



International Space Station

MISSION SUMMARY

EXPEDITION 34 begins Nov. 18, 2012 and will end March 15, 2013. This next expedition aboard the International Space Station will be exciting, as astronauts work with new experiments. These include the Facility for Absorption and Surface Tension (FASTER) investigation, provided by the European Space Agency, which will study how surfactants (surface acting agents that reduce the surface tension of water, such as soap) are affected by microgravity. Additionally, a Canadian Space Agency investigation called Microflow1 will be the first demonstration in space of a miniaturized flow cytometer that will allow doctors and scientists to quantify molecules and cells in blood.

THE CREW:

Soyuz TMA-06M • Launch: Oct. 23, 2012 • Landing: March 15, 2013



Kevin Ford – Commander (NASA)

- Born: Portland, Ind., considers Montpelier, Ind., home
- Interests: Football (favorite team is Notre Dame)
- Spaceflights: STS-128, Exp. 33/34

Soyuz TMA-07M • Launch: Dec. 19, 2012 • Landing: May 14, 2013



Chris Hadfield – Flight Engineer (CSA)

- Born: Sarnia, Ontario, Canada, raised in Milton, Ontario, Canada
- Interests: Skiing, playing guitar, singing, running, volleyball, squash, writing and riding
- Spaceflights: STS-74, STS-100, Exp. 34/35
- Twitter: @Cmdr_Hadfield



Oleg Novitsky – Flight Engineer (Roscosmos)
(OH-leg NO-vit-skee)

- Born: Belarus, Russia
- Interests: Football, hunting, fishing and reading
- Spaceflights: Exp. 33/34 will be his first mission



Roman Romanenko – Flight Engineer (Roscosmos)
(r0-man ro-man-Yenk-o)

- Born: Schelkovo, Moscow Region, Russia
- Interests: Underwater hunting and tennis
- Spaceflights: Exps. 20/21 and 34/35



Evgeny Tarelkin – Flight Engineer (Roscosmos)
(ev-GEN-nee tuh-REL-ken)

- Born: Pervomaisky, Russia
- Interests: Skydiving
- Spaceflights: Exp. 33/34 will be his first mission



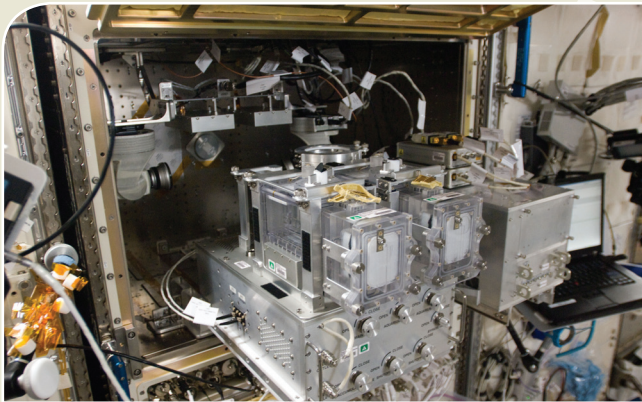
Tom Marshburn – Flight Engineer (NASA)

- Born: Statesville, N.C.
- Interests: Swimming, scuba diving and snowboarding
- Spaceflights: STS-127, Exp. 34/35
- Twitter: @AstroMarshburn

THE SCIENCE: What's the crew working on?

Expedition 34 will continue to take advantage of the space station's unique microgravity environment and expand the scope of research. The crew will look into the cardiovascular system by performing experiments that cover human research, biological and physical sciences, technology development and Earth observations. The crew also will engage in educational activities.

■ **Medaka Osteoclast (Medaka_Osteoclast) (JAXA)**
Living organisms, including astronauts, lose bone mineral density during long duration spaceflight. Increased activity of osteoclasts, a bone cell that is responsible for resorption or breakdown of bone, is thought to cause the decrease of bone mineral density during spaceflight. This experiment will study the effects of microgravity on osteoclast activity and the gravity-sensing system of fish.



The Aquatic Habitat aboard the station that is home to the Medaka fish.

■ **Sun Monitoring on the External Payload Facility of Columbus - SOLar Auto-Calibrating EUV/UV Spectrophotometers (Solar-SOLACES) (ESA)**
Solar-SOLACES measures the extreme-ultraviolet/ultraviolet (EUV/UV) solar spectrum with moderate spectral resolution from the sun. The data from SOLACES will be used to investigate the impact of changes in the sun's electromagnetic radiation on Earth's climate, as well as improve understanding of the interaction between the thermosphere and ionosphere.

■ **Investigating the Structure of Paramagnetic Aggregates from Colloidal Emulsions - 3 (InSPACE-3) (NASA)**
InSPACE-3 obtains data on fluids containing ellipsoid-shaped particles that change the physical properties of the fluids in response to magnetic fields. These fluids are called magnetorheological suspensions and are classified as smart materials that transition to a solid-like state by the formation and cross-linking of microstructures in the presence of a

magnetic field. On Earth, these materials are used for vibration damping systems that can be turned on or off. This technology has promise to improve the ability to design structures, such as bridges and buildings, to better withstand earthquake forces.

■ **Perspective Reversible Figures in Microgravity (Reversible_Figures) (ESA)**
Reversible_Figures investigates whether the perception of ambiguous perspective-reversible figures (such as an optical illusion that can normally be seen to change in perspective or orientation) is affected by microgravity. It is thought that the adaptive changes in the processing of gravitational information by the neurovestibular system during spaceflight may cause changes in 3-D visual perception. This could have important consequences on the performance of astronauts, including impaired psycho-motor ability on sensory-motor tasks (such as operation of robotic arm), spatial orientation and navigation. Understanding whether or not the perception of ambiguous figures is affected by microgravity may be useful for specific tasks executed by humans in microgravity.

THE MISSION PATCH:

The crew members of Expedition 34 put together the following description of their patch: "The outer border of the Expedition 34 patch takes the mold line of a crew transfer or generic resupply vehicle which will form our bridge to the orbiting outpost throughout the second half of its operational lifetime. The (station) in flight represents the dedication, ingenuity, and cooperation amongst the thousands and thousands of workers around the globe who have successfully designed and built a wonder of our modern world. The distant stars, like those visible in our night sky, beckon us to come further into the depths of space. 'Off the Earth. . . For the Earth' - Our acknowledgement of the responsibility and commitment to work diligently for all inhabitants of planet Earth."

