

## **Flying: High and Fast in Space; Low and Slow in a 100 Year Old Aircraft**

**Bjarni Tryggvason (University of Western Ontario)**

In 1997 the speaker flew on the US space shuttle Discovery on a 12 day mission that focused on science in the free fall environment and on science that used the vantage point of space to view the Earth and the solar system. As well as training and flying as an astronaut, the speaker played a leading role with science teams developing fluid science experiments and led the team of engineers that developed the hardware required to support these experiments. The first version of the Microgravity Vibration Isolation Mount (MIM-1) flew on the Russian space station Mir; MIM-2 flew on shuttle mission STS-85; and the MVIS is currently on board the ISS. The Mir and shuttle experiments with MIM were designed to examine the effect of spacecraft vibrations on fluids in the free fall environment. This work was done to determine the effects that can be expected on fluid physics and material science experiments planned for the International Space Station (ISS).

The ISS is the largest spacecraft ever assembled and the largest international cooperative space program undertaken thus far, through a partnership between the USA, Russia, Canada, Japan and the European Union. The ISS' primary role is to support science in the free fall environment. The ISS has been crewed on a continual basis since 2000 and full assembly was completed in 2010. The normal crew complement is six people, drawn from the international partners. Canadian Bob Thirsk spent six months on the ISS in 2010-11 and Chris Hatfield just returned from a five month mission included serving as the commander of the ISS during the last three months.

In 2009 the speaker flew the 100th anniversary flight of the Silver Dart, the first powered aircraft to fly in Canada. The presentation will review aspects of the author's 12-day adventure in space and contrast that with the challenge of flying one of earliest aircraft ever flown.