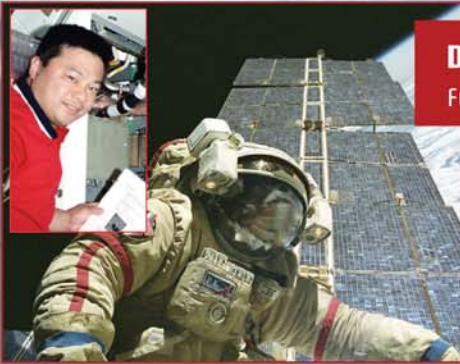


# The Two Hundred Mile High Club: Chemical Engineers at NASA Take it to the Next Level



Chiao, Expedition-10 commander and NASA science officer, outside the International Space Station (ISS), Jan. 2005. Inset: Chiao in the shirt-sleeve environment of the ISS functional cargo block.

## Dr. Leroy Chiao Former NASA Astronaut

*BS in chemical engineering, Univ. of California, Berkeley (1983); PhD, Univ. of California, Santa Barbara (1987).*

**Flight Plan:** Space Shuttle missions: Columbia – STS-65 (July 1994); Endeavour – STS-72 (Jan. 1996); Discovery – STS-92 (Oct. 2000); Expedition-10 – International Space Station (Oct. 2004 to Apr. 2005). Total 229 days, 8 hours in space; 36 hours spent in Extra-Vehicular Activity (EVA, or spacewalks). To date, only three Americans have logged more time in space. The first Asian-American to space walk.



Pettit sets up Pulmonary Function in Flight (PuFF) hardware in preparation for a Human Research Facility (HRF) experiment aboard the International Space Station (ISS).

## Dr. Donald R. Pettit NASA Astronaut

*BS in chemical engineering, Oregon State Univ. (1978); PhD in chemical engineering, Univ. of Arizona (1983).*

**Flight Plan:** Science officer and flight engineer aboard Expedition-6 – International Space Station (Nov. 2002 to May 2003). Launched on Space Shuttle Endeavour – STS-113 and returned to Earth on Soyuz TMA-1. Performed two spacewalks. To date, has spent 161 days in space. Pettit has been assigned to the crew of Space Shuttle Endeavour – STS-126, targeted for launch in Sept. 2008.



## Dr. Mae C. Jemison Former NASA Astronaut

*BS in chemical engineering, Stanford Univ. (1977); MD, Cornell Univ. (1981).*

**Flight Plan:** Science mission specialist on Spacelab-Japan and Space Shuttle Endeavour – STS-47 (Sep. 1992). Spent eight days in space.

*Jemison was the first African-American woman in space. Aboard Spacelab, she conducted bone cell research, life science, and materials processing experiments.*



## Dr. Gregory T. Linteris Payload Specialist

*BS in chemical engineering, Princeton Univ. (1979); MS in mechanical engineering (1984) and PhD in mechanical and aerospace engineering, Princeton Univ. (1990).*

**Flight Plan:** Space Shuttle Columbia and the Microgravity Science Laboratory (MSL-1) Spacelab – STS-83 (Apr. 1997); Space Shuttle Columbia – STS-94 (July 1997). Logged a total of 19 days, 16 hours in space.

*Linteris, Principal Investigator on NASA's microgravity combustion science experiments and materials research, enters data on a laptop computer aboard the Spacelab Science Module.*

Chemical engineering training is a launching pad to an ever-widening range of career possibilities. As the Institute celebrates its 100th Anniversary in 2008, CEP applauds the achievements of chemical engineers who have employed their expertise in a most unusual and fascinating arena — Earth's orbit.



**Richard (Dick) N. Richards**  
former NASA Astronaut

*BS in chemical engineering, Univ. of Missouri (1969); MS in aeronautical systems, Univ. of West Florida (1970).*

**Flight Plan:** Space Shuttle missions: Columbia — STS-28 (Aug. 1989); Discovery — STS-41 (Oct. 1990); Columbia — STS-50 (June — July 1992); Discovery — STS-64 (Sept. 1994). Logged 33 days, 22 hours in space. Mission director of subsequent Space Shuttle programs.

*Space Shuttle Commander Richards retired in 2007 as Boeing's Deputy Program Manager for the Space Shuttle.*



**Dr. Albert Sacco, Jr.**  
Payload Specialist

*BS in chemical engineering, Northeastern Univ. (1973); PhD in chemical engineering, MIT (1977).*

**Flight Plan:** Payload specialist on Space Shuttle Columbia and Spacelab — STS-73 (Oct. — Nov. 1995). 16 days in space. Perhaps the first "practicing" chemical engineer in space.

*Sacco mixing a zeolite synthesis "gel" and observing homogeneity and potential bubble formation. He is currently Professor of Engineering and Director of the Center for Advanced Microgravity Materials Processing at Northeastern Univ.*



**Dr. Lodewijk van den Berg**  
Payload Specialist

*Aboard Spacelab-3, Van den Berg conducted investigations in crystal growth, drop dynamics leading to containerless material processing, atmospheric trace gas spectroscopy, solar and planetary atmospheric simulation.*

*MS in chemical engineering, Technical Univ., Delft (1961); PhD in applied science, Univ. of Delaware (1975).*

**NASA Experience:** Payload specialist on Space Shuttle Challenger — Spacelab-3 mission — STS-51-B (Apr. — May 1985). Logged seven days in space.



**Dr. Robert L. Satcher, Jr.**  
NASA Astronaut

*BS (1986) and PhD (1993) in chemical engineering, MIT; MD, Harvard Medical School (1994). Assistant Professor at The Feinberg School of Medicine, Northwestern Univ. Attending Physician in Orthopaedic Surgery at Children's Memorial Hospital in Chicago, IL, specializing in Musculoskeletal Oncology. Prior clinical fellowship at Albert Schweitzer Hospital, Lambarene, Gabon.*

**Flight Plan:** In 2006, completed NASA Shuttle and International Space Station Astronaut training.

*Satcher floats freely aboard a KC-135 training aircraft.*



**Dr. Mary Ellen Weber**  
former NASA Astronaut

*BS in chemical engineering, Purdue Univ. (1984); PhD in physical chemistry, Univ. of California, Berkeley (1988).*

**Flight Plan:** Space Shuttle Discovery — STS-70 (July 1995); and Space Shuttle Atlantis and the International Space Station — STS-101 (May 2000). Aboard Discovery, performed biotechnology experiments, growing colon cancer tissues never before possible. Flew the 60-foot robotic arm to maneuver a spacewalker along the ISS surface. Logged 18 days in space.

*Weber prepares for the entry phase from her position on the flight deck of the Space Shuttle Atlantis.*

More information about each of these chemical engineers in space is available on the AIChE Web's Centennial Celebration Site: [www.aiche.org/100/](http://www.aiche.org/100/).