

# ASTRONAUT BIOGRAPHY



National Aeronautics and Space Administration

Lyndon B. Johnson Space Center  
Houston, Texas 77058

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**Tracy C. Dyson**  
(Ph.D.) NASA Astronaut

## Summary:

Tracy C. Dyson was selected as an astronaut by NASA in 1998. The California native has a Ph.D. in Chemistry, and is a veteran of three space flights. Dr. Dyson has designed, constructed and implemented electronics and hardware for the study of atmospheric gas phase chemistry, and has developed and presented numerous papers on methods of chemical ionization for the spectral interpretation of trace compounds. In 2007, Dyson flew aboard the space shuttle Endeavor on STS-118, where she served as a mission specialist. In 2010, she served as flight engineer for Expedition 23/24. She has logged a total of 373 days in space, including over 23 hours in four spacewalks. Most recently, Dyson launched to the International Space Station on March 23, 2024, as a flight engineer on the Soyuz MS-25 spacecraft. Dyson spent six months aboard the station as an Expedition 71 flight engineer, conducting science experiments and maintaining the space station. It was her second long-duration spaceflight and third mission overall.

## Personal Data:

Born in Arcadia, California. Married to George Dyson IV. Dyson enjoys sports, hiking, and auto repair/maintenance and anything requiring power tools. She competed in intercollegiate track and field at California State University, Fullerton (CSUF), as both a sprinter and long jumper as well as a member of both women's 4x100m and 4x400m teams.

## Education:

Received a bachelor of science degree in Chemistry from CSU Fullerton, 1993 and a Ph.D. in Chemistry from the University of California at Davis, (UC Davis) 1997.

## Experience:

As an undergraduate researcher at CSU Fullerton, Dyson designed, constructed and implemented electronics and hardware associated with a laser-ionization, time-of-flight mass spectrometer for studying atmospherically relevant gas phase chemistry. During that time she also worked as an electrician/inside wireman for her father's electrical contracting company doing commercial and light industrial construction. At UC Davis, Dyson 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, she received the Camille and Henry Dreyfus Postdoctoral Fellowship in environmental science to study atmospheric chemistry at the University of California, Irvine (UC 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. Dyson has published and presented her work in numerous papers at technical conferences and in scientific journals. She is a private pilot and conversational in American Sign Language (ASL) and Russian.

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## Tracy C. Dyson

### **NASA Experience:**

Selected as an astronaut by NASA in June 1998, Dyson reported for training in August. In 1999, she was first assigned to the Astronaut Office International Space Station (ISS) Operations branch as a Russian Crusader, participating in the testing and integration of Russian hardware and software products developed for the ISS. In 2000, she was assigned prime Crew Support Astronaut for Expedition 5 to the space station, serving as their representative on technical and operational issues throughout the training and on-orbit phase of their mission. Dyson has since held multiple roles within the Astronaut Office, working inside Houston's Mission Control Center (MCC-H) as spacecraft communicator (CAPCOM) for both space shuttle and space station operations, serving as lead CAPCOM for various ISS missions, including the lead and development of the CAPCOM cadre for Boeing Starliner Mission Operations team. Other technical assignments have included flight software verification in the Shuttle Avionics Integration Laboratory (SAIL) and supporting shuttle launch and landing operations at NASA's Kennedy Space Center, Florida. Upon returning from her first long-duration mission, Dyson initiated and led several projects to improve training and operations aboard the ISS, most notably developing the EVA Qualification training flow (EVQ) for Astronaut Candidates. Dyson also served as the on-camera host for NASA's TV series "StationLife," spanning over 10 episodes and 5 years of replay, a program dedicated to highlighting science and technology driven by the work aboard the space station. During her three flights, Dyson logged a total of 373 days in space, including more than 23 hours in four spacewalks. Dyson launched to the space station on March 23, 2024, as a flight engineer on the Soyuz MS-25 spacecraft. She spent six months aboard the station as an Expedition 71 flight engineer, conducting science experiments and maintaining the space station. She returned to Earth on Sept. 23, 2024.

### **Spaceflight Experience:**

STS-118 (August 8, 2007 through 21, 2007). This mission was the 119th space shuttle flight, the 22nd flight to the space station, and the 20th flight for Endeavour. During the mission, the crew successfully added truss segment S5 and a new gyroscope. As a mission specialist, Dyson assisted in flight deck operations on ascent and also aided in rendezvous/docking operations with the ISS. Dyson operated Endeavour's robotic arm to maneuver the Orbiter Boom Sensor System (OBSS) and handover the S5 truss segment to the space station, and served as the intravehicular (IV) crew member, directing all four spacewalks. Traveling 5.3 million miles in space, the STS-118 mission was completed in 12 days, 17 hours, 55 minutes and 34 seconds.

Expedition 23/24 (April 2 through September 25, 2010). Dyson launched aboard a Soyuz TMA 18 crew capsule on April 2, 2010, from the Baikonur Cosmodrome in Kazakhstan, docking with the space station two days later to join the Expedition 23 crew. For the next 174 days, Dyson lived and worked aboard the station as a Flight Engineer for both Expeditions 23 and 24. She performed three successful contingency spacewalks to remove and replace the failed pump module on the station, logging 22 hours and 49 minutes of spacewalk time. The Expedition 24 crew landed in central Kazakhstan on September 25, 2010. In completing this long duration mission, Dyson logged a total of 176 days in space.

Expedition 70/71. Dyson launched on March 23 aboard the Soyuz MS-25 spacecraft, arriving at the space station on March 25, 2024. During the science expedition, Dyson logged 184 days in space, orbiting the Earth nearly 3,000 times. She saw the arrival of five visiting spacecraft and the departure of six during her time in orbit. She conducted one spacewalk, totaling 31 minutes. Dyson conducted hundreds of hours of scientific investigations, including an experiment to 3D print cardiovascular tissue samples. She also helped run a program that used student-designed software to control the station's free flying robots. She has now spent 373 days in space across all three of her spaceflights, with a career total of four spacewalks lasting a cumulative time of 23 hours, 20 minutes.

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Tracy C. Dyson

**Awards/Honors:**

NASA Space Flight Medal, 2007, 2010; NASA Distinguished Service Medal, 2010; NASA Go the Extra Mile (GEM) Award, 2001; NASA Superior Accomplishment Award, 2000; Outstanding Doctoral Student Award in Chemistry from UC Davis, 1997; Patricia Roberts Harris Graduate Fellowship in Chemistry, 1993-1997; Lyle Wallace Award for Service to the Department of Chemistry, CSU Fullerton, 1993; National Science Foundation Research Experience for Undergraduates Award, 1992. Council of Building & Construction Trades Scholarship, 1991-1992; Big West Scholar Athlete, 1989-1991.