRacks LLC (www.nanorackslc.com), which has a **Space Act Agreement with NASA** to develop utilization of the International Space Station as a National Laboratory. **CREST-1** utilizes the flight-proven Materials Dispersion Apparatus (MDA) from Instrumentation Technology Associates, Inc., which has flown on six prior Space Shuttle missions and six sounding rocket flights. The CREST-1 team is dedicated to creating routine, standardized access to the space environment, so that the promise of space commercialization can begin to be realized.

SSEP Overview

SSEP is a unique opportunity for middle- and high-school students to conduct microgravity research utilizing equipment that has been successfully used to perform microgravity research in areas such as protein crystal growth, cell biology, zeolite crystallization, collagen polymerization, ceramic and polymer thin film membrane casting, and a variety of fluid physics studies, among other potential applications.

Because of the nature and design of the **CREST-1** mission, **SSEP** participants are free to concentrate on performing effective scientific experiments, and using CREST-1 to facilitate meaningful, real world science education. The CREST-1 team handles the hardware, integration, interfacing with NASA, and all the other aspects of managing such a program. More information and ideas of the types of experiments and education that can be conducted on the CREST-1 mission can be found on the SSEP website: ssep.ncesse.org.

How to Participate in SSEP – Time Critical

Through **SSEP**, grade 5-12 student investigators are being offered an opportunity to fly experiments and obtain SSEP assistance in developing an accompanying curriculum at the discounted price of **\$14,950 per experiment slot**. This cost includes late integration, safety review, launch, sample return and early post-landing sample recovery. SSEP has developed expanded programs which involve even more participation by educators and the local community. For more details on SSEP's education programs, visit this web page: ssep.ncesse.org/how-to-participate.

Critical Deadline: American Aerospace will accommodate all grade 5-12 student experimenters that reserve their launch opportunity by **August 2, 2010**, and as many as possible thereafter.

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