

# Planetary Science and Space Exploration

## Applying Space to Earth

### What is the Centre for Planetary Science and Exploration?

- Addresses questions of relevance to the study of matters related to planets and space
- Leads Canadian planetary science and exploration efforts through training and partnerships
- Establishes Western as a pioneer in space systems design and makes it the focus for planetary science research in Canada
- Promotes the national space program by training Canada's space community and by forming strategic partnerships with industry, the *Canadian Space Agency*, NASA and the *European Space Agency*
- Hosts Canada's only graduate program in planetary science

### Research

The CPSX is an interdisciplinary research effort involving members of the faculties of Science, Engineering, Social Science, Health Sciences and the Schulich School of Medicine & Dentistry. Its researchers are engaged in the following major areas of research:

- **Astrobiology:** investigating the origin, evolution, distribution and future of life on Earth and on other planets
- **Cosmochemistry:** investigating planetary materials, such as meteorites, to develop a more detailed, quantitative understanding of solar system history and chronology
- **Planetary Atmospheres:** interpreting the dynamics, thermodynamics and chemistry of the neutral and ionized components of an atmosphere, improving our ability to predict change in our own atmosphere and further understand critical issues for human survival
- **Planetary Dynamics/Astronomy:** understanding the dynamic interaction of planets and small bodies, and characterizing planetary objects
- **Planetary Interiors:** inferring the internal structure of planetary bodies and unraveling their formation and subsequent evolution
- **Planetary Surfaces:** studying features visible on planetary bodies and understanding the underlying physical processes that produce them
- **Space Systems:** designing systems and hardware required to fly instruments and technology in space
- **Modular Material Retrieval System:** designing reconfigurable robotic and mechatronic systems for collection, handling, analysis and containment of pristine samples from terrestrial and extraterrestrial environments
- **Telerobotics:** investigating requirements for the teleoperation of robots on Earth and other planets, including design of specialized haptics-enabled robotic systems and algorithms for bilateral teleoperation
- **Space History:** examining the history of space and planetary exploration

### Notable Achievements

- First international affiliate of NASA's *Lunar Science Institute*, promoting a new generation of collaborative scientific investigations about the moon, and providing technical perspectives to lunar missions
- Represents Canada's lunar science by leading the *Canadian Lunar Research Network*
- Groundbreaking planetary science research with colleagues at the institute and the *Canadian Space Agency*
- Leads national *NSERC CREATE* network developing Earth and space exploration technologies and techniques
- The *Canadian Astrobiology Network*, centered at Western, has been given affiliate status within the *NASA Astrobiology Network*



As NSERC/MDA/CSA Industrial Research Chair in Planetary Geology and Deputy Director of the CPSX, Gordon Osinski helps understand meteorite impacts and planet formation.

For more information, please visit: [cpsx.uwo.ca](http://cpsx.uwo.ca)



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Research