

# Joint JPL-UCLA Planetary Science Workshop

*UCLA Kerckhoff Grand Salon and Art Gallery*

<b>Wednesday, May 27<sup>th</sup>, 2015</b>			
<b>9:30am</b>	<b>30 min</b>	<b>Poster Setup (Light Refreshments)</b>	
10:00am	10 min	Workshop Welcome	David Jewitt (UCLA) and Robert Pappalardo (JPL)
10:10am	5 min	University Relations Management (URM)	Leon Alkalai (JPL)
10:15am	15 min	The Frequency of Exoplanets: A Kepler-Based Model	Wesley Traub (JPL)
10:30am	15 min	Perturbing Planetary Systems	Smadar Naoz (UCLA)
10:45am	15 min	Understanding Titan's Methane Cycle with Observations and Simulations	Jonathan Mitchell (UCLA)
11:00am	60 min	<i>Poster Session I</i>	
<b>12:00pm</b>	<b>90 min</b>	<b><i>Lunch at UCLA Faculty Club – California Room</i></b>	
1:30pm	15 min	Lunar Antipodal Ejecta Deposits	David Paige (UCLA)
1:45pm	15 min	Rock/Ocean Interactions on Europa and Enceladus: Comparison with Hydrothermal Processes at the Terrestrial Sea-floor	Christophe Sotin (JPL)
2:00pm	15 min	Long-runout Landslides on Mars	Jessica Watkins (UCLA)
2:15pm	15 min	The Hitchhiker's Guide to the Outer Solar System	Masahiro Ono (JPL)
2:30pm	15 min	Honey, I Shrunk the Geology: Using Scaled Laboratory Models to Investigate Planetary Tectonics	Ivy Curren (UCLA)
2:45pm	15 min	Infrared Small Body Surveys: Present and Future	Amy Mainzer (JPL)
3:00pm	30 min	MOU Signing and Discussion (Light Refreshments)	Dan McCleese (JPL's Chief Scientist) and Joseph Rudnick (UCLA Dean of Physical Sciences)
<b>3:30pm</b>	60 min	<i>Poster Session II</i>	
<b>4:30pm</b>	<b>End</b>		

# Poster Presentations

## UCLA Kerckhoff Art Gallery

Session I: 11am - noon

Session II: 3:30 - 4:30pm

**Laurie Barge (JPL)** - Spectroscopic Characterization of Green Rust and its Implications for Mars Astrobiology

*Fe-oxyhydroxides are relevant to prebiotic chemistry and habitability on Mars (and other wet rocky worlds); and we are simulating Fe-oxyhydroxide formation in ancient hydrothermal systems and developing methods to detect, analyze, process, and preserve/cache these delicate minerals – particularly using spectroscopic technologies that will fly on upcoming Mars missions.*

**Bruce Bills (JPL)** - TBD

*TBD*

**Jonathan Cheng (UCLA)** - Accessing core-style regimes of flow behavior: The development of the UCLA large-scale rotating device

*We outline the science and design goals behind a large-scale rotating convection experiment aimed at understanding the flow regimes relevant to planetary cores.*

**Christine Gabrielse (UCLA)** - Particle transport and energization within Earth's Magnetotail

*Our statistics show that particle energization and transport towards the radiation belts in Earth's magnetotail are related to fast earthward flows and dipolarization, and our modeling shows how that is done.*

**Richard Hart (UCLA)** - A Statistical Study of Lightning Occurrence Rates From Venus Express Observations

*Statistics of lightning occurrence rates at Venus inferred from whistler-mode wave observations.*

**Paul Hayne (JPL)** - Thermal Stability of Ice on Ceres

*We use thermal models and observational data to investigate the stability and possible distribution of water ice and other volatiles on dwarf planet Ceres.*

**Renyu Hu (JPL)** - Colors of Alien Worlds and Direct Imaging Exoplanet Missions

*Using reflection spectra to find the mixing ratio of methane and the pressure of the uppermost cloud deck on “cold” exoplanets located farther from their parent stars than is Earth from the Sun.*

**Michelle Jordan (UCLA)** - Comparing Measured and Modeled Ti Isotope Fractionation in CAI SJ101 and Implications for the Origin of CAIs

*Ti isotope ratios are presented for CAI SJ101. The results are compared to a condensation model for Ti in order to better understand the origin of CAIs.*

**Klara Kalousova (JPL)** - Ice melting and meltwater transport in the ice shell of Europa

*The production and stability of liquid water within the ice shell of Europa is investigated by numerical simulations - we find that liquid water is not stable at the top of hot plumes while it might accumulate below recently active strike-slip faults.*

**Bryana Henderson (JPL)** - Energetic Processing of Astrophysical Ice Analogs

*With a two-laser mass spectrometry method, we have successfully identified reactive intermediates and photoproducts in energetically processed ices at temperatures as low as 5 K.*

**Kynan Hughson (UCLA)** - Vesta's "Ribbon": Exploring Potential Non-Radially Symmetric Flow Features Near Sossia

*Using framing camera and spectroscopic data we attempt to test the fluidized ejecta flow hypothesis for Vesta's ribbon.*

**Erin Leonard (UCLA)** - Structural Analysis of Very High-Resolution Galileo Images of Europa

*Potential surface evolution on Europa derived from geomorphological and structural mapping of a high resolution image mosaic.*

**Yang Liu (JPL)** - Monazite, chevkinite-perrierite, xenotime: rare-earth minerals in martian breccia meteorite NWA 7034 and pairs

*Rare-earth minerals from Mars, implication for fluid-rock reactions.*

**Emmanuel Masongsong (UCLA)** - Visualizing Space Weather: The Planeterrella Auroral Simulator for Heliophysics Public Outreach

*The Planeterrella is an innovative tool to demonstrate the basic principles of space weather and planetary magnetic fields, giving kids and the public an opportunity to see a "virtual aurora" in person.*

**Kevin McKeegan (UCLA)** - Oxygen Isotope Distributions in the Solar System

*The Genesis and Stardust Discovery Missions, run by JPL with samples analyzed at UCLA, have contributed fundamental knowledge regarding the distributions of oxygen isotope "anomalies" in solar system matter.*

**Michael Mischna (JPL)** - Experiments with Orbit-Spin Coupling Accelerations in a Mars General Circulation Model

*A coupling between Mars' orbital and rotational motions yields a small acceleration on the atmosphere which may contribute to the intermittency of global dust storms on Mars.*

**Karl Mitchell (JPL)** - CAVER: Cave and Vent Exploration Robotics

*Recent developments in cave and vent sciences using climbing robots.*

**Robert Pappalardo (JPL)** - Science Investigations of the Europa Clipper Mission

*Selection of science investigations for the Europa Clipper mission are imminent; if available in time for this gathering, they will be summarized here.*

**Helen Parish (UCLA)** - Importance of the Angular Momentum Budget in Venus Atmosphere Circulation Models

*Detailed analyses of angular momentum balance need to be performed for Venus general circulation models (GCMs) to ensure that momentum is driven by physical sources rather than the residual numerical terms typically present in all GCMs.*

**Alex Patthoff (JPL)** - Diverse origins of Enceladus's ridge terrains including evidence for contraction

*We analyze different types of ridges found on Enceladus and provide evidence for significant amounts of shortening.*

**Michael Russell (JPL)** - The drive to life on wet and icy worlds

*The poster demonstrates how steep pH, redox and thermal gradients across inorganic membranes drives the onset of life at submarine alkaline vents.*

**Bryan Scott (JPL)** - Exoplanet Dynamics and Radio Emissions

*We discuss some recent work with implications for exoplanet detection and system characterization.*

**Jennifer Scully (UCLA)** - Gullies and Lobate Deposits as Geomorphological Evidence for Impact-Induced Transient Water Flow and Localized, Buried Ice-bearing Deposits on Vesta

*This poster describes the morphological, compositional, thermal and experimental data used to interpret the formation mechanism of gullies on Vesta.*

**Anezina Solomonidou (JPL)** - The spectral evolution of various Titan geomorphic surface types

*We report differences and similarities among various Titan surface regions and provide implications on their chemical composition, which lead us to constrain specific processes of origin.*

**Anna Tenerani (UCLA)** - Trigger of fast reconnection in thin current sheets

*We show that fast reconnection, which develops on the ideal timescale, is triggered once a critical threshold is reached. We provide a scenario for the trigger of explosive reconnection phenomena observed in nature.*

**Neal Turner (JPL)** - Ionization in Hot Jupiter Atmospheres and the Central Solar Nebula

*Thermionic and ion emission from micron-sized grains boost the conductivity of  $\sim 1000\text{K}$  gas by orders of magnitude.*

**Gautam Vashist (JPL)** - Project 1640: Direct Imaging of Exoplanets from Palomar

*A synopsis of Project 1640 and its survey.*

**Matthew Walker (UCLA)** - Deformation at the Elastic and Fluid Limits

*The fluid Love/Shida number is slightly different from what is reported in classic literature.*

**Karen Willacy (JPL)** - Synergy between astrochemical models and cometary taxonomies of parent volatiles

*Preliminary results from a study comparing protostellar disk models with abundance distributions in individual comets.*

**Meihui Xie (UCLA)** - New statistical Method for the Analysis of the Cratering of Venus

*Applying new statistic models and methods to analyse the cratering of Venus, to gain insight into the relative age of Venusian surface.*

**An Yin (UCLA)** - A stress-shadow model for explaining the spacing of the tiger-stripe fractures on Saturn's moon Enceladus

*Spacing of Enceladus' tiger-stripe fractures provides new constraints on the fault depth in the South Polar Terrain.*