



National Aeronautics and Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058

Biographical Data

TRACY E. CALDWELL (PH.D.)
NASA ASTRONAUT (MISSION SPECIALIST)

PERSONAL DATA: Born August 14, 1969 in Arcadia, California. Recreational interests include running, weight training, hiking, softball, basketball, and auto repair/maintenance. As an undergraduate, she competed in intercollegiate athletics on CSUF's track team as both a sprinter and long jumper.

EDUCATION: Received a Bachelor of Science degree in Chemistry from the California State University at Fullerton in 1993 and a Doctorate in Physical Chemistry from the University of California at Davis in 1997.

ORGANIZATIONS: Sigma Xi Research Society and the American Chemical Society.

SPECIAL HONORS: NASA Performance Award (2002 & 2001), NASA Go the Extra Mile (GEM) Award (2001), NASA Superior Accomplishment Award (2000), NASA Group Achievement Award - Russian Crusader Team (2000), Camille and Henry Dreyfus Postdoctoral Fellowship in Environmental Science (1997). Outstanding Doctoral Student Award in Chemistry from the University of California Davis (1997). American Vacuum Society - Nellie Yeoh Whetten Award (1996). American Vacuum Society Graduate Research Award (1996). Pro Femina Research Consortium Graduate Research Award (1996). Pro Femina Research Consortium Graduate Award for Scientific Travel (1996). University of California, Davis Graduate Research Award (1996). University of California, Davis Graduate Student Award for Scientific Travel (1994). Patricia Roberts Harris Graduate Fellowship in Chemistry (1993-1997). Lyle Wallace Award for Service to the Department of Chemistry, California State University Fullerton (1993). National Science Foundation Research Experience for Undergraduates Award, (1992). Council of Building & Construction Trades Scholarship (1991 and 1992). Big West Scholar Athlete (1989-1991).

EXPERIENCE: As an undergraduate researcher at the California State University, Fullerton (CSUF), Dr. Caldwell designed, constructed and implemented electronics and hardware associated with a laser-ionization, time-of-flight mass spectrometer for studying atmospherically-relevant gas-phase chemistry. Also at CSUF, she worked for the Research and Instructional Safety Office as a lab assistant performing environmental monitoring of laboratories using hazardous chemicals and radioactive materials, as well as calibrating survey instruments and helping to process chemical and radioactive waste. During that time (and for many years prior) she also worked as an electrician/inside wireman for her father's electrical contracting company doing commercial and light industrial type construction. At the University of California, Davis, Dr. Caldwell taught general chemistry laboratory and began her graduate research. Her dissertation work focused on investigating molecular-level surface reactivity and kinetics of metal surfaces using electron spectroscopy, laser desorption, and Fourier transform mass spectrometry techniques. She also designed and built peripheral components for a variable temperature, ultra-high vacuum scanning tunneling microscopy system. In 1997, Dr. Caldwell received the Camille and Henry Drefus Postdoctoral Fellowship in Environmental Science to study atmospheric chemistry at the University of California, Irvine. There she investigated reactivity and kinetics of atmospherically relevant systems using atmospheric pressure ionization mass spectrometry, Fourier transform infrared and ultraviolet absorption spectroscopies. In addition, she developed methods of chemical ionization for spectral interpretation of trace compounds. Dr. Caldwell has published and presented her work in numerous papers at technical conferences and in scientific journals.

Dr. Caldwell is a private pilot and conversational in American Sign Language (ASL) and Russian.

NASA EXPERIENCE: Selected by NASA in June 1998, Dr. Caldwell reported for training in August 1998. Astronaut Candidate Training included orientation briefings and tours, numerous scientific and technical briefings, intensive instruction in Shuttle and International Space Station (ISS) systems, physiological training, ground school to prepare for T-38 flight training, as well as learning water and wilderness survival techniques. Completion of this training and evaluation qualified her for flight assignment as a mission specialist. In 1999, Dr. Caldwell was first assigned to the Astronaut Office ISS Operations Branch as a Russian Crusader, participating in the testing and integration of Russian hardware and software products developed for ISS. In 2000, she was assigned prime Crew Support Astronaut for the 5 th ISS Expedition crew, serving as their representative on technical and operational issues throughout the training and on-orbit phase of their mission. During ISS Increments 4-6, Dr. Caldwell also served as an ISS spacecraft communicator (CAPCOM) inside Mission Control. In 2003, she transitioned to the Astronaut Shuttle Operations Branch and was assigned to flight software verification in the Shuttle Avionics Integration Laboratory (SAIL) and also worked supporting launch and landing operations at Kennedy Space Center, Florida. Dr. Caldwell currently serves as Lead CAPCOM for Increment 11. She will serve in technical assignments until assigned to a space flight.

AUGUST 2005