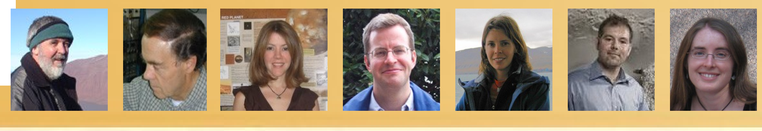
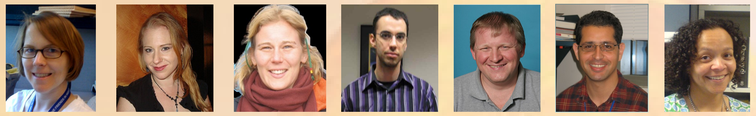
The Planetary Environments Laboratory (Code 699)

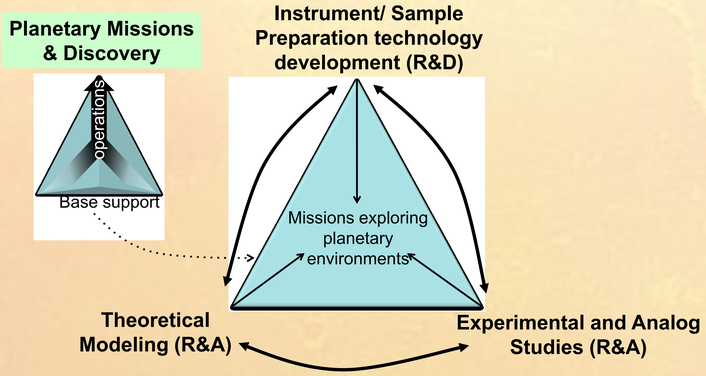


Lab Chief: Paul Mahaffy
Assoc. Lab Chief: Daniel Glavin
and PEL Scientists



Who We Are and What We Do

The **Planetary Environments Laboratory** studies chemical and physical processes at planetary exploration targets. We have developed instruments to explore Venus from orbit, to flyby Saturn's moons Titan and Enceladus, and to probe the chemical composition of the deep atmospheres of Titan and Jupiter. We are presently leading scientific investigations and developing instruments to orbit both the moon and Mars, and to robotically explore the habitability of a site on the surface of Mars using a surface rover. We are interested in the chemical and isotopic composition of samples from planetary targets and in the distribution and processing of organic molecules in the solar system. We advance our astrobiology studies through a vigorous program of planetary analog research that includes laboratory research and field studies of planetary analog sites.



699 Personnel and Associates

SCIENCE		
Civil Servants	***Code***	***Role***
Brinkerhoff, William	699	scientist
Eigenbrode, Jennifer	699	scientist
Glavin, Daniel, Assoc. Lab Chief	699	scientist
Harpold, Daniel	699	scientist
Mahaffy, Paul, Lab Chief	699	scientist
McAdam, Amy	699	scientist
Stern, Jennifer	699	scientist
Pavlov, Alex	699	scientist
Trainer, Melissa	699	scientist
Postdoctoral, GEST, and visiting scientists		
Benna, Mehdi	699/GEST	scientist
Franz, Heather	699/GEST	scientist / grad. student
Stalport, Fabien	699/GEST	scientist/ postdoc
ten Kate, Inge	699/GEST	scientist / postdoc
Floyd, Melissa	699/GEST	scientist
Misra, Prabhakar	699/Howard	visiting professor/Howard U.
Garcia, Raul	699/Howard	graduate student/Howard U.
Collier, Michael	695/GSFC	lunar LADEE sci/exp
Emeritus		
Niemann, Hasso	699/U.MD	Cassini GCMS scientist
Kasprzak, Wayne	699	scientist

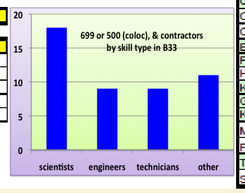
ENGINEERING, TECHNICIANS, & OTHER	
Contractors	
Arvey, Robert	electrical technician
Barciniak, Michael	electrical technician
Bendt, Mirl	machinist
Carrigan, Daniel	technician / MS specialist
Corsi, Kieth	QA
Hawk, Douglas	mechanical engineer
Holmes, Vince	mechanical engineer
Hovmand, Lars	engineer
Johnson, Chris	technician / vacuum systems
Johnson, Jenna	configuration management
Manning, Joyce	QA
Noreiga, Marvin	mechanical technician
Nolan, Thomas	software
Patel, Kiran	software
Prats, Benny	thermal engineer
Raaen, Eric	laboratory and flight software support
Westberg, John W	organization support

Code Green = multi project contract and 500 support

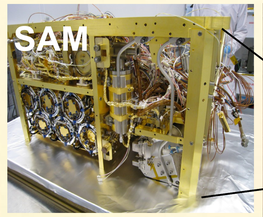
Co-located Civil Servants	
Cagiano, Steve / 544	technician
Chalmers, Rob / 545	thermal
Counts, Roger / 303	quality assurance
Emigo, Therese/564	contamination
Feng, Steve 564	electrical
Hidrobo, Graig / 547	technician
Kellog, Jim / 556	systems
Getty, Stephanie / 541	nano-technology
King, Todd / 541	Instrument Manager / MAVEN / LADEE
Martin, Dave / 599	systems
Frazier, Greg / 460	Project Manager / SAM
Tan, Florence / 565	electrical
Sheinman, Oren / 543	mechanical

6 Interns Summer 2009

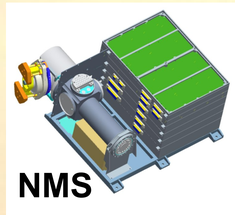
Several visiting scientists
- Atreya, Sushil - U. Michigan
- Coll, Patrice - U. Paris
- Cabane, Michel - U. Paris
- Conrad, Pan - JPL
- Szopa, Cyril - U. Paris

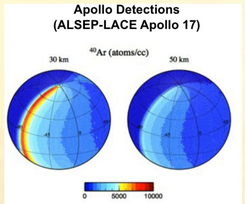


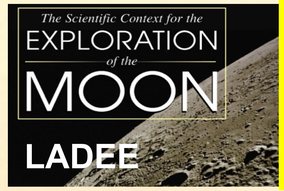
Current Flight Projects



MARS







MOON

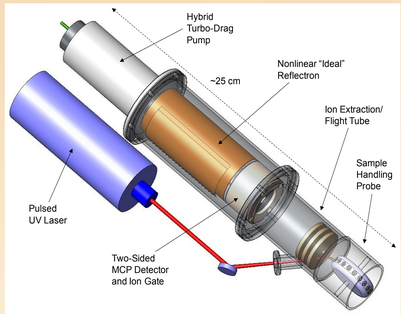
Flight Mass Spectrometers under Development:

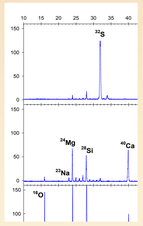
2011 Sample Analysis at Mars (SAM) Instrument Suite for MSL
2012 Lunar Atmosphere and Dust Environment Explorer (LADEE)
2013 Mars Atmospheric Evolution and Escape (MAVEN)

Technology Development

Volatile Analysis by Pyrolysis of Regolith: VAPoR (D. Glavin, I. ten Kate)

Search for water, organics, noble gases and other resources on the Moon by *in situ* evolved gas analyses. Field demonstration on Mauna Kea, Hawaii (2010)





Laser TOF-MS Development (W. Brinckerhoff, M. Floyd)

Compact (4-5 kg) instrument for in situ analysis of elements and organics on Mars, Titan, and small bodies.

Experimental & Analog Studies

Signatures of Life in Ice: SLIce (J. Eigenbrode, M. Floyd)

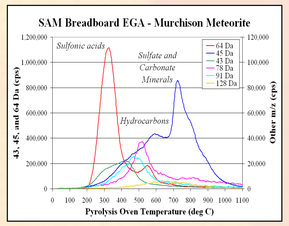
A comprehensive investigation of organic biosignatures in near-surface glacial ice.

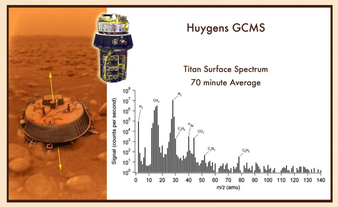
Laboratory modeling of the shallow Martian subsurface (A. Pavlov)

Study the stability of liquid water in the Martian soil, preservation of organics and prospects for life.

SAM-like analyses of Mars analogs from Svalbard (A. McAdam, H. Franz, F. Stalport, and J. Stern)

Evolved gas analyses, isotopic measurements, and chemical extraction and derivatization of organics compounds





Titan Surface Analog Studies (M. Trainer)

Experiments to investigate release of organics from Titan surface as it was warmed by Huygens probe

Theoretical Modeling

Advanced Multi-fluid Modeling of Magnetospheres (M. Benna)

Modeled protons density and magnetic field lines in the magnetosphere of Mercury during the two first MESSENGER flybys.