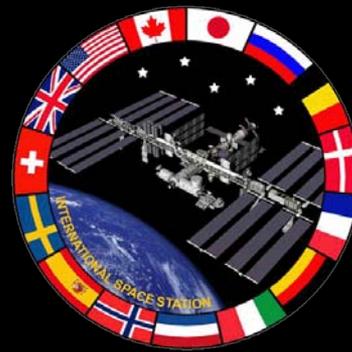
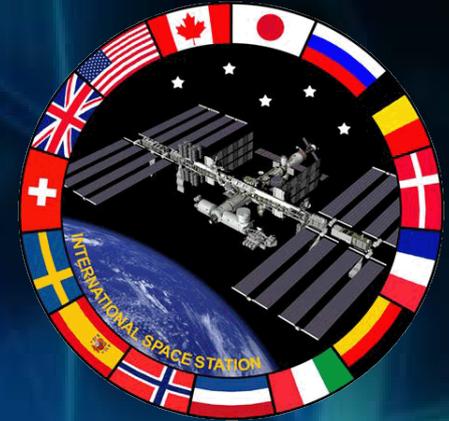


THE INTERNATIONAL SPACE STATION

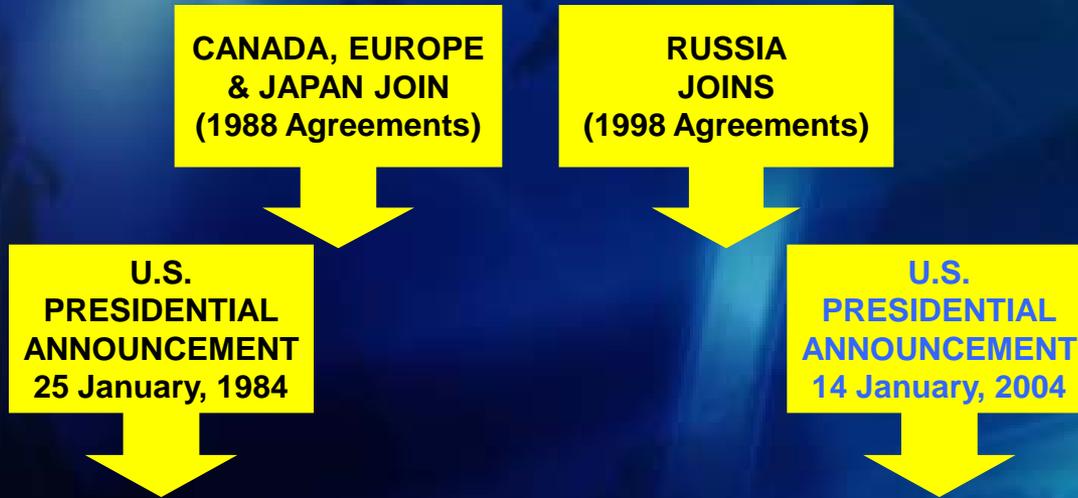


Lynn F.H. Cline
Deputy Associate Administrator
Space Operations Mission Directorate
National Aeronautics and Space Administration

Historic Context



POLITICAL



TECHNICAL



The International Space Station Partners

Canadian Space Agency



European Space Agency



Japan Aerospace Exploration Agency



National Aeronautics and Space Administration

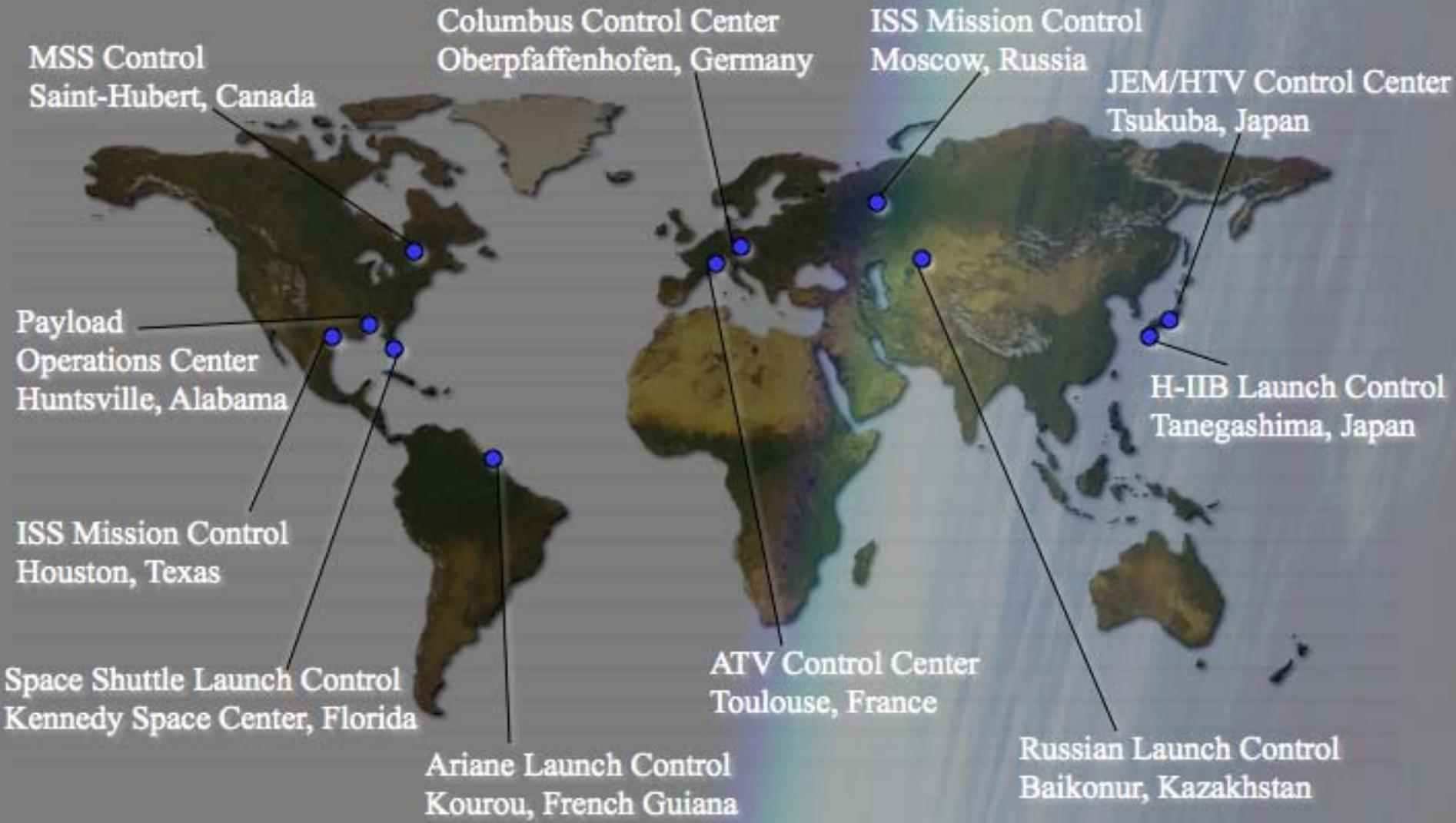


Russian Federal Space Agency





ISS Operations Centers





ISS Operations Centers



Current and Future ISS Launch Vehicles



Shuttle



Proton



Soyuz /
Progress



Ariane/ATV



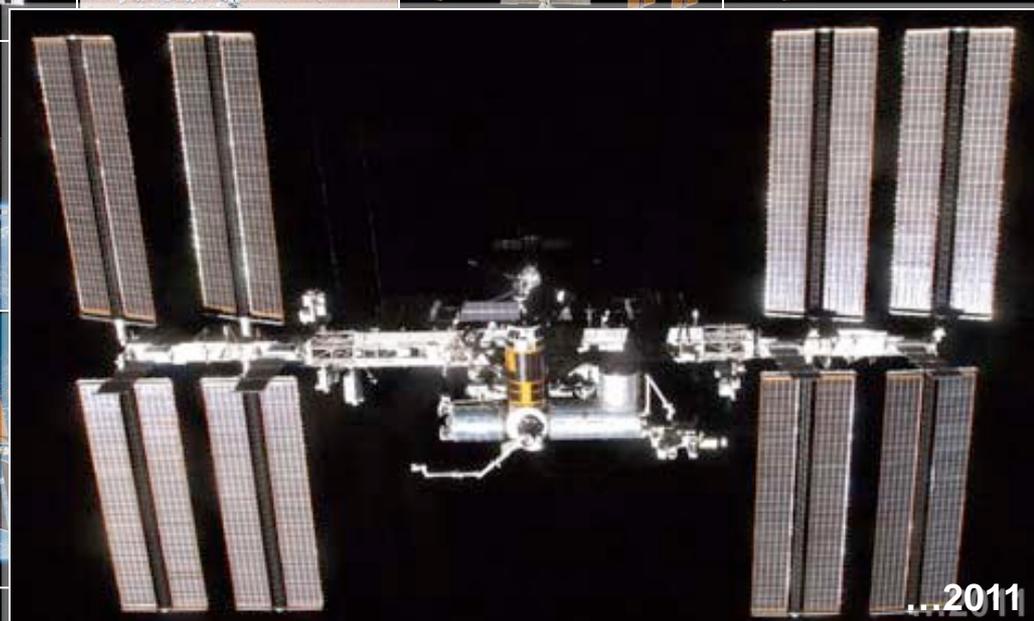
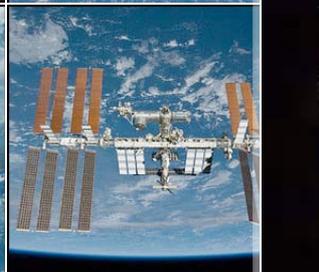
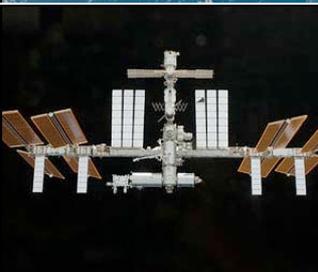
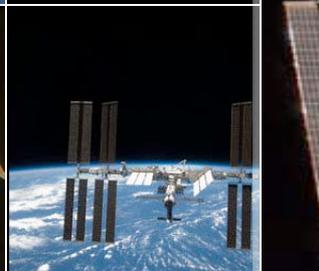
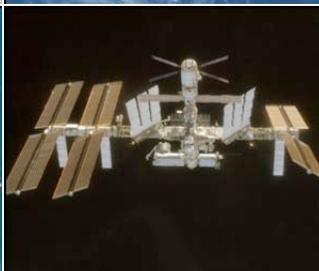
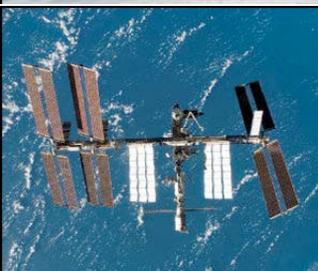
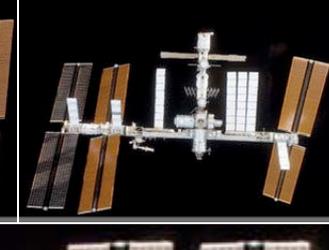
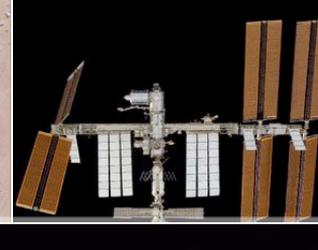
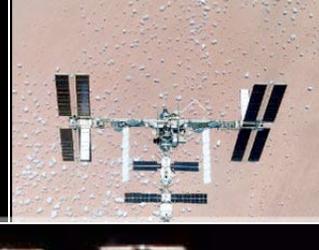
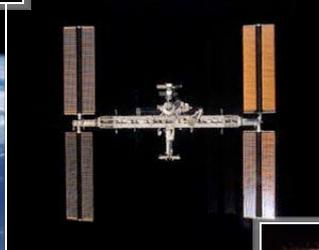
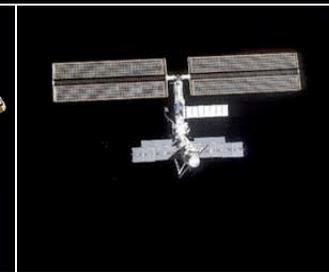
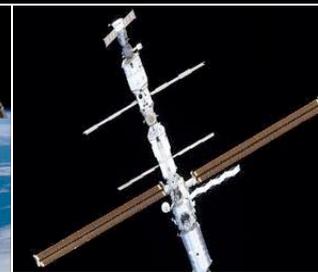
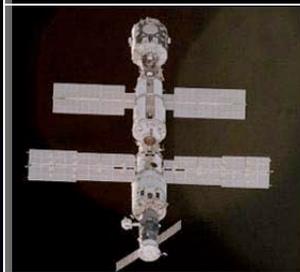
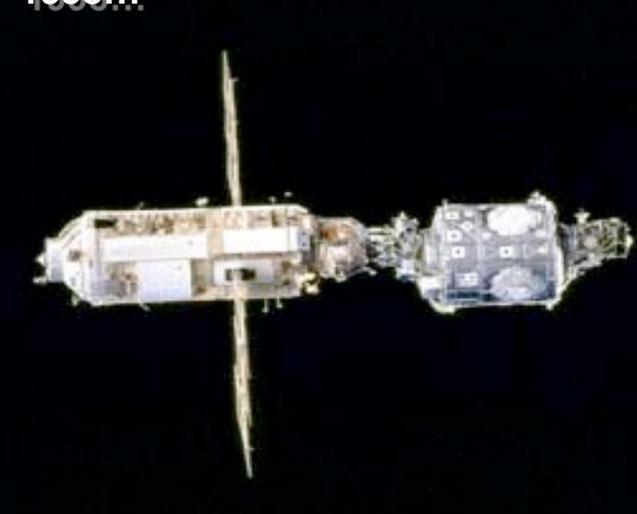
H-IIIB/HTV



NASA Commercial
Crew/Cargo Project

Commercial

1998...



...2011

Current Configuration



27 ISS Expeditions

Over ten years of continuously crewed flight operation

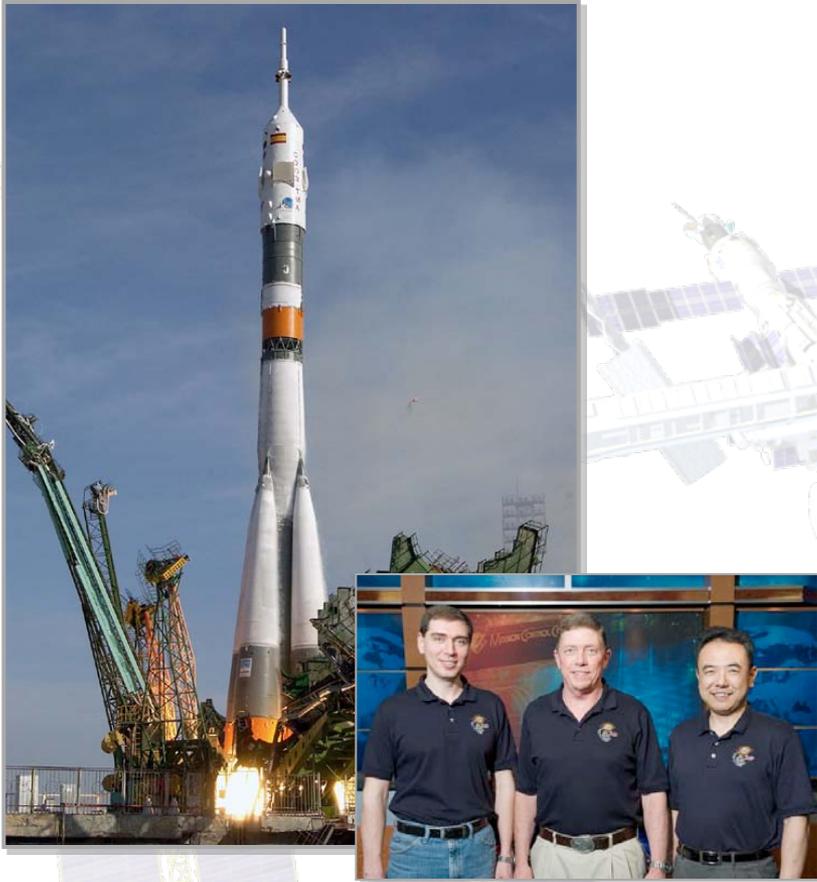
November 2000...



...June 2011



Upcoming Missions



SOYUZ 27S/TMA-02M

- Launching June 7/8, 2011
- ISS Crew Rotation



SPACE SHUTTLE ATLANTIS / STS-135

- Launching July 8, 2011
- Final Flight of the Space Shuttle Program

Crystalline v. Amorphous Structure (Hufnagel, 2007)

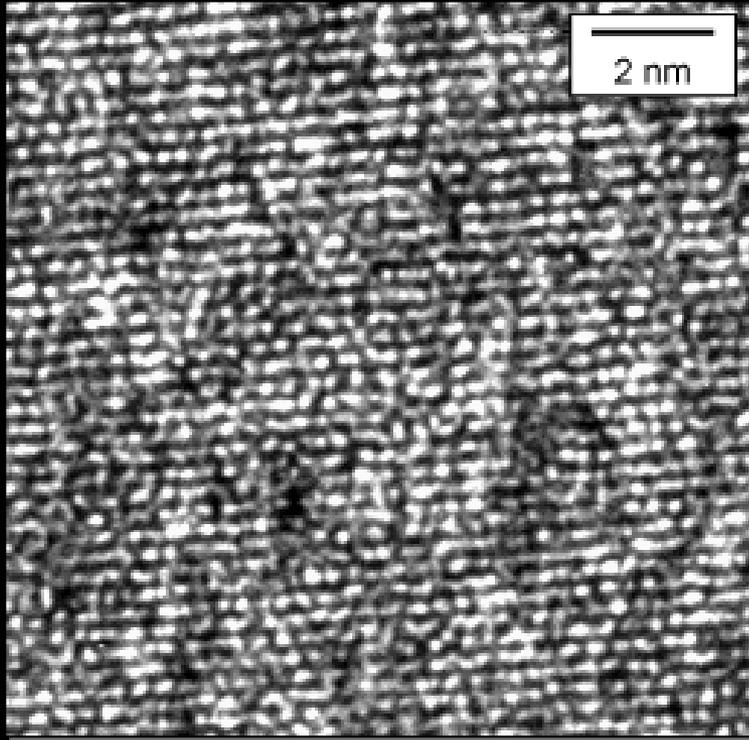


Figure 1: High resolution TEM image of a crystalline zirconium alloy. The bright spots are long rows of atoms, viewed end-on. Notice how these spots are very regularly arranged, proving that this material has a crystalline structure.

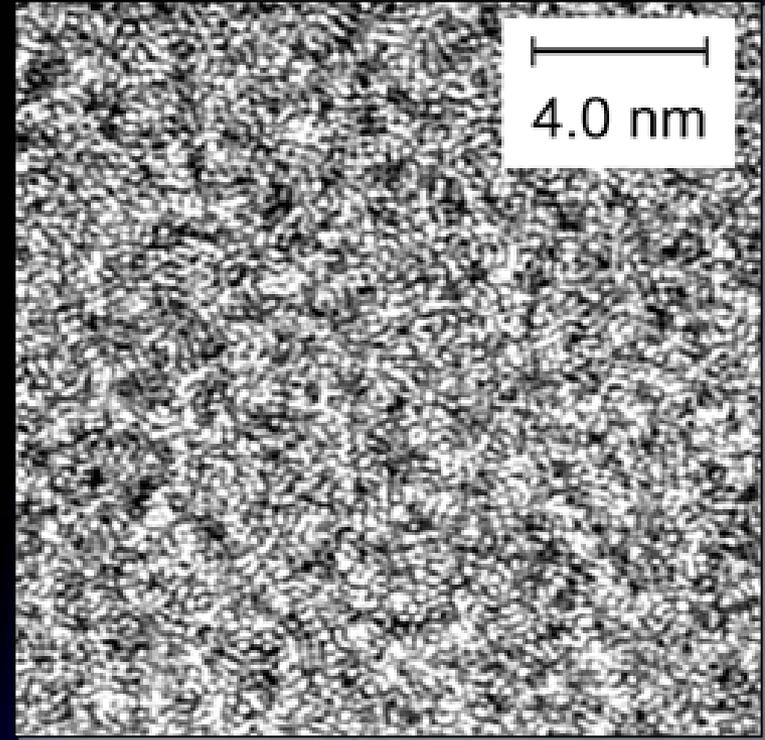


Figure 2: High resolution TEM image of an amorphous zirconium alloy. In contrast to Figure 1, the spots are randomly arranged, which tells us that this material is noncrystalline.

Liquidmetals® (metallic glasses)

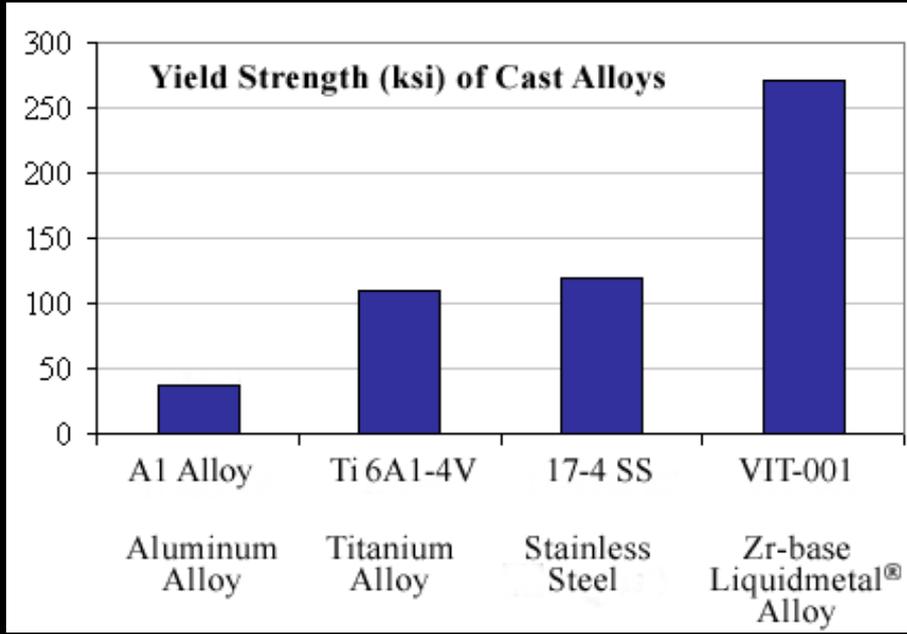


Figure 3: Comparative yield strength (ksi) of cast alloys with Zr-base Liquidmetal® alloy (<http://www.liquidmetal.com/technology/>).

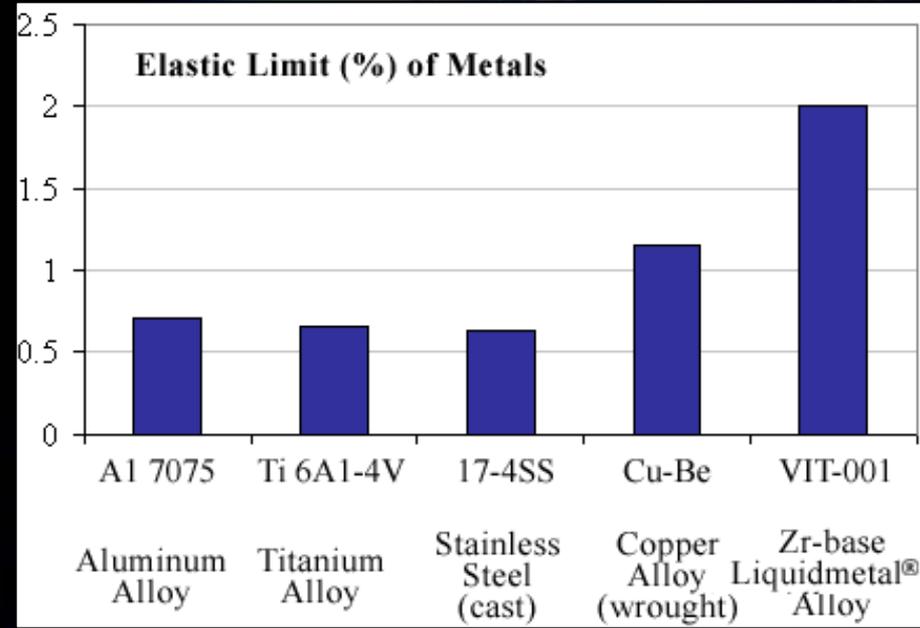


Figure 4: Comparative elastic limit (&) of metals with Zr-base Liquidmetal® alloy (<http://www.liquidmetal.com/technology/>).

ISS Research Accomplishments

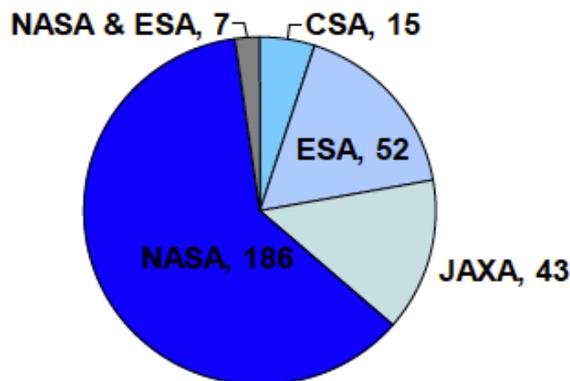
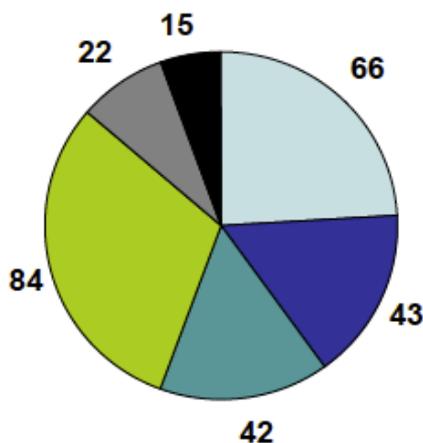
Expeditions 0 – 24



- Expeditions 0 – 24
 - 303 U.S.O.S.-integrated investigations
 - 169 completed investigations
 - 110 International Partner investigations
 - 25 National Lab investigations
 - > 950 scientists
 - 310+ scientific publications (international count ongoing)

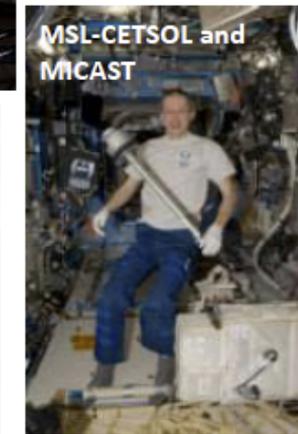
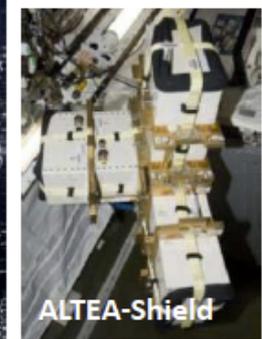
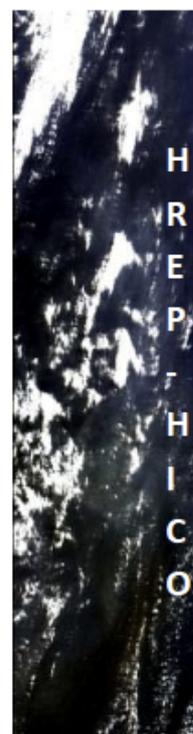


Number of Investigations, Expeditions 0 – 24



Scientific Disciplines

- Human Research
- Physical and Materials Science
- Education
- Technology
- Biology and Biotechnology
- Earth and Space Sciences



ISS Research Accomplishments

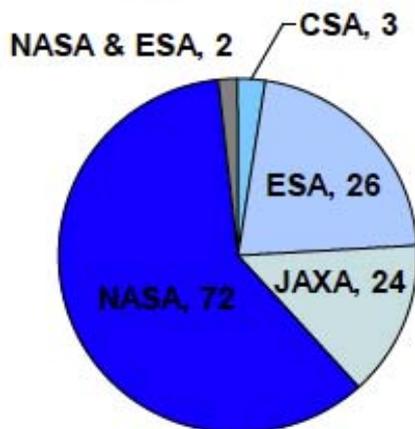
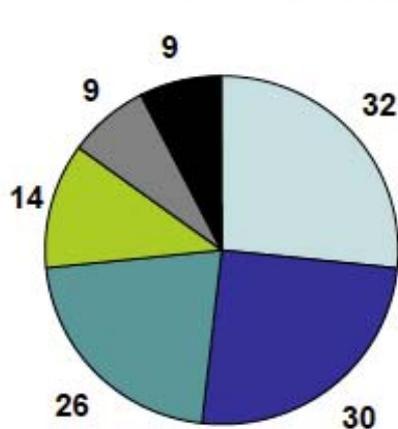
Expeditions 25 – 26



- Expeditions 25/26
 - 121 U.S.O.S.-integrated investigations
 - 49 new investigations
 - 44 International Partner investigations
 - 25 National Lab investigations
 - > 360 scientists



Number of Investigations, Expeditions 25/26

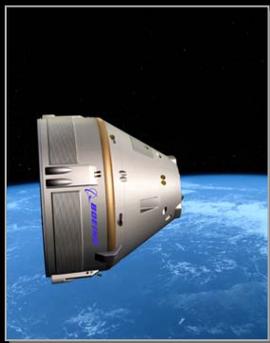
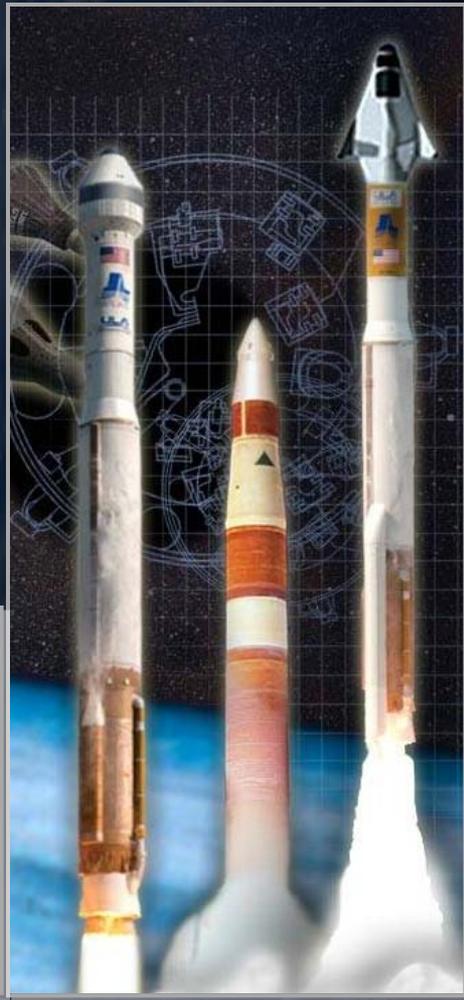


Scientific Disciplines

- Human Research
- Physical and Materials Sciences
- Earth and Space Science
- Technology
- Biology and Biotechnology
- Education



The First Steps in Exploration...



The ISS at Schönbrunn Palace

