

Janice L. Bishop, Ph.D.

THE SETI INSTITUTE

*Carl Sagan Center
Astrobiology Group*

189 Bernardo Ave., Mountain View, CA 94043

NASA AMES RESEARCH CENTER

Space Science & Astrobiology Division

Mail Stop 239-4, Moffett Field, CA 94035

EDUCATION:

Ph.D. in Chemistry Brown University, 1994
“*Spectroscopic analyses of chemically altered montmorillonites and applications to the soils on Mars*”
(advisor: John O. Edwards, co-advisor: Carlé M. Pieters, Geological Sciences)
M.S. in Applied Earth Science, Remote Sensing Program Stanford University, 1988
(advisors: Ronald J. P. Lyon and George A. Parks)
B.S. in Chemistry Stanford University, 1988

PROFESSIONAL POSITIONS:

Science Council, The SETI Institute (contractor at NASA-Ames) 2015 - present
Visiting Scientist and Guest Professor, Free University of Berlin, DLR-Berlin 2014 - 2015
Senior Research Scientist, The SETI Institute (contractor at NASA-Ames) 2010 - 2015
Research Scientist, The SETI Institute (contractor at NASA-Ames) March 1999 - 2009
Research Associate, NRC Fellow at NASA-Ames March 1997 - February 1999
Postdoctoral Research Associate, DLR-Berlin September 1994 - February 1997

SUMMARY OF PUBLICATIONS:

h-index: 52 (as of January 20, 2020)

Peer-reviewed publications: 143 (as of January 20, 2020)

Conference presentations: 450 (as of January 20, 2020)

CURRENT RESEARCH ACTIVITIES:

Mars surface composition and processes:

CRISM Science Team: Analysis of VNIR hyperspectral images to characterize surface minerals; focus on identifying phyllosilicates, sulfates and other OH/H₂O-bearing minerals in order to gain understanding of aqueous processes and geochemical environment on Mars; coordinating mineral detections from CRISM imagery with stratigraphy and surface morphology from HiRISE and HRSC imagery.

MER/Pancam Data: Characterization of iron oxide and sulfate minerals.

Development of Hyperspectral Analysis Tools: Working with graduate students to design and implement Gaussian modeling techniques, clustering algorithms, and simulated images for improved hyperspectral image analysis.

Mars Analog studies: Analysis of visible to thermal IR laboratory data of analog materials (and minerals found in them) for comparison with spacecraft data of the martian surface; Emphasis on volcanic alteration products (e.g. Hawaii and Iceland), martian meteorites, hydrothermal regions, acidic aqueous sites, and sediments from cold desert environments.

Laboratory alteration experiments: Investigation of the effects of chemical alteration and/or martian environment on minerals and Mars analog materials.

Curriculum Vitae: Janice L. Bishop, Ph.D.

Spectroscopy of Asteroids and Meteorites: Analysis of asteroid spectra (2008 TC₃, C-, F- and S-type) together with lab spectra of Almahata Sitta meteorites, other ureilites, and related lab mixtures in order to develop an association between ureilites and their parent bodies.

Relationships between organisms and minerals:

Minerals as Solar UV Shield for Photosynthetic Organisms: Performing lab and field experiments to explore the ability of iron oxide-bearing species to facilitate growth of photosynthetic organisms by providing solar UV protection.

Phyllosilicates and the Origin of Life: Investigating interactions of phyllosilicate minerals with organic molecules, cations, and anions. Performing lab experiments to test remote detection of organics and salts bound to phyllosilicates.

HONORS AND AWARDS:

Professional Awards:

Elected as Fellow of the Mineralogical Society of America	2018
Elected as Fellow of the Geological Society of America	2018
Elsevier Certificate for Highly Cited Research	2016
Marion L. and Chrystie M. Jackson Mid-Career Clay Scientist Award	2016
Humboldt Award for research in Germany	2015
Helmholtz International Fellow Award	2013
NASA Public Service Group Achievement Award to the MRO CRISM Team for significantly advancing our understanding of the Martian surface, its composition and evolution.	2011
NASA Public Service Group Achievement Award for developing CRISM instrument.	2011
Characterization of "Water on Mars" by the MRO Team selected as one of Science Magazine's Top Ten Insights of the Decade, December issue.	2010
Featured Scientist, Astronomy Magazine, "A Day in the Life of an Astronomer".	March, 2010
Best Paper Award (co-author), IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing, Grenoble, France.	2009
Kavli Fellow, Kavli Frontiers of Science Symposium, Irvine, CA.	2008
NRC Fellow, NASA-Ames Research Center, Moffett Field, CA.	1997-1999
Alexander von Humboldt Fellow, Berlin, Germany.	1994-1996

Scholarships and Awards:

DPS, Student Travel Award, 27th Annual Meeting	1995
Meteoritic Society, Student Travel Award, 57th Annual Meeting	1994
San Juan Capistrano Research Institute Conference on Infrared Spectroscopy, Student Travel Award,	1991
Meteoritic Society, Student Travel Award, 54th Annual Meeting	1991
Amelia Earhart Fellowship Award, Zonta International Foundation	1993-1994
NASA Graduate Student Researchers Program Fellowship	1990-1994
Research Fellowship, School of Earth Science, Stanford University	1987-1988
Stanford University Undergraduate Research Grant	1986-1987
Fannie and John Hertz Foundation Fellowship	1983-1987
Nahas Foundation Scholarship	1983-1987
General Electric Co. Scholarship for Women in Science	1983-1987
Livermore Boosters Olympian Award: Outstanding Athletics and Academics	1983-1987
Elks Association (Calif.) Most Valuable Student Award: Scholarship & Leadership	1983
Bank of America Achievement Award in Science and Mathematics	1983
Josten's Foundation Award	1983
Valedictorian, Livermore High School	1983

PLANETARY MISSION PARTICIPATION:

International MSR Objectives and Samples Team (iMOST): Invited to join Science Study Team for the investigation of the potential science and engineering value of samples delivered to Earth by Mars sample return, 2018-2019.

Mars Sample Return: Invited to join Science Study Team for the International Mars Exploration Working Group (IMEWG) for scientific planning of Mars Sample Return (MSR), 2017.

Mars Landing Site Characterization: Prepared presentations and reports on potential sites at Juventae Chasma and Mawrth Vallis; attended multiple landing site workshops for Mars Science Lab (MSL), MER, and other missions, 2002-present.

Compact Reconnaissance Imaging Spectrometer for Mars (CRISM) on Mars Reconnaissance Orbiter (MRO): Co-Investigator working on spectral identification tasks related to hydrated minerals and surface alteration, 2001 to present.

Marsokhod Rover Tests at Silver Lake, CA: participated as remote scientist during rover field activities; assisted in spectral analyses of data collected from mission, 1999.

Center for Mars Exploration (CMEX): participated in projects and meetings on Mars Landing Site development and furthering information technology capability for Martian Missions, 1998-2004.

Pathfinder Mineralogy Science Operations Working Group (SOWG): performed spectral analyses of Martian rocks and soils based on lab spectra of analogues, 1997-1999.

COMMUNITY ACTIVITIES:

Professional Community Service Activities:

Associate Editor, *American Mineralogist*, 2013- present.

Editor, *Icarus*, November, 2003 – December, 2004; Consulting Editor, January, 2005 – present;
Guest Editor for special issue, *Clay Minerals*, 2007-2008.

Review Panel Member: multiple NASA programs, 1999 - present.

External Reviewer: multiple NASA programs; scientific articles for *Science*, *Nature*, *Clays and Clay Minerals*, *Planetary and Space Science*, *Geology*, *JGR*, *MAPS*, *GRL* & others.

Member, several NASA steering groups, 2004-present.

Conference/Workshop Organization:

Session Convener: “Clay Minerals on Mars and Other Planetary Bodies”, Clay Minerals Society, Atlanta, GA, June, 2016.

Session Convener: “Earth analogues as case studies for Martian geological materials and processes”, AGU, San Francisco, CA, December, 2015.

Session Convener: “PS2.4: Unraveling Mars: insights from mineralogy and geochemistry”, EGU, Vienna, Austria, April, 2015.

Session Convener: “TP4.2: Stratigraphy of Aqueous Mineralogy on Mars Through Coordinated Analyses of Mineralogy, Geochemistry and Morphology”, EPSC, Estoril, Portugal, 2014.

Session Convener: “TP2.1: Phyllosilicates on Mars as Indicators of Aqueous Processes and Geochemical Environments”, EPSC, London, UK, 2013.

Session Convener: “P034: What Lurks in the Martian Rocks and Soil? Investigations of Sulfates, Phosphates, and Perchlorates”, AGU, San Francisco, CA, December, 2012.

Session Convener: “Mineralogy as an Indicator of Aqueous Processes on Mars”, Astrobiology Science Conference, Atlanta, GA, April, 2012.

Session Convener: “P05: Coordinated Mineralogy and Morphology Studies of Martian Aqueous Deposits”, AGU, San Francisco, December, 2011.

Scientific Organizing Committee: “The New Martian Chemistry Workshop”, Tufts University, Boston, July, 2009; <http://www.lpi.usra.edu/meetings/marschem2009/>

Scientific Organizing Committee: “Workshop on the Microstructure of the Martian Surface”, Copenhagen, August, 2009; <http://www.nbi.ku.dk/forskningsgrupper/mars/english/soil-workshop/>
Co-organizer: “Workshop on Martian Phyllosilicates: Recorders of Aqueous Processes?”, CNES, Paris, October, 2008; http://www.ias.u-psud.fr/Mars_Phyllosilicates/

Invited Lectures at Conferences, Department Seminars, and Community Events:

- “Characterizing the surface of Mars through remote spectral identification of minerals”, Keynote Speaker at *9th European Conference on Mineralogy and Spectroscopy*. Prague, Czech Republic., September 11, 2019.
- “The Surface of Mars: Mineralogy as an indicator of water, geochemistry and surface processes”, The SETI Institute REU Program, June, 2019.
- “Exploring Mars Using a Rover.”, Presentation and demonstration to 7th grade students at Alto International School about martian rovers, Menlo Park, CA, May, 2019.
- “Constraints on the Climate of Early Mars from the Phyllosilicate Record”, Colloquium, Department of Geology and Geophysics, Louisiana State University, Baton Rouge, LA, April, 2019.
- “The Places You’ll Go...The Things You Can Do: Planning Missions to Mars”, Presentation and demonstration to 5th grade students at Alto International School, Menlo Park, CA.
- “Investigating Mars: What We Learn from Analog Sites”, Osher Lifelong Learning Institute, Santa Clara University, Santa Clara, CA, April 15, 2019.
- “Clues about the Early Martian climate from the phyllosilicate record: How warm is warm?”, Klepser Seminar Series, Department of Earth and Planetary Sciences, University of Tennessee, Knoxville, TN, April, 2019.
- “Coordinated Analyses of Lab, Field and Remote Observations for Understanding Surface Processes on Mars”, . Planetary Geoscience Institute Brown Bag Lunch Seminar, Department of Earth and Planetary Sciences, University of Tennessee, Knoxville, TN, April, 2019.
- “The Surface of Mars: Mineralogy as an indicator of water, geochemistry and surface processes”, The SETI Institute REU Program, June, 2018.
- “Formation of Surface Clays via Short-Term Warmer and Wetter Climate Excursions on a Largely Cold Ancient Mars”, Exobiology Branch Seminar, NASA Ames, June, 2018.
- “Roving on Mars: Revving up for Future Exploration of the Red Planet”, SETI Institute Colloquium, Menlo Park, CA, March, 2018.
- “Astrobiology at Mars”, Osher Lifelong Learning Institute, University of California, Berkeley, CA, February, 2018.
- “Diverse Early Aqueous Environments and Climate on Mars Revealed by the Phyllosilicate Record”, Fourth International Conference on Early Mars, Flagstaff, AZ, October, 2017.
- ““The Martian’ traverse and what Mark Whatney missed along the way”, Doug Duncan’s University of Colorado Eclipse Event, Jackson Lake Lodge, Grand Tetons, WY, August, 2017
- “Clays on Mars: How We Found Them and Why They are Important for Astrobiology”, SETI Institute Colloquim, November, 2016.
- “Jackson Award Lecture. Clays on Mars: How We Identified Them and What They Tell Us About the Early Environment”, Clay Minerals Society Annual Meeting, Atlanta, GA, June, 2016.
- “Astrobiology at Mars”, Osher Lifelong Learning Institute, Santa Clara University, Santa Clara, CA, April 21, 2016.
- “Investigating Mars Analog Sites for Understanding Aqueous Outcrops on Mars”, Université Claude Bernard , Lyon, France, April, 2015.
- “The Composition of Mars as Determined from Orbital Remote Sensing”, Hollabrunn Technical College, Hollabrunn, Austria, April, 2015.

- “CRISM analysis of impact-induced hydrothermal clay outcrops on Mars”, Natural History Museum, Berlin, January, 2015.
- “What Hyperspectral Remote Sensing can Tell us about Aqueous Alteration on Mars”, Institute for Earth and Environmental Sciences Colloquium, University of Potsdam, Germany, January, 2015.
- “Aqueous Alteration at Mawrth Vallis, Mars Through Analysis of Spectral Imagery and Mars Analog Studies“ Astrophysics Colloquium, IAS, Paris, France, November, 2014.
- “Mineralogy on Mars with CRISM-based infrared spectroscopy”, Institute of Geological Sciences Colloquium, Free University of Berlin, Berlin, Germany, November, 2014.
- “Martian Surface Mineralogy as an Indicator of Geochemical Environments and Potentially Habitable Sites”, Biosignatures Across Space and Time, Bergen, Norway, May, 2014.
- “Hyperspectral Imaging of Mars: Mineralogy as an indicator of water, geochemistry and surface processes”, The SETI Institute REU Program, June, 2013.
- “Astrobiology at Mars: Mineralogy as an Indicator of Water, Geochemistry and Surface Processes”, Free University of Berlin, Berlin, Germany, July, 2012.
- “Characterization of the mineralogy and morphology of geologic units at Libya Montes, Mars”, German Aerospace Agency, Berlin, June, 2012.
- “Hyperspectral Imaging of Mars: Mineralogy as an indicator of water, geochemistry and surface processes”, The SETI Institute REU Program, June, 2012.
- “Hyperspectral Imaging of Mars: Mineralogy as an indicator of water, geochemistry and surface processes”, Lawrence Livermore National Lab, October, 2011.
- “The Search for Life on Mars: Mineralogy as an Indicator of Water and Environmental Conditions”, The SETI Institute REU Program, June, 2010.
- “Life in the Antarctic Dry Valleys”, SETICon, Santa Clara, CA, August, 2010
- “The Surface of Mars: Mineralogy as an Indicator of Water and Environmental Conditions”, The SETI Institute REU Program, June, 2010.
- “Could the Large Phyllosilicate Outcrop at Mawrth Vallis on Mars be Sedimentary in Origin?”, Sedimentology Group, School of Earth Sciences, Stanford University, April, 2010.
- “The Search for Life on Mars: Mineralogy as an Indicator of Water and Environmental Conditions”, Astrobiology Space Exploration Course #183, Human Biology Department, Stanford University, February, 2010.
- “Aqueous Processes on Mars: What We Have Learned from Spectroscopy”, Whole Earth Seminar, Earth and Planetary Sciences Department, UC Santa Cruz, October, 2009.
- “The Surface of Mars: Mineralogy as an Indicator of Water and Environmental Conditions”, SETI Institute Colloquium, July, 2009.
- “The Surface of Mars: Mineralogy as an indicator of Water and Environmental Conditions”, Livermore Public Library, sponsored by AAUW, March, 2009.
- “Looking at Mars through a CRISM: What we know and how we are learning more”, Summer Science Program, New Mexico Tech., July, 2005.
- Outstanding Women Scientists Series Lecture: "*The Surface of Mars: What We Know and How We're Learning More*", Indiana University, October, 2004.
- “Are nanophase iron oxides responsible for the red color of Mars?” Geology Department, UC Davis, June, 2003.
- Earth Sciences Division, NASA-Ames Research Center, Moffett Field, CA, January, 1999.
- Space Sciences Division, NASA-Ames Research Center, Moffett Field, CA, March, 1998.
- Planetary Physics Group, DLR-Berlin, (given in German), February, 1997.
- Los Alamos National Laboratory, Los Alamos, NM, November, 1996.
- Department of Physics, University of Medicine, Luebeck, Germany, (given in German) June, 1996;
- Exobiology Branch, NASA-Ames Research Center, Moffett Field, CA, March, 1996
- Dept. of Inorganic Chemistry, Academy of Science, Bratislava, Slovak Republic, January, 1996.

Popular Articles, Science Blogs, and Facebook Live Events:

- SETI Institute Facebook Live “Mars Rocks!”, October 3, 2019, part 1 <https://www.facebook.com/SETIInstitute/videos/vb.67487330534/958050031211831/?type=2&theater>, part 2: <https://www.facebook.com/SETIInstitute/videos/vb.67487330534/416177722373340/?type=2&theater>
- SETI Institute Facebook Live “Women in Astronomy”, February 11, 2017, <https://www.facebook.com/SETIInstitute/videos/vb.67487330534/1086383658212623/?type=2&theater>
- SETI Institute Facebook Live “Tour of the Mineral Lab”, May 11, 2017, <https://www.facebook.com/SETIInstitute/videos/vb.67487330534/10155149430745535/?type=2&theater>
- SETI Institute Feature “What can soil experiments tell us about Mars?” November 6, 2018, <https://www.seti.org/what-can-soil-experiments-tell-us-about-mars>
- NASA Astrobiology Research Highlight “Clay Formation Study Leads to New Model for Early Martian Climate” March 2, 2018, <https://astrobiology.nasa.gov/news/clay-formation-study-leads-to-new-model-for-early-martian-climate/>
- SETI Institute Feature “Clay Formation Study Leads to New Model for Early Martian Climate. How “Warm” is Warm?” February 27, 2018, <https://seti.org/clay-formation-study-leads-to-new-model-early-martian-climate-how-warm-is-warm>
- NASA Ames Space Science and Astrobiology Weekly Highlight “Clay Formation Study Leads to New Model for Early Martian Climate” February 21, 2018, <https://spacescience.arc.nasa.gov/story/2018/02/>
- SETI Institute Feature “New Studies of Clay Formation Provide Clues about Early Martian Climate”, February 5, 2018, <https://www.seti.org/seti-institute/press-release/new-studies-clay-formation-provide-clues-about-early-martian-climate>
- SETI Institute Feature “Orbiter Detects Changing Climate on Early Mars”, September 7, 2016, <https://www.seti.org/seti-institute/news/orbiter-detects-changing-climate-early-mars>
- SETI Institute Feature “Potential Habitats for Early Life on Mars”, May 23, 2016, <https://www.seti.org/seti-institute/press-release/potential-habitats-early-life-mars>
- SETI Institute Feature “Rock on, Mars”, Oct., 2015, <http://www.seti.org/mars-week/rock-on-mars>.
- CosmicDiary.org: “Past History of a Wet Mars Seen at Libya Montes”, April, 2013, <http://cosmicdiary.org/jbishop/2013/04/24/past-history-of-a-wet-mars-seen-at-libya-montes/>
- SETI Institute Explorer Magazine “The Clays of Mars”, May, 2012.
- SETI Institute Press Release “Young Clays on Mars may have Provided Niches Able to Support Life” October 3, 2011, http://scienceblogs.com/SETI/2011/10/young_clays_on_mars_may_have_p.php.
- SETI Institute Press Release “Scientists at the SETI Institute and NASA Ames Discover Evidence of Wet Martian Past in Desert” posted August 1, 2011, <http://www.seti.org/seti-institute/press-release/scientists-seti-institute-and-nasa-ames-discover-evidence-wet-martian>
- SETI Institute Blog “Mars: Back Through the Looking Glass” posted May 19, 2011, <http://www.seti.org/seti-institute/project/details/janice-bishop-%E2%80%94-mars-back-through-looking-glass>.
- Astronomy Now “Surprise recovery of meteorites from Sudan fireball” posted March 26, 2009, <http://www.astronomynow.com/090326SurpriserecoveryofmeteoritesfromSudanfireball.html>.
- SETI Institute Press Release “Martian Clays Tell Story of a Wet Past” posted August 8, 2008, <http://www.teamseti.org/?pid=1166>

National Geographic "Mars Clay "Layer Cake" Adds to Proof of Watery Past" by B. Handwerk, posted August 7, 2008, <http://news.nationalgeographic.com/news/2008/08/080807-mars-clays.html>

Space.com: "Looking for Water on Mars" posted March 20, 2008, <http://www.space.com/searchforlife/080320-seti-mars-water.html>.

Space.com: "Seeing the Invisible colors of Mars" posted January 29, 2004, <http://www.seti.org/color-of-mars-01-29-2004>.

Astrobiology Magazine "Achaean Sunscreen" posted October 1, 2003, <http://www.astrobio.net/exclusive/613/archaeon-sunscreen>.

SETI Voices: "Seeing Red" posted August 27, 2003, <http://www.seti.org/about-us/voices/bishop-082703.pbp>.

Educational Outreach Activities:

Mentor & Speaker, Professional Women's Night, *Tech Trek Marie Curie Camp for 7th grade girls*, Stanford University, July 10, 2013, July 12, 2017, July 11, 2018.

Summer Science Program, Inc. (SSPI), an educational program in math and science for accelerated high school students (www.summerscience.org). Science Advisor and Guest Speaker, 1999-present. Member, Board of Trustees, 2002 – present.

Assistant, *Science on Saturday Lecture Series* for middle school students, sponsored by LLNL and Sigma Xi, Livermore, CA, Saturday mornings February - April, 1998.

Panelist, *Tri-Valley Expanding your Horizons Conference*; day-long program for middle school and high school girls to encourage them to pursue careers in science, sponsored by LLNL, at Los Positos College, Livermore, CA, March, 1985.

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:

American Geophysical Union	1998 – present
Geological Society of America	1997 – present
Mineralogical Society of America	1997 – present
European Geophysical Society	1995, 2005, 2008, 2015
Clay Minerals Society	1991 – present
Meteoritical Society	1991 – present
Planetary Society	1991 – present
American Chemical Society	1990 - 1994
Sigma Xi, The Scientific Research Society	1990 – 2006

SKILLS AND EXPERTISE:

Planetary Remote Sensing: spectroscopic analysis of the mineralogy and surface processes on Mars and the Earth using remotely acquired and laboratory spectral data.

Astrobiology: spectral identification of minerals (e.g. clays, iron oxides, silicates, sulfates and carbonates) and organic materials in geologic samples (meteorites, Antarctic sediments, hydrothermal rocks) in preparation for characterization of these on Mars and other planetary surfaces and identification of potentially habitable sites.

Laboratory: spectroscopic measurement and analysis including visible and infrared reflectance, emittance, Raman, and transmittance spectroscopy of minerals and Mars analog materials; mixture experiments designed to evaluate quantification of individual minerals in mixtures based on spectral features; and alteration experiments designed to test the spectral properties of minerals and analog materials under Mars-like environmental conditions.

Field Work: sample collection and *in situ* analysis of clay-, sulfate- and carbonate-bearing rocks, rock alteration and coating formation.

Languages: fluent in German: speaking, reading, writing, lecturing; French (limited).

SUCCESSFUL RESEARCH PROPOSALS AS PRINCIPAL INVESTIGATOR:

“Characterizing the Geochemical Conditions Governing Formation and Reaction of Jarosite and Alunite Outcrops on Mars in the Context of Lab Experiments and Field Observations” Mars Data Analysis Program (MDAP), 2019-2022.

“Providing Spectral Library Data to the PDS and CAT” Planetary Data Archiving, Restoration, and Tools (PDART) program, 2019-2022.

“Analysis of the Effects of Aqueous Processes and Impacts in the South Isidis Region from Libya Montes to Tyrrhena Terra” Mars Data Analysis Program, 2018-2021.

“Investigating Evidence of Acidic Alteration on Mars: Analyses of Unique Aqueous Outcrops at Valles Marineris, Noctis Labyrinthus and Mawrth Vallis” Mars Data Analysis Program, 2015-2018.

“Characterizing Nanophase Materials on Mars: A Lab Spectroscopy and XRD Study of Allophane, Hydrated Silica, Iron Oxides/Hydroxides and Fe-Al-Si Oxide Species” Solar System Workings Program, 2015-2018.

“Low temperature characterization of hydrohalite and related salts essential to life in the Atacama” Exobiology Program, 2013-2015.

“Investigating the Mineralogy at Libya Montes, Mars, Determining if Carbonates are Present, and Characterizing the Geologic History of the Isidis Planitia Region” Planetary Geology and Geophysics Program, 2012-2015.

“Investigating the Origin of Layered Outcrops in the Mawrth Vallis Region” Mars Data Analysis Program, 2012-2015.

“CRISM and HiRISE Investigation of Aqueous Materials at the Juventae Plateau in order to Identify and Characterize a New Landing Site with High Potential for Habitability and Preservation of Biosignatures.” RFP Critical Data Products Program at JPL, 2010-2011.

“Revealing the Clays on Mars: A Spectral Unmixing Study of Phyllosilicates, Zeolites, Hydrated Silica and Glass” Mars Fundamental Research Program, 2008-2011.

“Searching for Aqueous Activity on Mars through Analyses of VNIR Spectral Images” Mars Data Analysis Program, 2006-2010.

“Formation of Magnetic Minerals on Mars by Alteration of Nanophase Ferric Oxides/Oxyhydroxides” Mars Fundamental Research Program, 2006-2010.

“Iron oxide: An early sunscreen for photosynthetic microbes?” Director’s Discretionary Fund research grant, NASA-Ames Research Center, 2002-2004.

“Organic Reductant as Key to Maghemite Formation on Mars?” Director’s Discretionary Fund research grant, NASA-Ames Research Center, 1999-2001.

“A Study of Soil Formation and Rock Alteration Models Through Analysis of Spectroscopic, Magnetic and Chemical Data from Mars Pathfinder and S, Fe-bearing Analog Materials” Mars Data Analysis Program, 1999-2003.

“Spectral Identification of Organics and Carbonates in the Martian Surface Rocks” National Research Council Research Associateship at NASA-Ames Research Center, sponsor: Rocco Mancinelli, 1997-1998.

“Visible and Infrared Spectroscopic Analyses of Mars Soil Analogs“ Alexander von Humboldt Research Fellowship at the DLR-Berlin, Germany, sponsor: Gerhard Neukum, 1994-1996.

“Spectroscopic Analysis of Iron-rich Montmorillonite as a Mars Soil Analog Material“ NASA Graduate Student Researchers Program, sponsor: Sherwood Chang, 1990-1994.

SUCCESSFUL RESEARCH PROPOSALS AS CO-INVESTIGATOR:

“Mapping and Analysis of Sulfates at Gale Crater from Orbital Data Sets and Preparing for Future Rover Exploration” (PI Catherine Wetiz, Planetary Science Institute) Mars Data Analysis Program (MDAP), 2019-2022.

“IceCrystal: Portable instrument protocol to delineate ancient ice and water on Mars using microcrystallinity of volcanic products” (PI Erika Rader, University of Idaho) Planetary Science and Technology from Analog Research Program, 2018-2021.

“Investigation of Anomalous Terrains on Olympus Mons” (PI Kim Seelos, JHUAPL) Mars Data Analysis Program, 2017-2020.

“Investigation of Sedimentary and Altered Deposits in and around Ladon Basin” (PI Cathy Weitz, PSI) Mars Data Analysis Program, 2017-2019.

“Constraining the Extent and Causes of Sedimentary Deposition and Aqueous Alteration in Coprates Chasma and Nearby Depressions” (PI Cathy Weitz, PSI) Mars Data Analysis Program, 2013-2016.

“Changing Planetary Environments & the Fingerprints of life” (PI Nathalie Cabrol, SETI Institute) NASA Astrobiology Institute, 2015-2020.

“Unraveling the sedimentary history of gypsum sand in the northern polar sand seas of Mars” (PI Lori Fenton, SETI Institute) Planetary Geology and Geophysics Program, 2012-2015.

“Laboratory and Theoretical Studies Enabling Quantitative Abundance Estimates of Hydrated-Hydroxylated Silicates from Visible and Near-Infrared Orbital Remote Sensing Data of Mars” (PI Ted Roush, NASA-Ames) Mars Fundamental Research Program, 2011-2014.

“Geologic Investigation of Interior Layered Deposits in Hebes Chasma and Noctis Labyrinthus” (PI Cathy Weitz, PSI) Mars Data Analysis Program, 2010-2013.

“The State of Sulfur on Mars: Understanding the Inter-relationships Among the Crystal Structure, Chemistry, and Spectroscopy of Sulfates and Sulfides” (PI Melissa Lane, PSI) Mars Fundamental Research Program, 2010-2013.

“Analysis and Characterization of Phosphates Using Multiple Spectral Techniques” (PI Melissa Lane, PSI) Mars Fundamental Research Program, 2008-2011.

“Integrated Spectroscopy of Synthetic Pyroxenes: Tools to Characterize Igneous Processes on the Inner Planets” (PI Carlé Pieters, Brown) Mars Fundamental Research Program, 2007-2010.

“Further Analysis and Characterization of Sulfates and Sulfides Using Multiple Spectral Techniques” (PI Melissa Lane, PSI) Mars Fundamental Research Program, 2005-2009.

“BIOsphere of Mars: Ancient and Recent Studies” (PI Jill Banfield, U.C. Berkeley) NASA Astrobiology Institute, 2005-2009.

“Planetary Biology, Evolution and Intelligence” (PI Chris Chyba then Rocco Mancinelli, SETI Institute) NASA Astrobiology Institute, 2005-2009.

“Analysis and Characterization of Sulfates and Sulfides Using Multiple Spectral Techniques” (PI Melissa Lane, PSI) Mars Fundamental Research Program, 2004-2005.

“Taking Apart the Rocks of Mars” (PI Carlé Pieters, Brown) Mars Fundamental Research Program, 2004-2007.

Curriculum Vitae: Janice L. Bishop, Ph.D.

“CRISM” (PI Scott Murchie, JHU-APL) MRO Program, 2002-present.

TEACHING EXPERIENCE:

Osher Lifelong Learning Program (OLLI), Lecturer in courses taught by SETI Institute scientists at Santa Clara University, Santa Clara, CA and University of Calif., Berkeley (2016-2019)

Guest Professor and Instructor (Kurs 24320a: Mineralogische Erkundung des Mars mittels VIS/NIR Spektroskopie) course in Geological Sciences, Free University of Berlin, Germany, 2015.

REU (Research Experience for Undergraduates) lectures on Mars and Astrobiology, SETI Institute, 2010-2013.

Guest Lecturer, Astrobiology (taught by Alessandro Airo), Free University, Berlin, 2012.

Guest Lecturer, Astrobiology Space Exploration (taught by Lynn Rothschild), Human Biology, Stanford University, 2010.

Informal lectures on mineral spectroscopy, remote sensing, Mars, soil formation, and aqueous chemistry to students working with me at the SETI Institute and NASA-Ames, 2003-present.

Substitute Lecturer, Remote Sensing (taught by Carlé M. Pieters), Brown University, 1999.

Informal lectures on mineral spectroscopy to students at DLR, Berlin, 1994-1996.

Teaching Certificate, Center for Advancement of College Teaching, Brown University, 1993; course designed to enhance teaching skills for graduate students.

Teaching Assistant, part-time, Volcanology, Brown University, 1992: responsibilities included grading and assisting students.

Teaching Assistant, Introductory Chemistry Laboratory Course, Brown University, 1989-1990; responsibilities included instructing students in the use of laboratory equipment and basic chemistry skills.

Teaching Assistant, Summer Science Program for accelerated high school students in astronomy and physics, Ojai, CA (sponsored then by the Thacher School, Pomona College and Stanford University) June - July, 1986 & 1987, responsibilities included instructing students in the use of telescopes, dark room and measuring engines.

STUDENT ADVISING:

Advising Graduate Students:

Zachary Burton, School of Earth, Energy & Environ. Sciences, Stanford University, Ph.D. 2020.

Jacob Danielsen, Department of Geology, San Jose State Univ, MS., 2020.

Christoph Gross, Institute of Geological Sciences, Free University of Berlin, Germany, Ph.D. 2018.

Barbara Lafuente, Department of Geosciences, University of Arizona, Ph.D. 2016.

Muna Al-Samir, Institute of Geological Sciences, Free University of Berlin, Germany, Ph.D. 2015.

Mario Parente, Electrical Engineering Department, Stanford University, M.S. 2005.; Ph.D. 2010.

Nancy McKeown, Department of Earth and Planetary Sciences, University of California Santa Cruz, Ph.D. 2010.

Heather Makarewicz, Mathematics Department, University of Kansas, M.S. 2009; Computer Science and Engineering Department, University of Kansas, M.S. 2009.

Advising Undergraduate Students:

Gabriela Usabal, Brown University, summer 2018.

Jasper Miura, Brown University, summer 2018.

Tatiana Gibson, California Polytechnic State University, summer 2018.

Selena Perrin, Stanford University, 2016-2018.

Jacob Danielsen, San Jose State Univ., 2016-2017.

Sara King, Sacramento State Univ., 2013-2014.

April Davis, MiraCosta College, 2013-2014.

Curriculum Vitae: Janice L. Bishop, Ph.D.

Alicia Noel, UC Davis, 2012-2013.

Shital Patel, San Jose State University, 2012-2013.

Ian Szumila, Rensselaer Polytechnic Institute, summer 2012.

Amanda Aguilera, San Jose State University, 2011-2012.

Lee Saper, Brown University, summer 2010.

Bill Freeman, Louisiana State University, summer 2010.

Lauren Hunkins, University of South Florida, summers 2009-2011.

Laura Bayley, Brown University, summer 2009.

Kaysea Perry, California Polytechnic State University, summer 2009.

Elena Amador, University of California Santa Cruz, summer 2008.

Alicia Muirhead, University of California Santa Cruz, summer 2008.

Trevor Clark, University of California Davis, summer 2007.

Nancy Garcia, Texas A & M University, summer 2007.

Andrew Honma, University of Hawaii, summer 2007.

Heather Makarewicz, Nazarene University, summer 2007.

Rebecca Sullivan, University of Texas El Paso, summer, 2004.

Student Advising while at Stanford University:

Residence Assistant at Haus Mitteleuropa, 1987-1988.

Selected for highly competitive position as student leader and liaison for student dormitory to residential management. Responsibilities included counseling, mentoring, and working with dormitory staff.

Academic Advisor, 1985-1987. Selected to work jointly with faculty advisor to provide advise on a variety of academic issues including courses, major and career directions. Met once per week with group of six freshman students.

Math Tutor, 1984-1985.

Selected from Freshman Honors Math course to provide tutoring in calculus and introductory math to students who needed extra assistance.

TOTAL PEER-REVIEWED JOURNAL PUBLICATIONS: 143**PEER-REVIEWED BOOK CHAPTERS: 12**

1. Bishop J.L. (2020) Chapter 4: Visible and near-infrared reflectance spectroscopy of geologic materials. In: *Remote Compositional Analysis: Techniques for Understanding Spectroscopy, Mineralogy, and Geochemistry of Planetary Surfaces*, eds. J. L. Bishop, J. F. Bell, III and J. E. Moersch (Cambridge University Press, Cambridge, UK), 68-101.
2. Lane M.D. & Bishop J.L. (2020) Chapter 3: Mid-infrared (thermal) emission and reflectance spectroscopy. In: *Remote Compositional Analysis: Techniques for Understanding Spectroscopy, Mineralogy, and Geochemistry of Planetary Surfaces*, eds. J. L. Bishop, J. F. Bell, III and J. E. Moersch (Cambridge University Press, Cambridge, UK), 42-67.
3. Murchie S.L., Bibring J.P., Arvidson R.E., Bishop J.L., Carter J., Ehlmann B.L., Langevin Y., Mustard J.F., Poulet F., Riu L., Seelos K.D. & Viviano C.E. (2020) Chapter 23. Visible to short-wave Infrared spectral analyses of Mars from orbit using CRISM and OMEGA. In: *Remote Compositional Analysis: Techniques for Understanding Spectroscopy, Mineralogy, and Geochemistry of Planetary Surfaces*, eds. J. L. Bishop, J. F. Bell, III and J. E. Moersch (Cambridge University Press, Cambridge, UK), 453-483.
4. Bishop J.L. (2018) Chapter 3: Remote detection of phyllosilicates on Mars and implications for climate and habitability. In: *From Habitability and Life on Mars*, eds. N.A. Cabrol & E. A. Grin, (Elsevier, The Netherlands) pp. 37-75.
5. Bishop J.L., Michalski J.R. and J. Carter (2017) Remote detection of clay minerals. In: *Infrared and Raman Spectroscopy of Clay Minerals*, eds. W. Gates, T. Klopogge, J. Madejova, and F. Bergaya (Elsevier, The Netherlands) pp. 482-514.
6. Farrand W.H., Bell J.F. III, Johnson J.R., Bishop J.L and Morris R.V. (2008) Multispectral imaging from Mars Pathfinder. In: *The Martian Surface*, ed. J. F. Bell, III (Cambridge University Press, Cambridge) pp. 265-280.
7. Bishop J.L. (2005) Hydrated Minerals on Mars. In: *Water on Mars and Life*, ed. T. Tokano, Advances in Astrobiology and Biogeophysics Series, Springer-Verlag, Berlin, pp. 65-96.
8. Schiffman P., Southard R., Eberl, D.D. and Bishop J.L. (2002) Distinguishing palagonitized from pedogenically-altered basaltic tephra: Mineralogical and geochemical criteria. In: *Volcano-Ice Interactions on Earth and Mars*, eds. J. L. Smellie and M. G. Chapman (Geological Society, Special Pub. No. 202) London, 393-405.
9. Bishop J.L. and Murad E. (2002) Spectroscopic and Geochemical Analyses of Ferrihydrite from Hydrothermal Springs in Iceland and Applications to Mars. In: *Volcano-Ice Interactions on Earth and Mars*, eds. J. L. Smellie and M. G. Chapman (Geological Society, Special Pub. No. 202) London, pp. 357-370.
10. Bishop J.L., Schiffman P., Southard R. (2002) Geochemical and mineralogical analyses of palagonitic tuffs and altered rinds of pillow lavas on Iceland and applications to Mars. In: *Volcano-Ice Interactions on Earth and Mars*, eds. J. L. Smellie and M. G. Chapman (Geological Society, Special Pub. No. 202) London, pp. 371-392.
11. Bishop J.L. and Murad E. (1996) Schwertmannite on Mars? Spectroscopic analyses of schwertmannite, its relationship to other ferric minerals, and its possible presence in the surface material on Mars. In: *Mineral Spectroscopy: A tribute to Roger G. Burns*, eds. M. D. Dyar, C. McCammon and M. W. Schaefer (The Geochem. Soc., Special Pub. No. 5) pp. 337-358.
12. Coyne L.M., Bishop J.L., Scattergood T., Banin A., Carle G. and Orenberg J. (1990) Near-infrared correlation spectroscopy, quantifying iron and surface water in a series of variably cation-exchanged montmorillonite clays. In: *Spectroscopic Characterization of Minerals and Their Surfaces*, eds. L. Coyne, S. McKeever, D. Blake (American Chemical Society, Washington, DC) pp. 407-429.

PEER-REVIEWED JOURNAL PUBLICATIONS: 131

1. Cuadros J., Sánchez-Marañón M., Mavris C., Fiore S., Bishop J.L., Melgosa M. & Nieto J.M. (2020) Color analysis and detection of Fe minerals in multi-mineral mixtures from acid-alteration environments. *Applied Clay Science*, in revision.
2. Grosch E.G., Bishop J.L., Mielke C., Maturilli A. & Helbert J. (2020) Early Archean rocks of the Barberton greenstone belt as petrological analogues for hydrothermal environments on Mars. *American Mineralogist*, in review.
3. Bishop J.L., Gross C., Danielsen J.M., Parente M., Murchie S.L., Horgan B., Wray J.J., Viviano C.E., Ehlmann B.L. & Seelos F.P. (2020) Multiple mineral horizons in layered outcrops at Mawrth Vallis, Mars, signify changing geochemical environments on early Mars. *Icarus*, in press.
4. Hinman N.W., Henneberger R.M., Kotler J.M., Davis R.E., Bishop J.L., Gulick V.E., Morkner P., Richardson C.D., Bergquist P., Scott J.R., Walter M.R., MacKenzie L.A. & Anitori R.P. (2020) Habitats and habitability of hydrothermally altered, acid-sulfate terrain. *American Mineralogist*, in review.
5. Poulet F., Gross C., Horgan B., Loizeau D., Bishop J.L., Carter J., Orgel C. & Bibring J.P. (2020) Mawrth Vallis, Mars: a fascinating place for future in situ exploration. *Astrobiology*, in press, doi.org/10.1089/ast.2019.2074.
6. Lowe D. R., Bishop J. L., Loizeau D., Wray J. J. & Beyer R. A. (2020) Deposition of >3.7 Ga Clay-Rich Strata of the Mawrth Vallis Group, Mars, in Lacustrine, Alluvial, and Aeolian Environments. *GSA Bulletin*, <https://doi.org/10.1130/B35185.1>.
7. Flahaut J., Bishop J.L., Silvestro S., Tedesco D., Daniel I. & Loizeau D. (2019) The Italian Solfataras as an analog for Mars fumarolic alteration. *American Mineralogist*, **104**, 1565-1577.
8. Cuadros J., Mavris C., Michalski J.R., Nieto J.M., Bishop J.L. & Fiore S. (2019) Abundance and composition of kaolinite on Mars: Information from NIR spectra of rocks from acid-alteration environments, Riotinto, SE Spain, *Icarus*, **330**, 30-41.
9. Beaty D.W., Grady M.M., McSween H.Y., Sefton-Nash E., Carrier B.L., Altieri F., Amelin Y., Ammannito E., Anand M., Benning L.G., Bishop J.L., Borg L.E., Boucher D., Brucato J.R., Busemann H., Campbell K.A., Czaja A.D., Debaille V., Des Marais D.J., Dixon M., Ehlmann B.L., Farmer J.D., Fernandez-Remolar D.C., Filiberto J., Fogarty J., Glavin D.P., Goreva Y.S., Hallis L.J., Harrington A.D., Hausrath E.M., Herd C.D.K., Horgan B., Humayun M., Kleine T., Kleinhenz J., Mackelprang R., Mangold N., Mayhew L.E., McCoy J.T., McCubbin F.M., McLennan S.M., Moser D.E., Moynier F., Mustard J.F., Niles P.B., Ori G.G., Raulin F., Rettberg P., Rucker M.A., Schmitz N., Schwenger S.P., Sephton M.A., Shaheen R., Sharp Z.D., Shuster D.L., Siljeström S., Smith C.L., Spry J.A., Steele A., Swindle T.D., ten Kate I.L., Tosca N.J., Usui T., Van Kranendonk M.J., Wadhwa M., Weiss B.P., Werner S.C., Westall F., Wheeler R.M., Zipfel J. & Zorzano M.P. (2019) The potential science and engineering value of samples delivered to Earth by Mars sample return. *Meteoritics and Planetary Science*, **54**, 667-671.
10. Weitz C.M. & Bishop J.L. (2019) Formation of clays, ferrihydrite, and possible salts in Hydrae Chasma, Mars. *Icarus*, **319**, 392-406.
11. Tirsch D., Bishop J.L., Yoigt J., Tornabene L.L., Erkeling G. & Jaumann R. (2018) Geology of central Libya Montes, Mars: Aqueous alteration history from mineralogical and morphological mapping. *Icarus*, **314**, 12-34.
12. Mavris C., Cuadros J., Nieto J.M., Bishop J.L. & Michalski J.R. (2018) Diverse mineral assemblages of acidic alteration in the Riotinto area (south-west Spain): Implications for Mars. *American Mineralogist*, **103**, 1877-1890.
13. Bishop J.L., Fairén A.G., Michalski J.R., Gago-Duport L., Baker L.L., Gross C., Velbel M.A. & Rampe E.B. (2018) Surface clay formation during short-term warmer and wetter conditions on a largely cold ancient Mars. *Nature Astronomy*, **2** (3), 206-213.
14. Yant M., Young K.E., Rogers A.D., McAdam A.C., Bleacher J.E., Bishop J.L. & Mertzman S.A. (2018) Visible, Near-Infrared and Mid-Infrared Spectral Characterization of Hawaiian Fumarolic

- Alteration near Kilauea's December 1974 Flow: Implications for Spectral Discrimination of Alteration Environments on Mars. *American Mineralogist*, **103** (1), 1-10.
15. Al-Samir M., Nabhan S., Fritz J., Winkler A., Bishop J.L., Gross C. & Jaumann R. (2017) The paleolacustrine evolution of Juventae Chasma and Maja Valles and its implications for the formation of interior layered deposits on Mars. *Icarus*, **292**, 125-143.
 16. Fenton L.K., Bishop J.L., King S., Lafuente B., Horgan B., Bustos D. & Sarrazin P. (2017) Sedimentary differentiation of aeolian grains at the White Sands National Monument, New Mexico, USA. *Aeolian Research*, **26**, 117-136.
 17. Flahaut J., Martinet M., Bishop J. L., Davies G. R., Potts N. J. (2017) Remote sensing and *in situ* mineralogic survey of the Chilean salars: An analog to Mars evaporate deposits? *Icarus*, **282**, 152-173.
 18. Weitz C. M. & Bishop J. L. (2016) Stratigraphy and Formation of Clays and Other Hydrated Minerals within a Depression in Coprates Catena. *J. Geophys. Res.*, **121**(5), 805-835.
 19. Bishop J. L. & Rampe E. B. (2016) Evidence for a changing Martian climate from the mineralogy at Mawrth Vallis. *Earth and Planetary Science Letters*, **448**, 42-48.
 20. Wray J. J., Murchie S. L., Bishop J. L., Ehlmann B. L., Milliken R. E., Wilhelm M. B., Seelos K. D. & Chojnacki M. (2016) Orbital evidence for more widespread carbonate-bearing rocks on Mars. *J. Geophys. Res.*, **121**, 652-677.
 21. Lin T. J., Ver Eecke H. C., Breves E. A., Dyar M. D., Jamieson J. W., Hannington M. D., Dahle H., Bishop J. L., Lane M. D., Butterfield D. A., Kelley D. S., Baross J. A. & Holden J. F. (2016) Linkages between mineralogy, fluid chemistry, and microbial communities within hydrothermal chimneys from the Endeavour Segment, Juan de Fuca Ridge. *Geochimistry, Geophysics, Geosystems*, **17**(2), 300-323.
 22. Berg B. L., Cloutis E. A., Beck P., Vernazza P., Bishop J. L., Driss T., Reddy V., Applin D. & Mann P. (2016) Reflectance spectroscopy (0.35-25 μm) of ammonium-bearing minerals and comparison to Ceres family asteroids. *Icarus*, **265**, 218-237.
 23. Cuadros J., Michalski J. R., Dekov V. & Bishop J. L. (2016) Octahedral chemistry of 2:1 clay minerals and hydroxyl band position in the near-infrared: Application to Mars. *American Mineralogist*, **101**(3), 554-563.
 24. Loizeau D., Mangold N., Poulet F., Bibring J.-P., Bishop J.L., Michalski J. & Quantin C. (2015) High resolution mapping of the martian candidate landing site at Mawrth Vallis: history of the clay-rich unit. *J. Geophys. Res.*, **120** (11), 1820-1846.
 25. Roush T. L., Bishop J. L., Brown A. J., Blake D. F. & Bristow T. F. (2015) Laboratory reflectance spectra of clay minerals mixed with Mars analog materials: Toward enabling quantitative clay abundances from Mars spectra. *Icarus*, **258**, 454-466.
 26. Michalski J. R., Cuadros J., Bishop J. L., Dyar M. D., Dekov V. & Fiore S. (2015) Constraints on the crystal-chemistry of Fe/Mg-rich smectitic clays on Mars and links to global alteration trends. *Earth and Planetary Science Letters*, **427**, 215-225.
 27. Bishop J. L., Murad E. & Dyar M. D. (2015) Akaganéite and schwertmannite: Spectral properties, structural models and geochemical implications of their possible presence on Mars. *American Mineralogist*, **100**(4), 738-746.
 28. Carter J., Viviano-Beck C., Le Deit L., Bishop J. L. & Loizeau D. (2015) Orbital detection and implications of akaganéite on Mars. *Icarus*, **253**, 296-310.
 29. Noel A. J., Bishop J. L., Al-Samir M., Gross C., Flahaut J., McGuire P. C., Weitz C. M., Seelos F. P. & Murchie S. L. (2015) Mineralogy, morphology and stratigraphy of the light-toned interior layered deposits at Juventae Chasma. *Icarus*, **251**, 315-331.
 30. Weitz C.M., Bishop J.L., Baker L.L. & Berman D.C. (2014) Fresh exposures of hydrous Fe-bearing amorphous silicates on Mars. *Geophys. Res. Let.*, **41**, 8744-8751.
 31. Bishop J.L., Englert P.A.J., Patel S., Tirsch D., Roy A.J., Koeberl C., Böttger U., Hanke F. & Jaumann R. (2014) Mineralogical analyses of surface sediments in the Antarctic Dry Valleys:

- Coordinated analyses of Raman spectra, reflectance spectra and elemental abundances. *Phil. Trans. R. Soc. A*, **372**, 20140198.
32. El-Maarry M. R., Watters W. A., McKeown N. K., Carter J., Noe Dobrea E. Z., Bishop J. L., Pommerol A. & Thomas N. (2014) Putative desiccation cracks on Mars: A synthesis from modeling, analogue-field studies, and global observations using HiRISE. *Icarus*, **241**, 248–268.
 33. Lane M. D., Bishop J. L., Dyar M. D., Hiroi T., Mertzman S. A., Bish D. L., King P. L. & Rogers A. D. (2015) Mid-infrared emission spectroscopy and visible/near-infrared reflectance spectroscopy of Fe-sulfate minerals. *American Mineralogist*, **100**, 62-82.
 34. Bishop J. L., Lane M. D., Dyar M. D., King S. J., Brown A. J. & Swayze G. (2014) Spectral properties of Ca-sulfates: Gypsum, bassanite and anhydrite. *American Mineralogist*, **99**, 2105-2115.
 35. Sobron P., Bishop J. L., Blake D. F., Chen B. & Rull F. (2014) Natural Fe-bearing oxides and sulfates from the Rio Tinto Mars analogue – Critical assessment of VNIR reflectance spectroscopy, laser Raman spectroscopy, and XRD as mineral identification tools. *American Mineralogist*, **99**, 1199-1205.
 36. Dyar M. D., Jawin E., Breves E., Marchand G. J., Nelms M., Lane M. D., Mertzman S. A., Bish D. L. & Bishop J. L. (2014) Mössbauer parameters of iron in phosphate minerals: Implications for interpretation of Mars results. *American Mineralogist*, **99**, 914-942.
 37. Bishop J. L., Quinn R. C. & Dyar M. D. (2014) Spectral and thermal properties of perchlorate salts and implications for Mars. *American Mineralogist*, **99**, 1580–1592.
 38. Isaacson P. J., Klima R. L., Sunshine J. M., Cheek L. C., Pieters C. M., Hiroi T., Dyar M. D., Lane M. D. & Bishop J. L. (2014) Visible to near-infrared optical properties of pure synthetic olivine across the olivine solid solution. *American Mineralogist*, **99**, 467-478.
 39. Poulet F., Carter J., Bishop J.L., Loizeau D. & Murchie S.M. (2014) Mineral abundances at the final four curiosity study sites and implications for their formation. *Icarus*, **231**, 65-76.
 40. Dyar M. D., Breves E., Jawin E., Marchand G. J., Nelms M., O'Connor V., Peel S., Rothstein Y., Sklute E. C., Lane M. D., Bishop J. L. & Mertzman S. A. (2013) Mössbauer parameters of iron in sulfate minerals. *American Mineralogist*, **98**, 1943-1965.
 41. Cuadros J., Michalski J. R., Dekov V., Bishop J., Fiore S. & Dyar M. D. (2013) Crystal-chemistry of interstratified Mg/Fe-clay minerals from seafloor hydrothermal sites. *Chemical Geology*, **360–361**, 142-158.
 42. Weitz C. M., Bishop J. L. & Grant J. A. (2013) Gypsum, opal, and fluvial channels within a trough of Noctis Labyrinthus, Mars: Implications for aqueous activity during the Late Hesperian to Early Amazonian. *Planet. Space Sci*, **87**, 130-145.
 43. Bishop J. L., Loizeau D., McKeown N. K., Saper L., Dyar M. D., Des Marais D., Parente M. & Murchie S. L. (2013) What the ancient phyllosilicates at Mawrth Vallis can tell us about possible habitability on early Mars. *Planet. Space Sci*, **86**, 130-149.
 44. McKeown N. K., Bishop J. L. & Silver E. A. (2013) Variability of rock texture and morphology correlated with the clay-bearing units at Mawrth Vallis, Mars. *J. Geophys. Res.*, **118**, doi: 10.1002/jgre.20096.
 45. Wendt L., Bishop J. L. & Neukum G. (2013) Knob fields in the Terra Cimmeria/Terra Sirenum region of Mars: Stratigraphy, mineralogy and morphology. *Icarus*, **225**, 200-215.
 46. Bishop J. L., Tirsch D., Tornabene L. L., Jaumann R., McEwen A. S., McGuire P. C., Ody A., Poulet F., Clark R. N., Parente M., Voigt J., Aydin Z., Bamberg M., Petau A., McKeown N. K., Mustard J. F., Hash C., Murchie S. L., Swayze G., Neukum G. & Seelos F. (2013) Mineralogy and morphology of geologic units at Libya Montes, Mars: Ancient aqueous outcrops, mafic flows, fluvial features and impacts. *J. Geophys. Res.*, **118**, doi:10.1029/2012JE004151.

47. Bishop J. L., Perry K. A., Dyar M. D., Bristow T. F., Blake D. F., Brown A. J. & Peel S. E. (2013) Coordinated spectral and XRD analyses of magnesite-nontronite-forsterite mixtures and implications for carbonates on Mars. *J. Geophys. Res.*, **118**, doi:10.1002/jgre.20066.
48. Bishop J.L., Rampe E.B., Bish D.L., Baker L.L., Abidin Z., Matsue N. & Henmi T. (2013) Spectral and hydration properties of allophane and imogolite. *Clays and Clay Minerals*, **61**(1), 57-74.
49. Bishop, J. L., Franz, H. B., Blake, D. F., Goetz, W., Freissinet, C., Steininger, H., Goesmann, F., Brinckerhoff, W. B., Getty, S., Pinnick, V. T., Mahaffy, P. R., Dyar, M. D. (2013) Coordinated analyses of Antarctic sediments as Mars analog materials using reflectance spectroscopy and current flight-like instruments for CheMin, SAM and MOMA. *Icarus*, **224**, 309-325.
50. Thollot, P., Mangold, N., Ansan, V., LeMouelic, S., Milliken, R. E., Bishop, J. L., Weitz, C. M., Roach, L. H., Mustard, J. F., Murchie, S. L. (2012) Most Mars minerals in a nutshell: Various alteration phases formed in a single environment in Noctis Labyrinthus. *J. Geophys. Res.*, **117**, doi: 10.1029/2011JE004028.
51. Weitz, C. M., Bishop, J. L., Thollot, P., Mangold, N. & Roach, L. H. (2011) Diverse mineralogies in two troughs of Noctis Labyrinthus, Mars. *Geology*, **39** (10), 899-902, doi: 10.1130/G32045.1.
52. Bishop, J. L., Schelble, R. T., McKay, C. P., Brown, A. J. & Perry, K. A. (2011) Carbonate rocks in the Mojave Desert as an analog for Martian carbonates. *International Journal of Astrobiology*, **10** (4), 349-358, doi: 10.1017/S1473550411000206.
53. McKeown, N. K., Bishop, J. L., Cuadros, J., Hillier, S., Amador, E., Makarewicz, H. D., Parente, M. & Silver, E. (2011) Interpretation of reflectance spectra of mixtures of clay minerals and silica: implications for Martian clay mineralogy at Mawrth Vallis. *Clays and Clay Mineral*, **59** (4), 400-415.
54. Lane, M. D., Glotch, T. D., Dyar, M. D., Pieters, C. M., Klima, R., Hiroi, T., Bishop, J. L. & Sunshine, J. M. (2011) Midinfrared spectroscopy of synthetic olivines: Thermal emission, specular and diffuse reflectance, and attenuated total reflectance studies of forsterite to fayalite. *J. Geophys. Res.*, **116**, E08010, doi:10.1029/2010JE003588.
55. Bishop, J. L., Gates, W. P., Makarewicz, H. D., McKeown, N. K. & Hiroi, T. (2011) Reflectance spectroscopy of beidellites and their importance for Mars. *Clays and Clay Minerals*, **59** (4), 376–397.
56. Parente, M., Makarewicz, H. D. & Bishop, J. L. (2011) Decomposition of mineral absorption bands using nonlinear least squares curve fitting: application to Martian meteorites and CRISM data. *Planetary and Space Science*, **59**, 423-442.
57. Hiroi T., Jenniskens P.M., Bishop J.L. & Shatir T.S.M. (2010) Bidirectional Visible-NIR and Biconical FT-IR Reflectance Spectra of Almahata Sitta Meteorite Samples *Meteoritics and Planetary Science*, **45**, 1836-1845.
58. Cloutis, E.A., Hudon, P., Romanek, C.S., Bishop, J.L., Reddy, V., Gaffey, M.J. & Hardersen, P.S. (2010) Spectral Reflectance Properties of Ureilites. *Meteoritics and Planetary Science*, **45**, 1668-1694.
59. Jenniskens P., Vaubaillon J., Binzel R.P., DeMeo F.E., Nesvorny D., Fitzsimmons A., Hiroi T., Marchis F., Bishop J.L., Zolensky M.E., Herrin J.S. & Shaddad M.H. (2010) 2008 TC3 and the Search For the Ureilite Parent Body. *Meteoritics and Planetary Science*, **45**, 1590-1617.
60. Dyar, M. D., T. D. Glotch, M. D. Lane, B. Wopenka, J. M. Tucker, S. J. Seaman, G. J. Marchand, R. Klima, T. Hiroi, J. L. Bishop, C. Pieters, J. Sunshine (2010) Spectroscopy of Yamato 984028, *Polar Science*, **4**, 530-549, doi:10.1016/j.polar.2010.06.001.
61. Wray, J. J., Milliken, R. E., Dundas, C. M., Swayze, G. A., Andrews-Hanna, J. C., Baldrige, A. M., Chojnacki, M., Clark, R. N., Murchie, S. L., Ehlmann, B. L., Bishop, J. L., Seelos, F. P., Tornabene, L. L. & Squyres, S. W. (2010) Columbus crater and other possible groundwater-fed paleolakes of Terra Sirenum, Mars. *J. Geophys. Res.*, **116**, E01001, doi:10.1029/2010JE003694.
62. Brown, A. J., Simon J. Hook, Alice M. Baldrige, James F. Crowley, Nathan T. Bridges, Bradley J. Thomson, Giles M. Marion, Carlos R. de Souza Filho & Bishop, J. L. (2010) Hydrothermal

- formation of clay-carbonate alteration assemblages in the Nili Fossae region of Mars. *Earth and Planetary Science Letters*, **297**, 174-1821, doi:10.1016/j.epsl.2010.06.018.
63. Parente M., Clark J.T. & Bishop J.L. (2010) End-to-End Simulation and Analytical Model of Remote-Sensing Systems: Application to CRISM. *IEEE Trans. Geosc. and Rem. Sens.*, **48**, 3877 - 3888.
 64. Wray, J. J., Squyres, S. W., Roach, L. H., Bishop, J. L., Mustard, J. F. & Noe Dobrea, E. Z. (2010) Identification of the Ca-sulfate bassanite in Mawrth Vallis, Mars. *Icarus*, **209**, 416-421, doi: 10.1016/j.icarus.2010.06.001.
 65. Michalski, J. R. , F. Poulet, D. Loizeau, N. Mangold, E. Z. Noe Dobrea, J. L. Bishop, J. J. Wray, N. K. McKeown, M. Parente, E. Hauber, F. Altieri, F. G. Carrozzo, and P. B. Niles (2010) The Mawrth Vallis Region of Mars: A Potential Landing Site for the Mars Science Laboratory (MSL) Mission. *Astrobiology*, **10** (7), 687-703.
 66. Marzo, G. A., Davila, A. F., Tornabene, L. L., Dohm, J. M., Fairén, A. G., Gross, C., Kneissl, T., Bishop, J. L., Roush, T. L. & McKay, C. P. (2010) Evidence for Hesperian impact-induced hydrothermalism on Mars. *Icarus*, **208**, 667-683.
 67. Fairén, A. G., V. Chevrier, O. Abramov, G. A. Marzo, P. Gavin, A. F. Davila, L. L. Tornabene, J. L. Bishop, T. L. Roush, C. Gross, T. Kneissl, E. R. Uceda, J. M. Dohm, D. Schulze-Makuch, J. A. P. Rodríguez, Amils, R. & McKay, C. P. (2010) Noachian and more recent phyllosilicates in impact craters on Mars. *Proceedings of the National Academy of Sciences*, **107** (27), 12,095-12,100, doi: 10.1073/pnas.1002889107.
 68. Heldmann, J.L., Conley, C.A., Brown, A.J., Fletcher, L., Bishop, J.L. & McKay, C.P. (2010) Possible liquid water origin for Atacama Desert mudflow and recent gully deposits on Mars. *Icarus*, **206**, 685-690.
 69. Weitz, C. M., Milliken, R. E., Grant, J. A., McEwen, A. S., Williams, R. M. E., Bishop, J. L. & Thomson, B. J. (2010) Mars Reconnaissance Orbiter observations of light-toned layered deposits and associated fluvial landforms on the plains adjacent to Valles Marineris. *Icarus*, **205**, 73-102, doi:10.1016/j.icarus.2009.04.017.
 70. Roach L.H., Mustard J.F., Swayze G.A., Milliken R., Bishop J.L., Murchie, S. L. & Lichtenberg, K. A. (2010) Hydrated Mineral Stratigraphy of Ius Chasma, Valles Marineris. *Icarus*, **206**, 253-268.
 71. Bishop, J. L., Parente, M., Weitz, C. M., Noe Dobrea, E. Z., Roach, L. A., Murchie, S. L., McGuire, P. C., McKeown, N. K., Rossi, C. M., Brown, A. J., Calvin, W. M., Milliken, R. E. & Mustard, J. F. (2009) Mineralogy of Juventae Chasma: Sulfates in the Light-toned Mounds, Mafic Minerals in the Bedrock, and Hydrated Silica and Hydroxylated Ferric Sulfate on the Plateau. *J. Geophys. Res.*, **114**, doi:10.1029/2009JE003352.
 72. Noe Dobrea, E. Z., Bishop, J. L., McKeown, N. K., Fu, R., Rossi, C. M., Michalski, J. R., Heinlein, C., Hanus, V., Poulet, F., Arvidson, R., Mustard, J. F., Ehlmann, B. L., Murchie, S., McEwen, A. S., Swayze, G., Bibring, J.-P., Malaret, J. F. E. & Hash, C. (2010) Mineralogy and Stratigraphy of Phyllosilicate-bearing and dark mantling units in the greater Mawrth Vallis: Constraints on geological origin. *J. Geophys. Res.*, **115**, E00D19, doi:10.1029/2009JE003351.
 73. McKeown, N. K., Bishop, J. L., Noe Dobrea, E. Z., Parente, M., Ehlmann, B. L., Mustard, J. F., Murchie, S. L., Bibring, J.-P. & Silver, E. (2009) Characterization of phyllosilicates observed in the central Mawrth Vallis region, Mars, their potential formational processes, and implications for past climate. *J. Geophys. Res.*, **114**, doi:10.1029/2008JE003301.
 74. Roach L.H., Mustard J.F., Lane M.D. & Bishop J.L. (2009) Diagenetic hematite and sulfate assemblages in Valles Marineris. *Icarus*, **207**, 659-674.
 75. Wiseman, S. M., Arvidson, R. E., Morris, R. V., Poulet, F., Murchie, S. L., Seelos, F. P., Bishop, J. L., Andrews-Hanna, J. C., Des Marais, D. & Griffes, J. L. (2010) Spectral and stratigraphic context of hydrated sulfate and phyllosilicate deposits in northern Sinus Meridiani, Mars. *J. Geophys. Res.*, **115**, E00D18, doi:10.1029/2009JE003354.

76. Lichtenberg, K. A., Arvidson, R. E., Morris, R. V., Murchie, S. L., Bishop, J. L., Glotch, T. D., Noe Dobreá, E., Mustard, J. F., Andrews-Hanna, J. & Roach, L. H. (2010) Stratigraphy of hydrated sulfates in the sedimentary deposits of Aram Chaos, Mars. *J. Geophys. Res.*, **115**, E00D17, doi: 10.1029/2009JE003353.
77. Ehlmann, B. L., Mustard, J. F., Swayze, G. A., Clark, R. N., Bishop, J. L., Poulet, F., Marais, D. J. D., Roach, L. H., Milliken, R. E., Wray, J. J., Barnouin-Jha, O. & Murchie, S. L. (2009) Identification of hydrated silicate minerals on Mars using MRO-CRISM: geologic context near Nili Fossae and implications for aqueous alteration. *J. Geophys. Res.*, **114**, doi:10.1029/2009JE003339.
78. Murchie, S. L., Roach, L. H., Seelos, F. P., Milliken, R. E., Mustard, J. F., Arvidson, R. E., Wiseman, S., Lichtenberg, K., Andrews-Hanna, J., Bibring, J.-P., Bishop, J. L., Parente, M. & Morris, R. V. (2009) Evidence for the origin of layered deposits in Candor Chasma, Mars, from mineral composition and hydrologic modeling. *J. Geophys. Res.*, **114**, doi:10.1029/2009JE003343.
79. Murchie, S. L., Mustard, J. F., Ehlmann, B. L., Milliken, R. E., Bishop, J. L., McKeown, N. K., Noe Dobreá, E. Z., Seelos, F. P., Buczkowski, D. L., Wiseman, S. M., Arvidson, R. E., Wray, J. J., Swayze G., Clark, R. N., Des Marais, D. J., McEwen, A. S., Bibring, J.-P. (2009) A synthesis of Martian aqueous mineralogy after one Mars year of observations from the Mars Reconnaissance Orbiter Compositional Evidence for the Origin of Layered Deposits in Valles Marineris, Mars. *J. Geophys. Res.*, **114**, doi:10.1029/2009JE003342.
80. Parente, M., Bishop, J. L. & Bell, J. F., III (2009) Spectral unmixing and anomaly detection for mineral identification in Pancam images of Gusev soils. *Icarus*, **203**, 421-436.
81. Roach, L. H., Mustard, J. F., Murchie, S. L., Bibring, J.-P., Forget, F., Lewis, K. W., Aharonson, O., Vincendon, M. & Bishop, J. L. (2009) Testing Evidence of recent hydration state change in sulfates on Mars. *J. Geophys. Res.*, **114**, E00D02, doi:10.1029/2008JE003245.
82. Jenniskens P., Shaddad M.H., Numan D., Elsir S., Kudoda A.M., Zolensky M.E., Le L., Robinson G.A., Friedrich J.M., Rumble D., Steele A., Chesley S.R., Fitzsimmons A., Duddy S., Hsieh H.H., Ramsay G., Brown P.G., Edwards W.N., Tagliaferri E., Boslough M.B., Spalding R.E., Dantowitz R., Kozubal M., Pravec P., Borovicka J., Charvat Z., Vaubaillon J., Kuiper J., Albers J., Bishop J.L., Mancinelli R.L., Sandford S.A., Milam S.N., Nuevo M. & Worden S.P. (2009) The Impact and recovery of asteroid 2008 TC3. *Nature*, **458**, 485-488.
83. McGuire, P. C., Bishop, J. L., Brown, A. J., Fraeman, A. A., Marzo, G. A., Morgan, M. F., Murchie, S. L., Mustard, J. F., Parente, M., Pelkey, S. M., Roush, T. L., Seelos, F. P., Smith, M. D., Wendt, L. & Wolff, M. J. (2009) An improvement to the volcano-scan algorithm for atmospheric correction of CRISM and OMEGA spectral data. *Planetary and Space Science*, **57** (7), 809-815.
84. Ehlmann, B. L., J. F. Mustard, S. L. Murchie, F. Poulet, J. L. Bishop, A. J. Brown, W. M. Calvin, R. N. Clark, D. J. Des Marais, R. E. Milliken, L. H. Roach, T. L. Roush, G. A. Swayze, and J. J. Wray (2008), Orbital identification of carbonate-bearing rocks on Mars, *Science*, **322** (19 December 2008), 1828-1832.
85. Milliken, R. E., Swayze, G. A., Arvidson, R. E., Bishop, J. L., Clark, R. N., Ehlmann, B. L., Green, R. O., Grotzinger, J., Morris, R. V., Murchie, S. L., Mustard, J. F. & Weitz, C. M. (2008) Opaline Silica in Young Deposits on Mars. *Geology*, **36**, 847-850; doi: 10.1130/G24967A.1.
86. Bishop J. L., Noe Dobreá E. Z., McKeown N. K., Parente M., Ehlman B. L., Michalski J. R., Milliken R. E., Poulet F., Swayze G. A., Mustard J. F., Murchie S. L. and Bibring J.-P. (2008), Phyllosilicate diversity and past aqueous activity revealed at Mawrth Vallis, Mars, *Science*, **321**, 830-833, doi: 10.1126/science.1159699.
87. Poulet F., Beaty D.W., Bibring J.-P., Bish D.L., Bishop J.L., Noe Dobreá E.Z., Mustard J.F., Petit S. & Roach L.H. (2008) Key Scientific Questions and Key Investigations from the First International Conference on Martian Phyllosilicates. *Astrobiology*, **9**, doi: 10.1089=ast.2009.0335.
88. Weitz C.M., Milliken R.E., Grant J.A., McEwen A.S., Williams R.M.S. & Bishop J.L. (2008) Light-toned strata and inverted channels adjacent to Juventae and Ganges Chasmata, Mars Geophysical Research Letters, **35**, L19202, doi:10.1029/2008GL035317.

89. Dyar M.D., Schaefer M.W., Sklute E.C. & Bishop J.L. (2008) Mössbauer spectroscopy of phyllosilicates: Effects of fitting models on recoil-free fractions and redox ratios. *Clay Minerals*, **43**, 3-33.
90. Pieters C.M., Klima R.L., Hiroi T., Dyar M.D., Lane M.D., Treiman A.H., Noble S.K., Sunshine J.M. & Bishop J.L. (2008) The origin of brown olivine in Martian dunite NWA 2737: Integrated spectroscopic analyses of brown olivine. *J. Geophys. Res.*, **113**, E06004, doi: 10.1029/2007JE002939.
91. Mustard J. F., Murchie S. L., Pelkey S. M., Ehlmann B. L., Milliken R. E., Grant J. A., Bibring J.-P., Poulet F., Bishop J. L., Noe Dobrea E. Z., Roach L. A., Seelos F., Arvidson R. E., Wiseman S., Green R., Hash C., Humm D., Malaret E., McGovern J. A., Seelos K., Clancy R. T., Clark R. N., Des Marais D., Izenberg N., Knudson A. T., Langevin Y., Martin T., McGuire P., Morris R. V., Robinson M., Roush T., Smith M., Swayze G. A., Taylor H., Titus T. N. & Wolff M. (2008) Hydrated silicate minerals on Mars observed by the CRISM instrument on MRO. *Nature*, **454** (7202, 17 July 2008), doi: 10.1038/nature07097, 7305-7309.
92. Bishop J. L., Dyar M. D., Sklute E. C. & Drief A. (2008) Physical alteration of antigorite: A Mössbauer spectroscopy, reflectance spectroscopy and TEM study with applications to Mars. *Clay Minerals*, **43**, 55-67.
93. Bishop J. L., Lane M. D., Dyar M. D. & Brown A. J. (2008) Reflectance and emission spectroscopy study of four groups of phyllosilicates: Smectites, kaolinite-serpentines, chlorites and micas *Clay Minerals*, **43**, 35-54.
94. Lane M. D., Bishop J. L., Dyar M. D., King P. L., Parente M. & Hyde B. C. (2008) Mineralogy of the Paso Robles Soils on Mars. *American Mineralogist*, **93**, 728-739.
95. Murchie S., Arvidson R. E., Bedini P., Beisser K., Bibring J.-P., Bishop J. L., Boldt J., Cavender P., Choo T., Clancy R. T., Darlington E. H., Des Marais D., Espiritu R., Fasold M., Fort D., Green R., Guinness E., Hayes J., Hash C., Heffernan K., Hemmler J., Heyler G., Humm D., Hutcheson J., Izenberg N., Lee R., Lees J., Lohr D., Malaret E., Martin T. Z., McGovern J. A., Morris R. V., Mustard J. F., Pelkey S., Rhodes E., Robinson M., Roush T., Schaefer E., Seagrave G., Seelos F., Silvergate P., Slavney S., Smith M., Strohbahn K., Taylor H., Thompson P., Tossman B., and Wolff M. J. (2007) CRISM (Compact Reconnaissance Imaging Spectrometer for Mars) on MRO (Mars Reconnaissance Orbiter). *J. Geophys. Res.*, **112**, doi:10.1029/2006JE002682.
96. Minitti M.E., Weitz C.M., Lane M.D. & Bishop J.L. (2007) Morphology, chemistry, and spectral properties of Hawaiian rock coatings and implications for Mars. *J. Geophys. Res.*, **112**, E05015 1-24.
97. Bishop J. L., Schiffman P., Murad E., Dyar M. D., Drief A., and Lane M. D. (2007) Characterization of alteration products in tephra from Haleakala, Maui: A visible-infrared spectroscopy, Mössbauer spectroscopy, XRD, EPMA and TEM study. *Clays and Clay Minerals*, **55**, 1-17.
98. Schiffman P., Zierenberg R. A., Marks N., Bishop J. L., and Dyar M. D. (2006) Acid fog deposition at Kilauea Volcano: A possible mechanism for the formation of siliceous-sulfate rock coatings on Mars. *Geology*, **34**, 921-924; doi: 10.1130/G22620A.1.
99. Bishop J. L., Louris S. K., Rogoff D. A. & Rothschild L. J. (2006) Nanophase iron oxides as a key ultraviolet sunscreen for ancient photosynthetic microbes. *International Journal of Astrobiology*, **5**, 1-12.
100. Moody C. D., Jorge Villar S. E., Edwards H. G. M., Hodgson D. A., Doran P. T., and Bishop J. L. (2005) Biogeological Raman spectroscopic studies of Antarctic lacustrine sediments. *Spectrochim. Acta*, **61**, 2413-2417.
101. Bishop J. L. and Murad E. (2005) The visible and infrared spectral properties of jarosite and alunite. *Am. Miner.*, **90**, 1100-1107.
102. Minitti M.E., Lane M.D. & Bishop J.L. (2005) A new hematite formation mechanism for Mars. *Meteoritics and Planetary Science*, **40**, 55-69.

103. Bishop J. L., Dyar M. D., Lane M. D., and Banfield J. F. (2005) Spectral identification of hydrated sulfates on Mars and comparison with acidic environments on Earth. *International Journal of Astrobiology*, **3** (4), 275-285.
104. Lane M. D., Dyar M. D and Bishop J. L. (2004) Spectroscopic evidence for hydrous iron sulfate in the Martian soil. *Geophys. Res. Lett.* **31**, L19702, doi:10.1029/2004GL021231.
105. Bishop J. L. and Murad E. (2004) Characterization of minerals and biogeochemical markers on Mars: A Raman and IR spectroscopy study of montmorillonite. *J. Raman Spectr.*, **35**, 480-486.
106. Edwards H. G. M., Jorge Villar S. E., Bishop J. L., and Bloomfield M. (2004) Raman spectroscopy of sediments from the Antarctic Dry Valleys; an Analog study for exploration of potential paleolake on Mars. *J. Raman Spectr.*, **35**, 458-462.
107. Bishop J. L., Murad E., Lane M. D., and Mancinelli R. L. (2004) Multiple Techniques for Mineral Identification on Mars: A Study of Hydrothermal Rocks as Potential Analogues for Astrobiology Sites on Mars. *Icarus*, **169**, 331-323.
108. Bishop J. L., Anglen B. L., Pratt L. M., Edwards H. G. M., Des Marais D. J. & Doran P. T. (2003) A Spectroscopy and Isotope Study of Sediments from the Antarctic Dry Valleys as Analogs for Potential Paleolakes on Mars. *International Journal of Astrobiology*, **2** (4) 273-287.
109. Bishop J. L., Murchie S. L., Pieters C. M., Zent A. P. (2002) A Model for Formation of Dust, Soil and Rock Coatings on Mars: Physical and Chemical Processes on the Martian Surface. *J. Geophys. Res.*, **107** (E11), 5097, doi:10.1029/2001JE001581.
110. Bishop J. L., Murad E. and Dyar M. D. (2002) The Influence of Octahedral and Tetrahedral Cation Substitution on the Structure of Smectites and Serpentes as Observed Through Infrared Spectroscopy. *Clay Miner.*, **37**, 617-628.
111. Bishop J. L., Madejova J., Komadel P., and Froeschl H. (2002) The Influence of Structural Fe, Al and Mg on the Infrared OH Bands in Spectra of Dioctahedral Smectites. *Clay Miner.* **37**, 607-616.
112. Bishop J. L., Banin A., Mancinelli R. L., Klovstad M. R. (2002) Detection of soluble and fixed NH₄⁺ in clay minerals by DTA and IR reflectance spectroscopy: A potential tool for planetary surface exploration. *Planetary Space Science*, **50**, 11-19.
113. Bishop J. L., Lougear A., Newton J., Doran P. Froeschl H., Trautwein A. X., Körner W. and Koeberl C. (2001) Mineralogical and geochemical analyses of Antarctic sediments: A reflectance and Mössbauer spectroscopy study with applications for remote sensing on Mars. *Geochim. Cosmochim. Acta*, **65**, 2875-2897.
114. Stoker C. R., Cabrol N. A., Roush T. R., Moersch J., Aubele J., Barlow N., Bettis E. A., Bishop J. L., Chapman M., Clifford S., Cockell C., Crumpler L., Craddock B., DeHon R., Foster T., Gulick V., Grin E., Horton K., Hovde G., Johnson J. R., Lee P. C., Lemmon M. T., Marshall J., Newsom H. E., Ori G. G., Reagan M., Rice J. W., Ruff S. W., Schreiner J., Sims M., Smith P. H., Tanaka K., Thomas H. J., Thomas G., and Yingst R. A. (2001) The 1999 Marsokhod Rover Mission Simulation at Silver Lake California: Mission Overview, Data Sets, and Summary of Results *J. Geophys. Res.*, **106**, 7639-7663.
115. Newsom H. E., Bishop J. L., Cockell C., Roush T. L., and Johnson J. R. (2001) Search for life on Mars in surface samples: Lessons from the 1999 Marsokhod rover field experiment. *J. Geophys. Res.*, **106**, 7713-7720.
116. Johnson J. R., Ruff S. W., Moersch J., Roush T., Horton K., Bishop J. L., Cabrol N. A., Cockell C., Gazis P., Newsom H. E., and Stoker C. (2001) Geological characterization of remote field sites using infrared spectroscopy: Results from the 1999 Marsokhod rover field test. *J. Geophys. Res.*, **106**, 7683-7711.
117. Murad E. and Bishop J. L. (2000) The infrared spectrum of synthetic akaganéite, βFeOOH . *American Mineralogist*, **85**, 716-721.
118. Bell J. F. III, McSween H. Y., Jr., Murchie S. L., Johnson J. R., Reid R., Morris R. V., Anderson R. C., Bishop J. L., Bridges N. T., Britt D. T., Crisp J. A., Economou T., Ghosh A., Greenwood J. P., Gunnlaugsson H. P., Hargraves R. M., Hviid S., Knudsen J. M., Madsen M. B., Moore H. J., Rieder

- R., and Soderblom L. (2000) Mineralogic and Compositional Properties of Martian Soil and Dust: Results from Mars Pathfinder. *J. Geophys. Res.*, **105**, 1721-1755.
119. Morris R. V., Golden D. C., Bell J. F. III, Shelfer T. D., Scheinost A. C., Hinman N. W., Furniss G., Mertzman S. A., Bishop J. L., Ming D. W., Allen C. C., and Britt D. T. (2000) Mineralogy, composition, and alteration of Mars Pathfinder rocks and soils: Evidence from multispectral, elemental, and magnetic data on terrestrial analogue, SNC meteorite, and Pathfinder samples. *J. Geophys. Res.*, **105**, 1757-1817.
 120. Bishop J. L., Murad E., Madejova J., Komadel P., Wagner U. and Scheinost A. (1999) Visible, Mössbauer and infrared spectroscopy of dioctahedral smectites: Structural analyses of the Fe-bearing smectites Sampor, SWy-1 and SWa-1. *11th International Clay Conference*, June, 1997, Ottawa, 413-419.
 121. Bishop J. L., Fröschl H. and R. L. Mancinelli (1998) Alteration processes in volcanic soils and identification of exobiologically important weathering products on Mars using remote sensing. *J. Geophys. Res.*, **103**, 31,457-31,476.
 122. Bishop J. L., Mustard J. F., Pieters C. M. and Hiroi T. (1998) Recognition of minor constituents in reflectance spectra of Allan Hills 84001 chips and the importance for remote sensing on Mars. *Meteorit. Planet. Sci.*, **33**, 693-698.
 123. Bishop J. L., Pieters C. M., Hiroi T. and Mustard J. F. (1998) Spectroscopic analysis of martian meteorite Allan Hills 84001 powder and applications for spectral identification of minerals and other soil components on Mars. *Meteorit. Planet. Sci.*, **33**, 699-708.
 124. Bishop J. L. (1998) Biogenic catalysis of soil formation on Mars? *Origins Life Evol. Biosphere*, **28**, 449-459.
 125. Bishop J. L., Koeberl C., Kralik C., Froeschl H., Englert P. A. J., Andersen D. W., Pieters C. M. and Wharton R. A. (1996) Reflectance spectroscopy and geochemical analyses of Lake Hoare sediments, Antarctica. *Geochim. Cosmochim. Acta*, **60**, 765-785.
 126. Bishop J. L., Pieters C. M., Burns R. G., Edwards J. O., Mancinelli R. L. and Froeschl H. (1995) Reflectance spectroscopy of ferric sulfate-bearing montmorillonites as Mars soil analog materials. *Icarus*, **117**, 101-119.
 127. Bishop J. L. and Pieters C. M. (1995) Low-temperature and low atmospheric pressure infrared reflectance spectroscopy of Mars soil analog materials. *J. Geophys. Res.* **100**, 5369-5379.
 128. Bishop J. L., Pieters C. M. and Edwards J. O. (1994) Infrared spectroscopic analyses on the nature of water in montmorillonite. *Clays Clay Min.*, **42**, 701-715.
 129. Reimold W. U., Koeberl C. and Bishop J. L. (1994) Roter Kamm impact crater, Namibia: Geochemistry of basement rocks and breccias. *Geochim. Cosmochim. Acta*, **58**, 2689-2710.
 130. Bishop J. L., Pieters C. M. and Burns R. G. (1993) Reflectance and Mössbauer spectroscopy of ferrihydrite-montmorillonite assemblages as Mars soil analog materials. *Geochim. Cosmochim. Acta*, **57**, 4583-4595.
 131. Murchie S., Mustard J., Bishop J. L., Head J., Pieters C. and Erard S. (1993) Spatial variations in the spectral properties of bright regions on Mars. *Icarus*, **105**, 454-468.

LIST OF PUBLISHED CONTRIBUTIONS TO ACADEMIC CONFERENCES: 450

1. Bishop J.L. (2020) Remote Characterization of Minerals on Mars to Uncover Former Aqueous Processes and Potentially Habitable Regions. BEACON: Biennial European Astrobiology Conference & EAI General Assembly.
2. Yeşilbaş M. & Bishop J.L. (2020) Following the water on Mars: A molecular study for near surface brines of Mars in the mid-IR region. BEACON: Biennial European Astrobiology Conference & EAI General Assembly.

3. Bishop J.L., Parente M., Saranathan A.M., Itoh Y., Weitz C.M., Flahaut J., Gross C., Danielsen J.M., Usabal G. & Miura J. (2020) Implementing New Feature Extraction Techniques for Characterization of Complex Mineral Signatures of Salty Regions on Mars. IEEE IGARSS: International Geoscience and Remote Sensing Symposium, Abstract #1502.
4. Bishop J.L., Yeşilbaş M., Burton Z.F.M., Gulick V.C., Toner J.D., McEwen A.S., Thomas M.F., Englert P., Gibson E.K. & Koeberl C. (2020) Melting of Near Surface Martian Salty Permafrost Could Form Brines, Trigger Microscale Soil Collapse, and Induce Recurring Slope Lineae. *8th Annual Space Science and Astrobiology Jamboree*.
5. Ackiss S.E., Rader E. & Bishop J.L. (2020) Is what you see, what you get? Investigating the relationship between visible and near-infrared spectroscopy and microcrystallinity of fresh, glassy basaltic lavas. *51st Lunar Planet. Sci. Conf.*, Abstract #2296.
6. Bishop J.L., Seelos K.D. & Murchie S.L. (2020a) Goethite in Anomalous Terrains West of Olympus Mons May be Consistent with Cold Spring Flows Percolating Through Near-Surface Permafrost. *51st Lunar Planet. Sci. Conf.*, Abstract #1032.
7. Bishop J.L., Viviano C.E., Lane M.D., Tirsch D., Loizeau D., Tornabene L.L. & Jaumann R. (2020b) Orbital characterization of igneous and aqueous outcrops in the Tyrrhena Terra region of Mars. *51st Lunar Planet. Sci. Conf.*, Abstract #1811.
8. Bonaccorsi R., Bishop J.L. & Burton Z.F.M. (2020) Salty clay sites in the Mojave desert as analogues for Mars: VNIR spectroscopy investigations of fluvio-lacustrine volcanoclastic deposits. *51st Lunar Planet. Sci. Conf.*, Abstract #2525.
9. Burton Z.F.M., Bishop J.L. & Danielsen J.M. (2020a) Altered volcanic material from Fuerteventura, Spain as a possible analogue for the martian surface. *51st Lunar Planet. Sci. Conf.*, Abstract #1713.
10. Burton Z.F.M., Bishop J.L., Englert P., Dera P., Koeberl C. & Gibson E.K. (2020b) Coordinated spectroscopy, geochemistry, and mineralogy of Mars brine pond analogue sediments from Antarctica. *51st Lunar Planet. Sci. Conf.*, Abstract #1248.
11. Englert P., Bishop J.L., Koeberl C. & Gibson E.K. (2020) McMurdo Dry Valley sediments as analogs for near-surface processes in the cold desert-like environment on Mars. *51st Lunar Planet. Sci. Conf.*, Abstract #1346.
12. Foerder A., Englert P., Bishop J.L., Koeberl C. & Gibson E.K. (2020) Rare Earth Element abundances & chemical alteration in microenvironments of the McMurdo Dry Valleys. *51st Lunar Planet. Sci. Conf.*, Abstract #2298.
13. Gross C. & Bishop J.L. (2020) Tracking layered deposits across the dichotomy boundary into the northern lowlands of Mars. *51st Lunar Planet. Sci. Conf.*, Abstract #2278.
14. Lane M.D., Tirsch D., Bishop J.L., Viviano C.E., Loizeau D., Tornabene L.L. & Jaumann R. (2020) Identifying olivine composition in Libya Montes and Tyrrhena Terra, Mars, using orbital mid-infrared data. *51st Lunar Planet. Sci. Conf.*, Abstract #2541.
15. Lowe D.J., Bishop J.L., Loizeau D., Wray J.J. & Beyer R.A. (2020) Sedimentary processes at Muara crater provide evidence of lakes or seas in past at Mawrth Vallis, Mars. *Lunar Planet. Sci. Conf. LI*, Abstract #2154.
16. Seelos K.D., Detelich C.E., Runyon K.D., Murchie S.L., Bishop J.L., Rogers A.D. & Craft K.E. (2020) Geologic setting of the Olympus Maculae, Mars. *Lunar Planet. Sci. Conf. LI*, Abstract #2985.
17. Weitz C.M., Bishop J.L., Seelos K.D., Thompson B.J. & Arvidson R.E. (2020) The marker bed at Gale crater, Mars: Predictions for exploration by Curiosity rover. *Lunar Planet. Sci. Conf. LI*, Abstract #.
18. Yeşilbaş M. & Bishop J.L. (2020a) Investigation of dehydration-hydration features of iron-smectite and sulfate from -90 to 950 °C and applications to Mars. *Lunar Planet. Sci. Conf. LI*, Abstract #2610.
19. Yeşilbaş M. & Bishop J.L. (2020b) A molecular view of near surface brines on Mars through mid-infrared spectra of martian analogs mixed with Cl salts. *Lunar Planet. Sci. Conf. LI*, Abstract #2788.
20. Bishop J.L., Koeberl C., Englert P.A.J., Toner J.D., Gulick V.C., Burton Z.F.M., Gibson E.K. & McEwen A.S. (2019) Martian near-surface S and Cl brines in fractured and porous regolith could trigger microscale soil collapse and cause Recurring Slope Lineae. *AGU fall meeting*, Abstract #P43B-10.
21. Bishop J.L., Gross C., Danielsen J.M., Miura J.K., Usabal G.S., Perrin S.L., Itoh Y., Saranathan A.M., Parente M., Sessa A.M. & Wray J.J. (2019) Changes in geochemical environment detected at

- Mawrth Vallis, Mars, through changes in the mineralogic record observed in orbital imagery. *GSA Annual Meeting*, Abs. #295-2.
22. Bishop J.L., Gross C., Danielsen J.M., Perrin S.L., Miura J.K., Usabal G.S., Sessa A.M. & Wray J.J. (2019) Multiple mineral horizons at Mawrth Vallis, Mars, represent changing environmental conditions. *EPSC-DPS Joint Meeting*, Abs. #1175.
 23. Bishop J.L., Flahaut J. & Perrin S.L. (2019) Characterizing environments containing complex phyllosilicate-sulfate assemblages as analogs for Mars. *EPSC-DPS Joint Meeting*, Abs. #1258.
 24. Bishop J.L. (2019) Characterizing the surface of Mars through remote spectral identification of minerals. *9th European Conf. on Mineralogy and Spectroscopy*, p. 5.
 25. Lane M.D., Tirsch D., Bishop J.L., Viviano C.E., Loizeau D., Tornabene L.L. & Jaumann R. (2019) Identifying olivine in Libya Montes and Tyrrhena Terra, Mars. *9th Int'l Conf. on Mars*, Abs. #6422.
 26. Weitz C.M., Bishop J.L., Flahaut J., Gross C., Saranathan A.M., Itoh Y. & Parente M. (2019) Evidence for Hesperian acidic alteration in Ius Chasma. *9th Int'l Conf. on Mars*, Abs. #6240.
 27. Bishop J.L., Weitz C.M., Flahaut J., Gross C., Saranathan A.M., Danielsen J.M., Usabal G.S., Miura J.K., Itoh Y. & Parente M. (2019) Salty residues on Mars mark changing geochemical environments. *9th Int'l Conf. on Mars*, Abs. #6148.
 28. Bishop J.L., Flahaut J., Gross C., Perrin S., Danielsen J.M., Miura J., Usabal G., Sessa A.M., Wray J.J., Warren-Rhodes K., Hinman N. & Cabrol N.A. (2019) Identifying environmental change and seeking potentially habitable sites on Mars at Mawrth Vallis through correlation with analog expeditions on Earth. *Astrobiology Science Conf.*, Abstract #479407.
 29. Fairén A. G., Mateo E., Robas C., Muñoz-Iglesias V., Carrizo D., Fernandez-Sampedro M., Prieto-Ballesteros O., Gago-Duport L., Losa-Adams E., Lanza N., Gasda P. J., Fox V. K., Fornaro T., Bristow T., Bishop J. L. & Gil-Lozano C. (2019) Preservation of organics in martian clays. *EGU General Assembly*, Abstract #16034.
 30. Tirsch D., Bishop J. L., Viviano C. E., Loizeau D., Tornabene L. L., Lane M. D. & Jaumann R. (2019) The effects of aqueous processes and impacts on mineral alteration and weathering in Libya Montes and Tyrrhena Terra, Mars. *50th Lunar Planet. Sci. Conf.*, Abstract #1532.
 31. Weitz C. M., Bishop J. L. & Grant J. A. (2019) Analysis of clay deposits in and around Ladon Basin and Ladon Valles. *50th Lunar Planet. Sci. Conf.*, Abstract #1929.
 32. Bishop J. L., Hinman N. W., Danielsen J. M., Baker L. L., Jeute T. J., Abidin Z. & Rampe E. B. (2019a) Spectral properties of hydrated poorly crystalline materials for spectral analysis of the Moon and Mars. *50th Lunar Planet. Sci. Conf.*, Abstract #2288.
 33. Perrin S. L., Bishop J. L. & Gruendler L. (2019a) Investigation of altered volcanic material from the Polihua Trail site on Lāna'i as an analog for Mars. *50th Lunar Planet. Sci. Conf.*, Abstract #3158.
 34. Englert P., Bishop J. L., Burton Z. F. M., Gibson E. K., Koeberl C., Tirsch D., Toner J. D. & Sutter B. (2019) Near surface geochemistry and mineralogy at the McMurdo Dry Valleys, Antarctica, serves as an analog for some near surface sites on Mars. *50th Lunar Planet. Sci. Conf.*, Abstract #2252.
 35. Burton Z. F. M., Bishop J. L., Englert P., Koeberl C. & Gibson E. K. (2019) Salts and clays beneath surface sediments in Antarctica provide clues to weathering and geochemistry of Mars. *50th Lunar Planet. Sci. Conf.*, Abstract #1766.
 36. Bishop J. L., Toner J. D., Englert P., Gulick V. C., McEwen A. S., Burton Z. F. M., Thomas M. F., Gibson E. K. & Koeberl C. (2019b) Salty solution to slipping soils on martian slopes. *50th Lunar Planet. Sci. Conf.*, Abstract #1188.
 37. Danielsen J. M., Bishop J. L., Usabal G. S., Miura J. K., Sessa A. M., Wray J. J., Itoh Y., Parente M. & Murchie S. M. (2019) Characterization of outcrops containing “doublet” spectra at Mawrth Vallis, Mars. *50th Lunar Planet. Sci. Conf.*, Abstract #3017.
 38. Miura J. K., Bishop J. L., Danielsen J. M., Sessa A. M., Itoh Y., Parente M., Wray J. J. & Swayze G. A. (2019) Spectral properties of alunite-kaolinite mixtures and detection of these minerals at Mawrth Vallis. *50th Lunar Planet. Sci. Conf.*, Abstract #2576.
 39. Perrin S. L., Bishop J. L. & Sessa A. M. (2019b) Analysis of unique martian sulfate outcrops based on samples from the Painted Desert Sulfate Hill analog site and lab mixtures. *50th Lunar Planet. Sci. Conf.*, Abstract #1903.
 40. Usabal G. S., Bishop J. L., Danielsen J. M., Itoh Y., Parente M. & Seelos F. (2019) Characterization of jarosite-bearing outcrops northwest of Mawrth Valles. *50th Lunar Planet. Sci. Conf.*, Abstract #2234.

41. Fairén A. G., Mateo E., Robas C., Muñoz-Iglesias V., Carrizo D., Fernandez-Sampedro M., Prieto O., Gago-Duport L., Losa-Adams E., Lanza N., Gasda P. J., Bishop J. L. & Gil-Lozano C. (2018) Preservation of organic matter on Mars: The role of the mineral matrix. *AGU Fall Meeting*, Abstract #P31F-3757.
42. Usabal G. S. & Bishop J. L. (2018) VNIR spectral analysis of laboratory nontronite/jarosite mixtures: Applications to Mawrth Vallis. *AGU Fall Meeting*, Abstract #P31H-3806.
43. Miura J. K. & Bishop J. L. (2018) Constraining sulfate and hydrated silica abundances on Mars with laboratory mixtures. *AGU Fall Meeting*, Abstract #P31H-3811.
44. Bishop J. L. (2018) Reaction of Ca sulfates and chlorides in the martian near surface to create sinkholes and debris flows. GSA Annual Meeting, Abstract #138-9.
45. Bishop J.L. (2018) Plenary Presentation: Using mineralogy to reveal diverse geochemical environments and climate on Mars. *International Mineralogical Association*, Melbourne, Australia, p.6.
46. Tirsch D., Bishop J.L., Voigt J.R.C., Tornabene L.L., Erkeling G. & Jaumann R. (2018) Aqueous alteration at central Libya Montes, Mars. *EPSC*. Berlin.
47. Rampe E.B., Morris R.V., Ming D.W., Bristow T.F., Achilles C.N., Bishop J.L., Horgan B., Smith R.J. & Kraft M.D. (2018) Alteration of volcanic sediments on Mars and the formation of clay minerals and X-ray amorphous materials. *Clay Minerals Society Annual Meeting*. Urbana, IL.
48. Jeute T.J., Baker L.L., Bishop J.L., Abidin Z. & Rampe E.B. (2018) Characterizing nanophase materials on Mars: Spectroscopic studies of allophane and imogolite. *Clay Minerals Society Annual Meeting*, 119.
49. Bishop J.L., Horgan B., Benning L.G., Carrier B.L., Hausrath E.M. & iMOST_Team. (2018) High Priority Subaerial Environments Needed for Mars Sample Return. 2nd Int'l Mars Sample Return Conference, Abstract #6023.
50. Bishop J.L., Wray J.J., Sessa A.M., Danielsen J.M., Ehlmann B.L., Murchie S.L., Horgan B., Gross C., Parente M. & Seelos F.P. (2018) Evidence of salty residues in layered outcrops at Mawrth Vallis and implications for evaporative environments on early Mars. *Lunar Planet. Sci. Conf. XLIX*, Abstract #1117.
51. Sessa A.M., Wray J.J. & Bishop J.L. (2018) Discovery of alunite in candidate ExoMars landing site, Mawrth Vallis: Evidence for localized evaporative environments. *Lunar Planet. Sci. Conf. XLIX*, Abstract #2983.
52. Gross C., Orgel C., Poulet F., Carter J., Horgan B. & Bishop J.L. (2018) ExoMars 2020 - High priority science targets within the Mawrth Vallis candidate landing site. *Lunar Planet. Sci. Conf. XLIX*, Abstract #1405.
53. Weitz C.M. & Bishop J.L. (2018) Formation of clays and ferrihydrite in Hydræ Chasma, Mars. *Lunar Planet. Sci. Conf. XLIX*, Abstract #1226.
54. Makarewicz J.S., Makarewicz H.D. & Bishop J.L. (2018) Spectral mixture modeling using Principle Component Analysis applied to nontronite-ferrihydrite and kaolinite-montmorillonite mixtures. *Lunar Planet. Sci. Conf. XLIX*, Abstract #1378.
55. Burton Z.F.M., Bishop J.L., Englert P., Koeberl C. & Gibson E.K. (2018) Chemically active horizon in a soil pit from an intermittent pond site in the Dry Valleys Region, Antarctica and implications for soil processes on Mars. *Lunar Planet. Sci. Conf. XLIX*, Abstract #1086.
56. Jeute T.J., Baker L.L., Abidin Z., Bishop J.L. & Rampe E.B. (2018) Characterizing nanophase materials on mars: spectroscopic studies of allophane and imogolite. *Lunar Planet. Sci. Conf. XLIX*, Abstract #2137.
57. Perrin S., Bishop J.L., Parker W.G., King S.J. & Lafuente B. (2018) Mars evaporite analog site containing jarosite and gypsum at Sulfate Hill, Painted Desert, AZ. *Lunar Planet. Sci. Conf. XLIX*, Abstract #1801.
58. Danielsen J.M. & Bishop J.L. (2018) Characterization of jarosite-bearing outcrops at Mawrth Vallis, Mars. *Lunar Planet. Sci. Conf. XLIX*, Abstract #1804.
59. Cabrol N.A., Bishop J.L., Cady S.L., Hinman N., Moersch J., Noffke N., Phillips C., Sobron P., Summers D.M., Warren-Rhodes K. & Wettergreen D.S. (2018) Coevolution as a Guiding Principle for Biosignature Exploration on Mars (and Beyond). *Lunar Planet. Sci. Conf. XLIX*, Abstract #1350.
60. Hiesinger H., Bernhardt H., Reiss D., Tirsch D., Jaumann R., Hauber E., Head Iii J.W., Michael G., Williams D.A., Bishop J.L., Poulet F., Muller J.P., Gross C., Gwinner K., Adeli S. & Fanara L.

- (2018) Absolute model ages and stratigraphy of Neukum Crater geologic units. *Lunar Planet. Sci. Conf. XLIX*, Abstract #.
61. Tirsch D., Jaumann R., Adeli S., Bernhardt H., Bishop J.L., Fanara L., Gross C., Gwinner K., Hauber E., Head J.W., Hiesinger H., Michael G., Muller J.P., Poulet F., Reiss D. & Williams D.A. (2018) The complex geomorphology of Neukum Crater on Mars. *European Geophysical Union*, Abstract #EGU2018-1959.
 62. Hiesinger H., Bernhardt H., Reiss D., Tirsch D., Jaumann R., Hauber E., Head J.W., Michael G., Williams D.A., Bishop J.L., Poulet F., Muller J.P., Gross C., Gwinner K., Adeli S. & Fanara L. (2018) Neukum Crater in Noachis Terra, Mars: Absolute Model Ages and Stratigraphy. *European Geophysical Union*, Abstract #EGU2018-13328.
 63. Bishop J.L., Baker L.L., Fairén A.G., Michalski J.R., Gago-Duport L., Velbel M.A., Gross C. & Rampe E.B. (2017) Implications of martian phyllosilicate formation conditions to the early climate on Mars. *AGU fall meeting*, Abstract #214800.
 64. Jeute T.J., Baker L.L., Bishop J.L., Rampe E.B. & Abidin Z. (2017) Characterizing nanophase materials on Mars: Spectroscopic studies of allophane and imogolite. *GSA Annual meeting*, Abstract #276-3.
 65. Weitz C.M., Berman D.C., Rodriguez A. & Bishop J.L. (2017) Geologic mapping and studies of diverse deposits at Noctis Labyrinthus, Mars. *GSA Annual meeting*, Abstract #298877.
 66. Bishop J.L., Fairén A.G., Michalski J.R., Gago-Duport L., Baker L.L., Velbel M.A., Gross C. & Rampe E.B. (2017) Diverse early aqueous environments and climate on Mars revealed by the phyllosilicate record. *Fourth International Conference on Early Mars*, Abstract #3030.
 67. Cuadros J., Mavris C., Michalski J.R., Bishop J.L. & Nieto J.M. (2017) Kaolinite from diverse acidic alterations in Earth analogues for Mars. *XVI International Clay Conference*, 171.
 68. Bishop J.L. & Velbel M.A. (2017) Comparison of phyllosilicates observed on the surface of Mars with those found in martian meteorites. *80th Annual Meeting of the Meteoritical Society*, Abstract #6115.
 69. Bishop J.L. (2017) Seeking biosignatures on Mars today that are preserved from ancient environments at Mawrth Vallis. *AbSciCon*, Abstract #3042.
 70. Bishop J.L. (2017) Harnessing Water and Resources from Clay Minerals on Mars and Planetary Bodies. *Planetary Science Vision 2050 Workshop*, Abstract #8131.
 71. Bishop J.L., Baker L.L., Fairén A.G., Gross C., Velbel M.A., Rampe E.B. & Michalski J.R. (2017) Unraveling the diversity of early aqueous environments and climate on Mars through the phyllosilicate record. *Lunar Planet. Sci. Conf. XLVIII*, Abstract #1804.
 72. Danielsen J.M., Bishop J.L. & Gruendler L. (2017) Characterization of volcanic material from Fuertaventura as a potential Mars analog site. *Lunar Planet. Sci. Conf. XLVIII*, Abstract #2773.
 73. Flahaut J., Bishop J.L., Silvestro S., Tedesco D., Daniel I., Loizeau D., Quantin C. & Dehouck E. (2017) Hydrothermal alteration on Mars compared to the Italian Solfatara. *Lunar Planet. Sci. Conf. XLVIII*, Abstract #2071.
 74. Mavris C., Bishop J.L., Cuadros J., Nieto J.M. & Michalski J.R. (2017) Clay-bearing paragenetic associations in Riotinto (SW Spain): Disentangling multiple pathways of acidic bedrock alterations on Mars. *Lunar Planet. Sci. Conf. XLVIII*, Abstract #1839.
 75. Jeute T.J., Baker L.L., Abidin Z., Bishop J.L. & Rampe E.B. (2017) Characterizing nanophase materials on Mars: Spectroscopic studies of allophane and imogolite. *Lunar Planet. Sci. Conf. XLVIII*, Abstract #2738.
 76. Bishop J.L., King S.J., Lane M.D., Lafuente B., Brown A.J., Hiroi T., Swayze G.A. & Lin J.-F. (2017) Spectral properties of anhydrous carbonates and nitrates. *Lunar Planet. Sci. Conf. XLVIII*, Abstract #2362.
 77. Miller K.M., Phillips-Lander C.M., Bishop J.L., Elwood Madden A.S. & Elwood Madden M.E. (2017) Anhydrite nucleation and growth at low temperatures: effects of flow rate, activity of water, and mineral substrates. *Lunar Planet. Sci. Conf. XLVIII*, Abstract #2133.

78. Gross C., Carter J., Poulet F., Loizeau D., Bishop J.L., Horgan B. & Michalski J.R. (2017) Mawrth Vallis - An auspicious destination for the ESA and NASA 2020 landers. Lunar Planet. Sci. Conf. XLVIII, Abstract #2194.
79. Loizeau D., Poulet F., Horgan B. & Bishop J.L. (2017) Mawrth Vallis as a landing site for the NASA Mars2020 mission. Lunar Planet. Sci. Conf. XLVIII, Abstract #2988.
80. Bishop J. L., Baker L., Rampe E. B. & M. A. Velbel (2016) The Effects of Punctuated Warm and Wet Environments on Phyllosilicate Formation - or How Long was Early Mars Wet? AGU Fall Meeting, Abstract #142566.
81. Bishop J.L. (2016) Identification of Clays on Mars and Why They are Important for Astrobiology. *A Workshop on Searching for Life Across Space and Time*, Irvine, CA.
82. Bishop J. L. (2016) Spectroscopy of Mars analog samples to inform identification of minerals and constrain geochemical environments on Mars. *GSA Annual Meeting*, Abstract #283978.
83. Clark R. N., Murchie S. L., Seelos F. P., Viviano-Beck C. E., Calvin W. M., Swayze G. A., Bishop J. L., Seelos K. D. & Brown A. J. (2016) Surface composition of Martian polar regions: Complex mixtures of H₂O ice, bound H₂O and CO₂ ice. *Sixth Mars Polar Science Conference*, Abstract #6010.
84. Bishop J. L. & Engert P. (2016) Antarctic Dry Valley sediments as analogs for sediments in the cold desert-like environment on Mars. *Sixth Mars Polar Science Conference*, Abstract #6011.
85. Bishop J. L., Gross C., Tirsch D., Tornabene L. L., Carter J. & Erkeling G. (2016) Impacts on Mars: Excavation and/or Hydrothermal Alteration. *79th Annual Meteoritical Society*, Abstract #6462.
86. Bishop J. L. (2016) Jackson Award Lecture. Clays on Mars: How we identified them and what they tell us about the early environment. *Clay Minerals Society 53rd Annual Meeting*. Atlanta, GA.
87. Bishop J. L., Schiffman P., Gruendler L., Murad E., Dyar M. D., Lane M. D. & Southard R. J. (2016) Formation of opal, clays and sulfates from volcanic ash at Kilauea Caldera as an analog for surface alteration on Mars. *53rd Annual Clay Minerals Society Meeting*, Atlanta, GA.
88. Wray J. J. & Bishop J. L. (2016) Carbonates mixed with clay minerals on Mars: Identification and implications. *53rd Annual Clay Minerals Society Meeting*, Atlanta, GA.
89. Bishop J. L. & Engert P. A. J. (2016) Antarctic Dry Valley Sediments as Analogues for Microbial Systems in a Cold Mars-Like Environment. *Biosignature Preservation and Detection in Mars Analog Environments*, Abstract #2017.
90. Bishop J. L., Gross C., Rampe E. B., Wray J. J., Parente M., Horgan B., Loizeau D., Viviano-Beck C. E., Seelos F. P., Ehlmann B. L. & Clark R. N. (2015) Mineralogy of layered outcrops at Mawrth Vallis and implications for early aqueous geochemistry on Mars. Lunar Planet. Sci. Conf. XLVII, Abstract #1332.
91. Lowe D. R., Bishop J. L., Beyer R. A., Wilhelm M. B., Wray J. J. & Loizeau D. (2016) Characterization of aeolian and sedimentary features in the Mawrth Vallis region, Mars. Lunar Planet. Sci. Conf. XLVII, Abstract #1651.
92. Fenton L. K., Bishop J. L., King S. J. & Lafuente B. (2016) Aeolian transport in Olympia Undae, Mars, based on a field study at White Sands National Monument, New Mexico, USA. Lunar Planet. Sci. Conf. XLVII, Abstract #2183.
93. Flahaut J., Bishop J. L., Daniel I., Silvestro S., Tedesco D. & Quantin C. (2016) Spectral characterization of the sulfate deposits at the Mars analog site of La Solfatara (Italy). Lunar Planet. Sci. Conf. XLVII, Abstract #2233.
94. Gross C., Poulet F., Michalski J., Horgan B. & Bishop J. L. (2016) Mawrth Vallis - proposed landing site for ExoMars 2018/2020. Lunar Planet. Sci. Conf. XLVII, Abstract #.
95. Bishop J. L., Davila A., Hanley J. & Roush T. L. (2016) Dehydration-rehydration experiments with Cl salts mixed into Mars analog materials and the effects on their VNIR spectral properties. Lunar Planet. Sci. Conf. XLVII, Abstract #1645.

96. Brown A. J., Viviano-Beck C. E., Bishop J. L., Cabrol N. A., Andersen D., Sobron P., Moersch J., Templeton A. S. & Russell M. J. (2016) A serpentinization origin for Jezero Crater carbonates. Lunar Planet. Sci. Conf. XLVII, Abstract #2165.
97. Clark R. N., Swayze G. A., Murchie S. L., Seelos F. P., Viviano-Beck C. E. & Bishop J. L. (2016) Mapping water and water-bearing minerals on Mars with CRISM. Lunar Planet. Sci. Conf. XLVII, Abstract #.
98. Erkeling G., Ivanov M. A., Tirsch D., Reiss D., Bishop J. L., Tornabene L. L., Hiesinger H. & Jaumann R. (2016) Bradbury Crater, Mars: Morphology, morphometry, mineralogy, and chronostratigraphy. Lunar Planet. Sci. Conf. XLVII, Abstract #1451.
99. Tirsch D., Erkeling G., Bishop J. L., Tornabene L. L., Hiesinger H. & Jaumann R. (2016) Geologic context of lacustrine mineral deposits at Bradbury Crater, Mars. Lunar Planet. Sci. Conf. XLVII, Abstract #1444.
100. Weitz C. M., Bishop J. L., Tornabene L. L., Mest S., Grant J. A. & Rodriguez A. (2016) Disrupted hydrated deposits in southeastern Noctis Labyrinthus: Possible displaced subsurface materials from Oudemans Crater? Lunar Planet. Sci. Conf. XLVII, Abstract #.
101. Bishop J. L., Schiffman P., Lane M. D., Dyar M. D., Southard R. J. & Gruendler L. (2015) Solfataric alteration at Hawaii as a potential analog for Martian surface processes. AGU fall meeting, Abstract #62066.
102. Englert P., Bishop J. L., Patel S., Gibson E. K. & Koeberl C. (2015) Wright Valley sediments as potential analogs for Martian surface processes. AGU Fall Meeting, Abstract #62033.
103. Flahaut J., Bishop J. L., Martinot M., Potts N. J. & Davies G. R. (2015) Combined VNIR and Raman spectroscopy of the Atacama salt flats as a potential Mars analog. AGU fall meeting, Abstract #67999.
104. Grosch E. G., Bishop J. L., Maturilli A. & Helbert J. (2015) Early Earth rock analogues for Martian subsurface processes. AGU Fall Meeting, Abstract #79942.
105. Gross C., Bishop J. L., Maturilli A., D'Amore M. & Helbert J. (2015) A Hydrothermally Altered, Mn-incrusted Marine Sediment as an Analogue for Martian Deposits? AGU Fall Meeting, Abstract #69053.
106. Bishop J. L., Gross C., Parente M., Wray J. J., Horgan B., Viviano-Beck C. & Seelos F. P. (2015) The transition from neutral to acidic alteration at Mawrth Vallis as observed from the mineralogical record. GSA Annual Meeting.
107. Bishop J.L., Velbel M.A. & Filiberto J. (2015) Determining Martian Aqueous Mineralogy Through Analyses Of Orbital Remote Sensing & Martian Meteorite Geochemistry. Meteoritical Society, Abstract #5113.
108. Bishop J.L. & Gross C. (2015) Bentonite Composition and Stratigraphy at Mawrth Vallis, Mars. *Euroclay*, Abstract #314.
109. Bishop J.L., King S.J., Brown A.J. & Wray J.J. (2015) Investigating the Chemistry of Martian Carbonates Using CRISM. AbSciCon, Abstract #7285.
110. Horgan B., Rice M.S., Farrand W.H., Sheldon N.D. & Bishop J.L. (2015) Possible Microbial Energy Pathways from Iron and Sulfur Redox Gradients at Mawrth Vallis and Gale Crater, Mars. AbSciCon, Abstract #7463.
111. Cabrol N.A., Bishop J.L., Brown A.J., Cady S., Davila A., DeVore E., Ertem G., Farmer J.D., Grin E.A., Gulick V.C., Hinman N., Moersch J., Parro V., Phillips C., Quinn R., Sobron P., Sarrazin P., Summers D.M., Wettergreen D.S., Wray J.J., Zacny K., Blake D., Feister U., Häder D., Leveille R., Pollard W. & Arvidson R. (2015) Roadmap to Biosignature Exploration on Mars. AbSciCon, Abstract #7010.
112. Brown A.J., Viviano-Beck C., Bishop J.L., Cabrol N.A., Anderson D.T., Sobron P., Moersch J., van Kranendonk M. & Russell M.J. (2015) The Evidence for Hydrothermal Formation of Talc - Carbonate at Nili Fossae, and Implications for Astrobiology on Mars. AbSciCon, Abstract #7397.

113. Mavris C., Cuadros J., Nieto J.M., Bishop J.L., Vega R. & Michalski J.R. (2015) Clay mineralogical evolution as a function of acidic leaching conditions: implications for alteration pathways on Mars' surface. EGU, Abstract #314.
114. Bishop J.L., Weitz C.M., Flahaut J., Gross C. & Horgan B. (2015) Acidic Alteration Environments at Valles Marineris, Noctis Labyrinthus and Mawrth Vallis. EGU, Abstract #14098.
115. Bishop J.L., Tirsch D., Tornabene L.L., Seelos F.P., Erkeling G., Hiesinger H. & Jaumann R. (2015) Aqueous Alteration at a Delta in Eastern Libya Montes. EGU, Abstract #13953.
116. Tirsch D., Bishop J.L., Voigt J., Tornabene L.L., Erkeling G., Hiesinger H. & Jaumann R. (2015) Aqueous outcrops at Libya Montes, Mars: A close eye on morphology and mineralogy. EGU General Assembly, Abstract #3870-3.
117. Bishop J.L., Gross C., Wray J.J., Horgan B., Viviano-Beck C.E. & Seelos F.P. (2015) Acid-alteration at Mawrth Vallis between the older Fe/Mg-rich clays and the younger Al/Si-rich clays. Lunar Planet. Sci. Conf. XLVI, Abstract #1455.
118. Brown A.J., Bishop J.L. & Viviano-Beck C.E. (2015) Spectral analysis of carbonate deposits at Nili Fossae, Mars. Lunar Planet. Sci. Conf. XLVI, Abstract #2701.
119. Cavanagh P.D., Pratt L.M., Bish D.L., Bishop J.L., Peng Y. & Englert P. (2015) Microbial sulfur isotope depletion and mineralogy of Prospect Mesa Formation soil pit, Dry Valleys, Antarctica. Lunar Planet. Sci. Conf. XLVI, Abstract #2776.
120. Englert P., Bishop J.L., Patel S., Gibson E.K. & Koeberl C. (2015) Don Quixote Pond: A small scale model of weathering and salt accumulation. Lunar Planet. Sci. Conf. XLVI, Abstract #2297.
121. Erkeling G., Ivanov M.A., Reiss D., Hiesinger H., Bishop J.L., Tirsch D., Jaumann R. & Tornabene L.L. (2015) Valleys, fan-shaped deposits and associated phyllosilicates of a paleolake site at Libya Montes, Mars: Evidence of complex hydrologic activity. Lunar Planet. Sci. Conf. XLVI, Abstract #1779.
122. Gross C., Carter J., Tornabene L.L., Sowe M. & Bishop J.L. (2015) Stratified phyllosilicate-bearing deposits within impact craters in the northern plains of Mars. Lunar Planet. Sci. Conf. XLVI, Abstract #1817.
123. Patel S., Bishop J.L., Engert P. & Gibson E.K. (2015) Coordinating chemical and mineralogical analyses of Antarctic Dry Valley sediments as potential analogs for Mars. Lunar Planet. Sci. Conf. XLVI, Abstract #1537.
124. Tirsch D., Bishop J.L., Voigt J., Tornabene L.L., Erkeling G. & Jaumann R. (2015) Morphology of aqueous outcrops at Libya Montes, Mars. Lunar Planet. Sci. Conf. XLVI, Abstract #1738.
125. Weitz C.M. & Bishop J.L. (2015) Stratigraphy and distribution of clays within Coprates Catena and Hydrae Chasma. Lunar Planet. Sci. Conf. XLVI, Abstract #1383.
126. Bishop J.L., Flahaut J., Weitz C.M., Gross C., Parente M. & Horgan B. (2014) Acidic Alteration Environments on Mars and Implications for Habitability. AGU Fall Meeting, Abstract #P41A-3885.
127. Englert P., Bishop J.L., Gibson E.K. & Koeberl C. (2014) Don Quixote Pond Sediments: Surface and Subsurface Chemistry and Mineralogy. AGU Fall Meeting, Abstract #P41A-3893.
128. Brown A.J., Bishop J.L., van Kranendonk M., Russell M., Viviano-Beck C. & Moersch J. (2014). AGU Fall Meeting, Abstract #P33C-4041.
129. Michalski J.R., Cuadros J., Dekov V., Dyar M.D., Bishop J.L. & Stephen N. (2014) Constraints on the Crystal Chemistry of Fe/Mg-Rich Smectitic Clays on Mars and Links to Global Alteration Trends. AGU Fall Meeting, Abstract #P34A-01.
130. Gross C., Carter J., Tornabene L.L., Sowe M. & Bishop J.L. (2014) Excavation of Stratified Phyllosilicate-Bearing Rocks in the Northern Plains of Mars. AGU Fall Meeting, Abstract #P41A-3884.
131. Weitz C.M. and Bishop J.L. (2014) Diverse hydrated minerals and deposits at Noctis Labyrinthus: Implications for late Hesperian to Amazonian aqueous activity on Mars. GSA Annual Meeting, Vancouver, BC, Abstract #248959.

132. Davis A.C., Bishop J.L., Veto M., Ruff S.W., Bristow T.F., Gates W.P. & Blake D. (2014) Refining the chemistry of Mars: Comparing VNIR and TIR spectra of clay-bearing rocks. *GSA Annual Meeting*, Vancouver, BC, Abstract #241303.
133. Englert P., Bishop J.L., Patel S., Gibson E.K. & Koeberl C. (2014) Don Juan basin sediments: Surface and subsurface chemistry and mineralogy *GSA Annual Meeting*, Vancouver, BC, Abstract #247208.
134. Michalski J., Cuadros J., Dekov V., Dyar M.D., Bishop J.L. & Stephen N. (2014) Constraints on the crystal chemistry of Martian Fe/Mg-rich smectitic clays: Links to global alteration trends and protoliths. *GSA Annual Meeting*, Vancouver, BC, Abstract #245487.
135. Bishop J.L. and Tirsch D. (2014) VNIR Spectral Properties of Martian Meteorites and Comparison with CRISM Spectra of Mars in the Isidis Basin Region. *Meteoritical Society 77th Annual Meeting*, Abstract #5186.
136. Englert P.E., Bishop J.L. Gibson E.K., Patel S. and Koeberl C. (2014) Don Juan Basin, Wright Valley, Antarctica: Model for Surface Processes on Mars. *Meteoritical Society 77th Annual Meeting*, Abstract #.
137. Bishop J.L., Horgan B., Wray J.J., Loizeau D., Gross C., McGuire P.C., Parente M. & Seelos F. (2014) Composition and Stratigraphy of Acidic or Salty Components at Mawrth Vallis, Mars. *EPSC*, Lisbon, Abstract #694.
138. El-Maarry M.R., Watters W.A., McKeown N.K., Carter J., Noe Dobra E.Z., Bishop J.L., Pommerol A. & Thomas N. (2014) Potential Desiccation Cracks on Mars as Indicators of Paleolacustrine Sites: Implications for Future Exploration. *EPSC*, Lisbon, Abstract #394.
139. Flahaut J., Bishop J.L., Fueten F., Quantin C., Thollot P., van Westrenen W. & Davies G.R. (2014) New hydrated mineral detections in the ILDs of Valles Marineris: Insights into their aqueous history. *EPSC*, Lisbon, Abstract #211.
140. Weitz C.M., Bishop J.L., Baker L.L. & Berman D.C. (2014) Fresh Exposures of Fe-Allophane/Opal in Association with Channels and Debris Aprons in Coprates Chasma, Mars. *EPSC*, Lisbon, Abstract #378.
141. Gross C., Carter J., Sowe M. & Bishop J.L. (2014) Excavation of Altered Sediments in the Northern Plains of Mars. *EPSC*, Lisbon, Abstract #365.
142. Tirsch D., Voigt J., Bishop J.L., Jaumann R. & Tornabene L.L. (2014) Photogeological Mapping of Ancient Aqueous Outcrops at Libya Montes, Mars. *EPSC*. Lisbon, Abstract # 687.
143. Bishop, J. L. & Rampe, E. B. 2014. The presence of nanophase Al-Si-Fe components at Mawrth Vallis indicate varying environmental conditions. *8th Int'l Conf. on Mars*, Pasadena, Abstract #1265.
144. Flahaut, J., Bishop, J. L., Fueten, F., Quantin, C., Thollot, P., van Westrenen, W. & Davies, G. R. (2014) New hydrated phase detections in Valles Marineris: Insights into the canyon's aqueous history. *8th Int'l Conf. on Mars*, Pasadena, Abstract #1411.
145. King, S. J., Bishop, J. L. & Brown, A. J. (2014) Spectral properties of Ca-, Mg-, and Fe- bearing carbonates and implications for Mars. *8th Int'l Conf. on Mars*, Pasadena, Abstract #1177.
146. Bishop, J. L., Englert, P., Patel, S., Tirsch, D., Böttger, U., Hanke, F. & Jaumann, R. (2014) Mineralogical analyses of surface sediments in the Antarctic Dry Valleys. *8th Int'l Conf. on Mars*, Pasadena, Abstract #1271.
147. Flahaut, J., Massé, M., Le Deit, L., Thollot, P., Bibring, J. P., Poulet, F., Quantin, C., Mangold, N., Michalski, J. & Bishop, J. L. (2014) Sulfate-rich deposits on Mars: A review of their occurrences and geochemical implications. *8th Int'l Conf. on Mars*, Pasadena, Abstract #1196.
148. Gross, C., Carter, J., Sowe, M. & Bishop, J. L. (2014) Uplifted sediments in the northern plains of Mars? *8th Int'l Conf. on Mars*, Pasadena, Abstract #1116.
149. Weitz, C. M. & Bishop, J. L. (2014) Diversity of hydrated minerals and deposits at Noctis Labyrinthus: Implications for late Hesperian to Amazonian aqueous activity on Mars. *8th Int'l Conf. on Mars*, Pasadena, Abstract #1222.

150. El-Maarry, M. R., Watters, W. A., McKeown, N. K., Carter, J., Noe Dobrea, E. Z., Bishop, J. L., Pommerol, A. & Thomas, N. (2014) Potential Desiccation Cracks on Mars: A Review of Global Observations using HiRISE. *8th Int'l Conf. on Mars*, Pasadena, Abstract #1230.
151. Roush, T. L., Brown, A. J., Bishop, J. L., Blake, D. & Bristow, T. (2014) Modeling laboratory reflectance spectra of mixtures using optical constants of Mars candidate materials. *8th Int'l Conf. on Mars*, Pasadena, Abstract #1322.
152. Horgan, B., Bishop, J. L., Fraeman, A. A. & Farrand, W. H. (2014) Plateau wetlands at Mawrth Vallis and possible implications for clay and oxide layers in Gale Crater. *8th Int'l Conf. on Mars*, Pasadena, Abstract #1276.
153. Bishop, J. L. & Murad, E. (2014) Spectral properties of akaganéite and schwertmannite and geochemical implications of their presence on Mars. *Goldschmidt Conference*, Abstract #209.
154. Bishop, J. L. (2014) Martian surface mineralogy as an indicator of geochemical environments and potentially habitable sites. *Biosignatures Across Space and Time*.
155. Bishop, J. L. & Rampe, E. B. (2014) The importance of nanophase aluminosilicates at Mawrth Vallis. *Lunar Planet. Sci. Conf. XLV*, Abstract #2068.
156. Bishop, J. L., Ward, M. K., Roush, T. L., Davila, A., Brown, A. J., McKay, C. P., Quinn, R. & Pollard, W. (2014) Spectral properties of Na, Ca-, Mg- and Fe-chlorides and analyses of hydrohalite-bearing samples from Axel Heiberg island. *Lunar Planet. Sci. Conf. XLV*, Abstract #2145.
157. Gross, C., Noel, A. J., Bishop, J. L., Al-Samir, M., Flahaut, J., McGuire, P., Weitz, C. M., Seelos, F. & Murchie, S. (2014) Investigating the mineralogy, morphology and stratigraphy of Mound B in Juventae Chasma, Mars using multiple datasets. *Lunar Planet. Sci. Conf. XLV*, Abstract #1918.
158. Tornabene, L. L., Osinski, G. R., Greenberger, R. N., Bishop, J. L., Cloutis, E. A., Marion, C. L., Mustard, J. F., Pontefract, A. & Ramsey, M. S. (2014) The pre-, syn- and post-impact origin of hydrated phases: a case study based on the remote sensing and ground-truth at the Haughton Impact Structure, Nunavut, Canada. *Lunar Planet. Sci. Conf. XLV*, Abstract #2710.
159. Mann, P., Cloutis, E. A., Greenberger, R. N., Milliken, R. E., Hiroi, T., Mustard, J. F., Klima, R. L., Hibbits, C. A., Plescia, J. B., Bell III, J. F., Roush, T. L., Bishop, J. L. & Ehlmann, B. L. (2014) An interlaboratory UV/VIS/NIR wavelength calibration study. *Lunar Planet. Sci. Conf. XLV*, Abstract #2392.
160. Englert, P., Bishop, J. L., Patel, S., Gibson, E. K., Koeberl, C., Tirsch, D., Boettger, U. & Jaumann, R. (2014) Sediments and soil profiles of Upper Wright Valley, Antarctica. *Lunar Planet. Sci. Conf. XLV*, Abstract #1707.
161. Fenton, L. K., Bishop, J. L., Lafuente, B., Horgan, B. H., Szykiewicz, A., Bustos, D. & King, S. J. (2014) Preliminary results from a field study of the mineralogy of White Sands National Monument Dune Field. *Lunar Planet. Sci. Conf. XLV*, Abstract #2855.
162. King, S. J., Bishop, J. L., Garcia, G. C., Lafuente, B. & Fenton, L. K. (2014) VNIR spectra of gypsum-rich field samples from White Sands New Mexico as an analog study for Olympia Undae, Mars. *Lunar Planet. Sci. Conf. XLV*, Abstract #2284.
163. Lafuente, B., Bishop, J. L., Fenton, L. K., King, S. J., Blake, D., Sarrazin, P., Downs, R. T., Horgan, B. H. & Garcia, G. C. (2014) Mineralogical characterization by XRD of gypsum dunes at White Sands National Monument and application to gypsum detection on Mars. *Lunar Planet. Sci. Conf. XLV*, Abstract #2578.
164. Englert, P., Bishop, J. L., Patel, S., Gibson, E. K., Koeberl, C., Tirsch, D., Boettger, U. & Jaumann, R. (2014) Sediments and soil profiles of Upper Wright Valley, Antarctica. *Lunar Planet. Sci. Conf. XLV*, Abstract #1707.
165. Weitz, C. M., Bishop, J. L. & Baker, L. L. (2014) Fresh exposures of allophane in association with channels and debris aprons in Coprates Chasma, Mars. *Lunar Planet. Sci. Conf. XLV*, Abstract #1386.
166. Carter, J., Viviano, C. E., Le Deit, L., Bishop, J. L. & Loizeau, D. (2014) Orbital detection and implications of akaganéite on Mars. *Lunar Planet. Sci. Conf. XLV*, Abstract #2364.

167. El-Maarry, M. R., Watters, W. A., McKeown, N. K., Carter, J., Noe Dobrea, E. Z., Bishop, J. L., Pommerol, A. & Thomas, N. (2014) Potential desiccation cracks on Mars: A synthesis from modeling, analogue-field studies, and global observations. *Lunar Planet. Sci. Conf. XLV*, Abstract #2530.
168. Blaney, D. L., Murchie, S. L., Green, R. O., Mustard, J. F., Jeganathan, M., Mouroulis, P., Van Gorp, B., Rodriquez, J., Tucker, S., Nastal, J., Glavich, T., Helmlinger, M., Ferdosi, J., Santo, A., Morgan, F., Strobehbeh, K., Seelos, F., Allwood, A., Bishop, J. L., Boardman, J. W., Bridges, N. T., Ehlmann, B. L., Farmer, J. D., Hoehler, T., Johnson, J. R., King, P. L., Lewis, K. W., Mangold, N., Milliken, R., Minitti, M., Smith, M., Vincendon, M. & Wolff, M. J. (2014) MinMap: An instrument concept for the Mars 2020 Mission. *Lunar Planet. Sci. Conf. XLV*, Abstract #2037.
169. Roush, T. L., Brown, A. J., Bishop, J. L., Blake, D. & Bristow, T. (2014) Optical constants of Mars candidate materials used to model laboratory reflectance spectra of mixtures. *Lunar Planet. Sci. Conf. XLV*, Abstract #1380.
170. Davis, A. C., Bishop, J. L., Veto, M., Ruff, S., Bristow, T., Gates, W. & Blake, D. (2014) Comparing VNIR And TIR spectra of clay-bearing rocks. *Lunar Planet. Sci. Conf. XLV*, Abstract #2699.
171. Bishop, J. L. (2013) Rapid geochemical changes at Mawrth Vallis as observed through the mineralogical record. *AGU Fall Meet.*, Abstract P43E-06.
172. King, S. J., Bishop, J. L., Fenton, L. K., Lafuente, B., Garcia, G. C. & Horgan, B. H. (2013) VNIR reflectance spectra of gypsum mixtures for comparison with White Sands National Monument, New Mexico (WSNM) dune samples as an analog study of the Olympia Undae region of Mars. *AGU Fall Meet.*, Abstract P23C-1800.
173. Lafuente, B., Bishop, J. L., Fenton, L. K., King, S. J., Blake, D. F., Sarrazin, P., Downs, R. & Horgan, B. H. (2013) XRD and mineralogical analysis of gypsum dunes at White Sands National Monument, New Mexico and applications to gypsum detection on Mars. *AGU Fall Meet.*, Abstract P23C-1801.
174. Flahaut, J., Bishop, J. L., Fueten, F., Quantin, C., van Westrenen, W. & Davies, G. R. (2013) Mineralogical and morphological study of the chaotic terrains of Valles Marineris, Mars: Insights into their geologic history. *AGU Fall Meet.*, Abstract P23F-1845.
175. Roush, T. L., Bishop, J. L., Brown, A. J., Blake, D. F. & Bristow, T. (2013) Optical constants using two particle size distributions: On-going laboratory efforts to quantitatively address clay abundance on Mars. *AGU Fall Meet.*, Abstract P23F-1862.
176. Englert, P. A., Bishop, J. L., Patel, S., Koeberl, C. & Gibson, E. K. (2013) Sediment and Soil Profiles of Taylor and Wright Valleys, Antarctica, as Analogs for Mars. *AGU Fall Meet.*, Abstract P23B-1778.
177. Bishop, J. L. & Rampe, E. B. (2013) Phyllosilicates and nanophase aluminosilicates at Mawrth Vallis and their geochemical implications. *European Planetary Science Congress*, Abstr. #411.
178. Englert, P., Bishop, J. L., Patel, S., Gibson, E. K. & Koeberl, C. (2013) Soils and weathering processes in Antarctic Dry Valleys. *European Planetary Science Congress*, Abstr. #96.
179. Horgan, B., Kahmann-Robinson, J. A., Bishop, J. L. & Christensen, P. R. (2013) Habitable paleoenvironments preserved in pedogenically altered clay-rich sediments at Mawrth Vallis, Mars. *European Planetary Science Congress*, Abstr. #511.
180. Bishop, J. L., Perry, K. A., Dyar, M. D., Bristow, T. F., Blake, D. F., Brown, A. J. & Peel, S. E. (2013) Characterization of magnesite-nontronite-forsterite mixtures and implications for phyllosilicate and carbonate detections on Mars. *European Planetary Science Congress*, Abstr. #789.
181. Michalski, J. R., Cuadros, J., Dekov, V. M., Bishop, J. L., Fiore, S. & Dyar, M. D. (2013) Constraints on the crystal chemistry of Martian clays from infrared spectroscopy of analogue materials. *European Planetary Science Congress*, Abstr. #1089.
182. Sowe, M., Bishop, J. L., Gross, C. & Walter, S. (2013) Deposits of the Peruvian Pisco Formation compared to layered deposits on Mars. *European Planetary Science Congress*, Abstr. #990.

183. Bishop, J. L., Lane, M. D., Brown, A. J., Hiroi, T., Swayze, G. A. & Lin, J.-F. (2013) Spectral Properties of Ca-, Mg- and Fe-bearing Carbonates. *44th Lunar Planet. Sci. Conf.*, Abstract #1719.
184. Bishop, J. L., Wray, J. J., Ehlmann, B. L., Brown, A. J. & Parente, M. (2013) Refining Martian carbonate chemistries determined through CRISM analyses of several carbonate-bearing outcrops. *44th Lunar Planet. Sci. Conf.*, Abstract #2555.
185. Englert, P., Bishop, J. L., Gibson, E. K. & Koeberl, C. (2013) Subsurface Salts in Antarctic Dry Valley Soils. *44th Lunar Planet. Sci. Conf.*, Abstract #1804.
186. Gross, C., Airo, A., Al-Samir, M., Sowe, M., Nabhan, S., Bishop, J. L. & van Gasselt, S. (2013) Martian crater-lake environments and their potential range of biological deposits. *44th Lunar Planet. Sci. Conf.*, Abstract #2452.
187. Horgan, B., Kahlmann-Robinson, J. A., Bishop, J. L. & Christensen, P. R. (2013) Climate change and a sequence of habitable ancient surface environments preserved in pedogenically altered sediments at Mawrth Vallis, Mars. *Lunar Planet. Sci. Conf.*, Abstract #3059.
188. McGuire, P., Arvidson, R. E., Bishop, J. L., Brown, A. J., Cull, S., Green, R. O., Gross, C., Hash, C. D., Hauber, E., Humm, D. C., Jaumann, R., Le Deit, L., Malaret, E. R., Martin, T. Z., Marzo, G. A., Morgan, M. F., Murchie, S. L., Mustard, J. F., Neukum, G., Parente, M., Platz, T., Roush, T. L., Seelos, F. P., Seelos, K. D., Smith, M. D., Sowe, M., Tirsch, D., Walter, S., Wendt, L., Wiseman, S. M. & Wolff, M. J. (2013) Mapping Minerals on Mars with CRISM: Atmospheric and Photometric Correction for MRDR Map Tiles, Version 2, and Comparison to OMEGA. *44th Lunar Planet. Sci. Conf.*, Abstract #1581.
189. Noel, A. J. & Bishop, J. L. (2013) CRISM Analyses of Juventae Chasma: Mineralogy and Morphology of Interior Layered Deposits at Mound B. *44th Lunar Planet. Sci. Conf.*, Abstract #1736.
190. Roush, T. L., Brown, A. J., Bishop, J. L., Blake, D. F. & Bristow, T. (2013) Initial estimates of optical constants of Mars candidate materials. *44th Lunar Planet. Sci. Conf.*, Abstract #1297.
191. Szumila, I., Bishop, J. L., Fenton, L. K. & Brown, A. J. (2013) Composition and morphology of gypsum dunes in Olympia Undae on Mars. *44th Lunar Planet. Sci. Conf.*, Abstract #2123.
192. Wilhelm, M. B., Bishop, J. L., Wray, J. J. & Ojha, L. (2013) Structural variation in the ancient phyllosilicates at Mawrth Vallis. *44th Lunar Planet. Sci. Conf.*, Abstract #2440.
193. Bishop, J. L., M. D. Lane, and M. D. Dyar (2012) Reflectance spectra of hydrated sulfates, phosphates and perchlorates. *Eos Trans. AGU, 93, Fall Meet. Suppl.*, Abstract P11E-1872.
194. Bishop, J. L., M. D. Lane, and M. D. Dyar (2012), Reflectance spectra of hydrated sulfates, phosphates and perchlorates. *Eos Trans. AGU, 93, Fall Meet. Suppl.*, Abstract P11E-1872.
195. Lane, M., Bishop, J. L. & Dyar, M. D. (2012) Thermal Infrared Emission Measurements of Iron Sulfate and Phosphate Samples for Application to Mars. *Eos Trans. AGU, 93, Fall Meet. Suppl.*, Abstract P11E-1871.
196. Szumila, I., J. L. Bishop, L. K. Fenton, and A. J. Brown (2012), Differing Abundances of Gypsum in the Primary and Secondary Dunes of the Martian Dune Field. *Olympia Undae, Eos Trans. AGU, 93, Fall Meet. Suppl.*, Abstract P11E-1859.
197. Englert, P., J. L. Bishop, E. K. Gibson, and C. Koeberl (2012), Subsurface salts in Antarctic Dry Valley soils as analogs for Mars. *Eos Trans. AGU, 93, Fall Meet. Suppl.*, Abstract P11E-1873.
198. Al-Samir, M., J. L. Bishop, J. Flahaut, and R. Jaumann (2012), Formation and evolution of ILDs at Juventae Chasma and implications from the fractures at Mound B, *Eos Trans. AGU, 93, Fall Meet. Suppl.*, Abstract P11E-1864.
199. Roush, T. L., Bishop, J. L., Brown, A. J., Blake, D. F. & Bristow, T. F. (2012) On-going laboratory efforts to quantitatively address clay abundance on Mars. *Eos Trans. AGU, 93, Fall Meet. Suppl.*, Abstract P13A-1905.
200. Bishop, J. L., P. Englert, C. Koeberl, D. F. Blake, P. Sarrazin, D. Tirsch, L. Hunkins, S. Patel, U. Böttger, and R. Jaumann (2012), Geochemical and mineralogical analyses of Antarctic Dry Valleys

- Soils as an analog for Mars, paper presented at 3rd Conf. on Terrestrial Mars Analogues, Marrakech, Morocco.
201. Horgan, B., Bishop, J. L., Christensen, P. R. & Bell III, J. F. (2012) Seeking constraints on the climate of early Mars from the mineralogy of terrestrial paleosol sequences. *3rd Conf. on Terrestrial Mars Analogues*, Marrakech, Morocco, Abstract.
 202. Sowe, M., Gross, C., Walter, S., Bishop, J. L., Ramsey, M. S. & Al-Samir, M. (2012) The Peruvian Pisco Formation as analogy for layered sulphate deposits on Mars. *3rd Conf. on Terrestrial Mars Analogues*, Marrakech, Morocco, Abstract.
 203. Horgan, B., Bishop, J. L., Christensen, P. R. & Bell III, J. F. (2012) Seeking constraints on the climate of early Mars from the mineralogy of ancient soils preserved at Mawrth Vallis. *GSA Annual mtg*, Abstract 120-9.
 204. Bishop J.L., Loizeau D., McKeown N.K., Saper L.M., Dyar M.D., Des Marais D.J., Parente M. & Murchie S.L. (2012) Early Martian Habitability and Phyllosilicates at Mawrth Vallis. *Third Conference on Early Mars: Geologic, Hydrologic, and Climatic Evolution and the Implications for Life*, Abstract #7014.
 205. Horgan B., Bishop J.L., Christensen P.R. & Bell III J.F. (2012) Potential ancient soils preserved at Mawrth Vallis from comparisons with eastern Oregon Paleosols: Implications for early Martian climate. *Third Conference on Early Mars: Geologic, Hydrologic, and Climatic Evolution and the Implications for Life*, Abstract #7074.
 206. Baker L.L., Strawn D.G., McDaniel P.A., Fairley J.P. & Bishop J.L. (2012) Hydrologic and geochemical controls on nontronite formation in terrestrial Columbia River Basalts and implications for clay formation on Mars. *Third Conference on Early Mars: Geologic, Hydrologic, and Climatic Evolution and the Implications for Life*, Abstract #7011.
 207. Wray J.J., Murchie S.L., Ehlmann B.L., Milliken R.E., Bishop J.L. & Noe Dobrea E.Z. (2012) Expanding the inventory of carbonate-bearing rocks on Mars. *Astrobiology Science Conference*, Abstract #5016.
 208. Bishop J.L., Wray J.J., Lowe D.R., Loizeau D., McKeown N.K., Saper L., Parente M. & Beyer R.A. (2012) Evidence for sedimentary processes at Mawrth Vallis, Mars and Implications for Habitability. *Astrobiology Science Conference*, abs. 5012.
 209. Bishop, J. L. & Rampe, E. B. (2012) Allophane identified at Mawrth Valles in CRISM and TES datasets and implications for the ancient phyllosilicate-rich rocks. *43rd Lunar Planet Sci. Conf.*, Abstract #2277.
 210. Flahaut, J., Quantin, C., Bishop, J. L., Fueten, F., Allemand, P., Mangold, N., Poulet, F. & Bibring, J.-P. (2012) Mineralogic investigation of Capri/Ganges/Eos Chasmata, Mars: Insights into the geologic history of Valles Marineris. *43rd Lunar Planet Sci. Conf.*, Abstract #1823.
 211. Bishop, J. L., Tirsch, D., Tornabene, L. L., McGuire, P. C., Ody, A., Poulet, F., Hash, C., Mustard, J. F., Jaumann, R. & Murchie, S. L. (2012) Fe/Mg-smectite, carbonate and Al-smectite in ancient aqueous outcrops at Libya Montes and their association with fluvial features and mafic rocks. *43rd Lunar Planet Sci. Conf.*, Abstract #2330.
 212. Weitz, C. M. & Bishop, J. L. (2012) Investigation of Layered Sediments at a Proposed Future Landing Site in Ladon Valles. *43rd Lunar Planet Sci. Conf.*, Abstract #1243.
 213. Gross, C., Sowe, M., Wendt, L., Bishop, J. L. & Fairén, A. G. (2012) Phyllosilicates in Bamberg Crater, Mars. *43rd Lunar Planet Sci. Conf.*, Abstract #2356.
 214. Wendt, L., Bishop, J. L. & Neukum, G. (2012) Knob fields in the Terra Cimmeria/Terra Sirenum region of Mars: Stratigraphy, mineralogy and morphology. *43rd Lunar Planet Sci. Conf.*, Abstract #2024.
 215. Brown, A. J., Bishop, J. L., Roush, T. L., Hunkins, L., Bristow, T. & Blake, D. (2012) Controlled study for quantitative clay abundance on Mars. *43rd Lunar Planet Sci. Conf.*, Abstract #1747.
 216. Englert, P., Bishop, J. L., Hunkins, L. D. & Koeberl, C. (2012) Martian soil analogs from Antarctica: Chemical and mineralogical weathering scenarios. *43rd Lunar Planet Sci. Conf.*, Abstract #1743.

217. Sobron, P., Amundsen, H. E. F., Bauer, A., Bishop, J. L., Jordan, F., Jossett, J.-L., Jossett, L., Leveille, R., Pugh, S. M., Schmitz, N., Steele, A. & Wang, A. (2012) In-situ investigation of Devonian Redbed sediments in Bockfjord (Svalbard, Norway) as a Martian analogue. *43rd Lunar Planet Sci. Conf.*, Abstract #2631.
218. Roush, T.L.; J.L. Bishop; A.J. Brown; L. Hunkins; D.F. Blake; T.F. Bristow (2011) A laboratory effort to quantitatively address clay abundance on Mars. *Eos Trans. AGU*, **92**, Fall Meet. Suppl., Abstract #P23B-1710.
219. Bishop J.L., Rampe E.B., Baker L.L., Bish D.L., Abidin A., Henmi T. & Hillier S. (2011) Character of short-range ordered aluminosilicates and their possible presence on Mars. 48th Annual Meeting of The Clay Minerals Society, September 24 - 29, 2011, 31.
220. Lane, M.D.; J.L. Bishop; M.D. Dyar (2011) Iron Sulfates Measured Using Thermal Infrared Emission and Visible-Near Infrared Reflectance Spectroscopy. *Eos Trans. AGU*, **92**, Fall Meet. Suppl., Abstract #P23B-1709.
221. Bishop, J. L., Tornabene L.L., Tirsch D., McGuire P.C., Hash C., Mustard J.F., Murchie S.L. & Jaumann R. (2011) Spectral Analyses of Aqueous Outcrops at Libya Montes and Their Relationship To Nearby Olivine- and Pyroxene-Bearing Rocks *Eos Trans. AGU*, **92**, Fall Meet. Suppl., Abstract #P22A-07.
222. Tirsch, D.; G. Erkeling; J.L. Bishop; R. Jaumann; M. Bamberg (2011) The Libya Montes Region on Mars: Geology, Mineralogy, and Possible Habitable Environments. *Eos Trans. AGU*, **92**, Fall Meet. Suppl., Abstract #P21B-1666.
223. Murchie, S.L.; J.F. Mustard; R.E. Arvidson; B.L. Ehlmann; J. Bibring; J.L. Bishop; J.J. Wray (2011) The Diversity of Aqueous Mineral-Bearing Deposits on Mars (Invited). *Eos Trans. AGU*, **92**, Fall Meet. Suppl., Abstract #P22A-06.
224. Bishop, J. L., Rampe, E. B., Baker, L. L., Bish, D. L., Abidin, A., Henmi, T., Hillier, S. (2011) Character of short-range ordered aluminosilicates and their possible presence on Mars. 48th Annual Meeting of The Clay Minerals Society, September 24 - 29, 2011, Stateline, Nevada, abstract, p. 31.
225. Bishop J.L., Wray J.J., Parente M., Loizeau D., Beyer R.A., Lowe D.R., Saper L. & McKeown N.K. (2011) Sedimentary Features in Phyllosilicate-bearing Outcrops of Crater Rims at Mawrth Vallis, Mars. EPSC-DPS Joint Meeting, Abstract #1704.
226. Wray J.J., Murchie S.L., Ehlmann B.L., Milliken R.E., Bishop J.L., Seelos K.D., Noe Dobrea E.Z., Mustard J.F. & Squyres S.W. (2011) Orbital evidence for iron or calcium carbonates on Mars. EPSC-DPS Joint Meeting, Abstract #1719.
227. Bishop J.L., Parente M. & Hamilton V.E. (2011) Spectral signatures of Martian meteorites and what they can tell us about rocks on Mars. Meteoritical Society 74th annual meeting, Abstract #5393.
228. Englert P.A.J., Bishop J.L., Hunkins L.D. & Koeberl C. (2011) Martian soil analogs from Antarctic Dry Valleys: Elemental abundances and mineralogy signal weathering processes. Meteoritical Society 74th annual meeting, Abstract #5396.
229. Bishop J.L., Saper L., Beyer R.A., Lowe D.R., Wray J.J., McKeown N.K. & Parente M. (2011) Possible sedimentary features in phyllosilicate-bearing rocks at Mawrth Vallis, Mars. *42nd Lunar Planetary Science Conf.*, Abstract #2374.
230. Bishop J.L. & Weitz C.M. (2011) Morphology and mineralogy of light-toned layered deposits on the Juventae Chasma Plateau and the location of a proposed future landing site. *42nd Lunar Planetary Science Conf.*, Abstract #2115.
231. Perry K.A., Bishop J.L., Dyar M.D., Blake D.F., Peel S. & Brown A.J. (2011) Spectral analysis of nontronite-magnesite-olivine mixtures and implications for carbonates on Mars. *42nd Lunar Planetary Science Conf.*, Abstract #1554.
232. Weitz C.M. & Bishop J.L. (2011) A proposed future Mars landing site in Noctis Labyrinthus. *42nd Lunar Planetary Science Conf.*, Abstract #1874.
233. Weitz C.M., Bishop J.L., Thollot P., Mangold N. & Roach L. (2011) Diverse mineralogies in two troughs of Noctis Labyrinthus, Mars. *42nd Lunar Planetary Science Conf.*, Abstract #1724.

234. Saper L. & Bishop J.L. (2011) Reflectance spectroscopy of nontronite and ripidolite mineral mixtures in context of phyllosilicate unit composition at Mawrth Vallis. *42nd Lunar Planetary Science Conf.*, Abstract #2029.
235. Lane M.D., Mertzman S.A., Dyar M.D. & Bishop J.L. (2011) Phosphate minerals measured in the visible-near infrared and thermal infrared: Spectra and XRD analyses. *42nd Lunar Planetary Science Conf.*, Abstract #1013.
236. Jarwin E.R., Dyar M.D., Lane M.D., Bishop J.L. & Marchand G.J. (2011) Inter-relationships among Mössbauer parameters of phosphate minerals and crystal structures. *42nd Lunar Planetary Science Conf.*, Abstract #1259.
237. Baker L.L., Strawn D.G., McDaniel P.A., Nickerson R.N., Bishop J.L., Ming D.W. & Morris R.V. (2011) Poorly crystalline, iron-bearing aluminosilicates and their importance on Mars. *42nd Lunar Planetary Science Conf.*, Abstract #1939.
238. Bishop, J. L. (2010) Characterizing Martian Soils: Correlating Orbital Observations with Chemistry and Mineralogy from Landed Missions. *Eos Trans. AGU*, **91**, Fall Meet. Suppl., Abstract #P51F-02.
239. McKeown, N. K., Bishop, J. L., Cuadros, J., Hillier, S. & Parente, M. (2010) Hydrated Silica at Mawrth Vallis and Implications for Past Environment. *Eos Trans. AGU*, **91**, Fall Meet. Suppl., Abstract #P54A-04.
240. Bishop, J. L., Hiroi, T., Cloutis, E. A., Lane, M. D., Freeman, W., Marchis, F., Emery, J. P., Jenniskens, P. & Shaddad, M. H. (2010) Spectroscopy of Almahata Sitta and Goalpara Meteorites: Implications for Ureilite Composition and Association with Asteroids. *Bulletin of the American Astronomical Society*, **42**, 1059.
241. Freeman, W., Bishop, J. L., Marchis, F., Emery, J. P., Reiss, A. E., Hiroi, T., Barrado y Navascués, D., Shaddad, M. H. & Jenniskens, P. (2010) Investigation of the origin of 2008 TC3 through spectral analysis of F-type asteroids and lab spectra of Almahata Sitta and mineral mixtures. *Bulletin of the American Astronomical Society*, **42**, 1059.
242. Bishop, J. L., McKeown, N. K., Parente, M., Bibring, J. P., Loizeau, D., Mangold, N., Michalski, J. R., Noe Dobrea, E. Z., Poulet, F., Wray, J. J., Des Marais, D. J., Murchie, S. L. & Mustard, J. F. (2010) Phyllosilicate-bearing Rocks at Mawrth Vallis, Mars, and Implications for Habitable Environments and Biomarkers. *European Planetary Science Congress*, **5**, Abstract #177.
243. McGuire, P. C., Arvidson, R. E., Bishop, J. L., Brown, A. J., Cull, S., Green, R. O., Gross, C., Hash, C., Hauber, E., Humm, D., Jaumann, R., Le Deit, L., Malaret, E., Martin, T. Z., Marzo, G. A., Morgan, M. F., Murchie, S. L., Mustard, J. F., Neukum, G., Parente, M., Platz, T., Roush, T. L., Seelos, F. P., Seelos, K. D., Smith, M. D., Sowe, M., Tirsch, D., Walter, S., Wendt, L., Wiseman, S. J. & Wolff, M. J. (2010) Mapping Minerals on Mars with CRISM: Atmospheric, Thermal, and Photometric Correction for MRDR Map Tiles and Comparison to OMEGA. *European Planetary Science Congress*, **5**, Abstract #163.
244. Bishop, J. L., Makarewicz, H. D., Gates, W. P., McKeown, N. K. & Hiroi, T. (2010) Beidellites: Spectral properties and importance for Mars. *41st Lunar Planet Sci. Conf.*, Abstract #2080.
245. Bishop, J. L., Makarewicz, H. D., Perry, K. A., McKeown, N. K., Parente, M., Tornabene, L. L., Swayze, G. A., Clark, R. N., Mustard, J. F., Murchie, S. L. & McEwen, A. S. (2010) Mineralogy of the Libya Montes and the Southern Isidis Planitia region: CRISM detection of clay, carbonate, olivine and pyroxene, and correlation with HiRISE imagery. *41st Lunar Planet Science Conf.*, Abstract #2147.
246. Perry, K. A., Bishop, J. L. & McKeown, N. K. (2010) Mineralogy of Libya Montes, Mars, and applications of phyllosilicate-carbonate-olivine mixtures. *41st Lunar Planet Sci. Conf.*, Abstract #2605.
247. Weitz, C. M., Bishop, J. L., Roach, L., Milliken, R. E. & Rodriguez, J. A. (2010) Mineralogy and morphology of light-toned deposits in Noctis Labyrinthus. *41st Lunar Planet Science Conf.*, Abstract #2240.

248. Parente, M. & Bishop, J. L. (2010) Extracting endmember spectra from CRISM images: Comparison of new DiREX Image transform technique with MNF. *41st Lunar Planet Science Conf.*, Abstract #2633.
249. McKeown, N. K., Bishop, J. L., Amador, E., Cuadros, J., Hillier, S., Makarewicz, H. D., Parente, M. & Silver, E. (2010) Spectral mixtures of clays and their impact on CRISM mineral identifications. *41st Lunar Planet Science Conf.*, Abstract #2510.
250. Hiroi, T., Jenniskens, P., Bishop, J. L. & Shatir, T. (2010) Reflectance spectroscopy of Almahata Sitta meteorite samples from asteroid 2008 TC3. *41st Lunar Planet Science Conf.*, Abstract #1148.
251. Bishop, J. L., McKeown, N. K., Parente, M., Makarewicz, H. D., Mancinelli, R. L., Marais, D. J. D., Murchie, S. L. & Mustard, J. F. (2009) Potential for Biomarkers in Phyllosilicate-bearing Rocks at Mawrth Vallis, Mars. *Eos Trans. AGU*, **90**, Fall Meet. Suppl., Abstract #P41B-05.
252. Wendt, L., Combe, J.-P., McGuire, P. C., Bishop, J. L. & Neukum, G. (2009) Linear spectral unmixing of near-infrared hyperspectral data from Juventae Chasma, Mars. *SPIE Remote Sensing*, doi: 10.1117/12.830095.
253. McKeown, N. K., Bishop, J. L., J. Wray, J., Parente, M. & Silver, E. A. (2009) Rock Morphologies of the Mawrth Vallis Landing Site Region, *Eos Trans. AGU*, **90**, Fall Meet. Suppl., Abstract #P43D-1458.
254. Lane, M. D., Glotch, T. D., Dyar, M. D., Pieters, C. M., Klima, R., Hiroi, T., Bishop, J. L. & Sunshine, J. M. (2009) Midinfrared Multi-technique Spectroscopy of Synthetic Olivines (Forsterite to Fayalite), *Eos Trans. AGU*, **90**, Fall Meet. Suppl., Abstract #P23A-1232
255. Weitz, C. M., Bishop, J. L., Roach, L. & Rodriguez, J. P. (2009) Mineralogy and Morphology of Light-toned Layered Deposits in Pits of Noctis Labyrinthus, *Eos Trans. AGU*, **90**, Fall Meet. Suppl., Abstract #P21C-02.
256. Perry, K. A., Bishop, J. L. & McKeown, N. K. (2009) Mineralogy of Libya Montes, Mars. *Eos Trans. AGU*, **90**, Fall Meet. Suppl., Abstract #P13A-1244.
257. Wiseman S.M., Arvidson R.E., Morris R.V., Poulet F., Bishop J.L., Andrews-Hanna J.C., Marais D.J.D., Griffes J.L., Murchie S.L. & Seelos F.P. (2009) Evidence for Unconformable Deposition of Hydrated Sulfate-bearing Evaporitic Deposits in Northern Sinus Meridiani, Mars, *Eos Trans. AGU*, **90**, Fall Meet. Suppl., Abstract #P13A-1268.
258. Makarewicz H.D., Parente M., Perry K.A., McKeown N.K. & Bishop J.L. (2009) Characterizing Mafic, Clay, and Carbonate Components found in MRO/CRISM Images in Libya Montes, Mars, using Advances in Automated Gaussian Modeling of Spectral Features, *Eos Trans. AGU, Fall Meet. Suppl.*, Abstract #P13A-1245.
259. Lichtenberg K.A., Arvidson R.E., Morris R.V., Murchie S.L., Bishop J.L., Fernandez-Remolar D.C., Glotch T.D., Dobreá E.Z.N., Mustard J.F., Andrews-Hanna J.C. & Roach L. (2009) Evidence for Multiple Depositional Periods in Aram Chaos, Mars, *Eos Trans. AGU, Fall Meet. Suppl.*, Abstract #P13A-1269.
260. Parente M., Bayley L., Hunkins L., McKeown N.K. & Bishop J.L. (2009) Automated Texture Classification of the Mawrth Vallis Landing Site Region, *Eos Trans. AGU, Fall Meet. Suppl.*, Abstract #P13A-1271.
261. Bishop J.L. (2009) Characterizing the aqueous materials identified by CRISM on Mars through analysis of terrestrial analog sites, *Workshop on the Microstructure of the Martian Surface*, Copenhagen, Abstract #9013.
262. Bishop J.L., McKeown N.K., Mustard J.F., Buczkowski D.L., Clark R.N., Des Marais, D.J., Ehlmann B.L., Marzo G.A., Milliken R.E., Murchie S.L., Noe Dobreá E., Parente M., Roush T.L., Swayze G.A. & Wray J.J. and the CRISM Team (2009) Distribution and variability of phyllosilicates on Mars observed by MRO/CRISM and what they can tell us about early martian chemistry, *The New Martian Chemistry Workshop*, Boston, Abstract #8003.
263. Makarewicz H.D., Parente M. & Bishop J.L. (2009) Deconvolution of VNIR Spectra Using Modified Gaussian Modeling (MGM) with Automatic Parameter Initialization (API) Applied to

- CRISM. IEEE WHISPERS First Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing, Grenoble, France, doi: 10.1109/WHISPERS.2009.5289046
264. Parente M., Clark J.T., Brown A.J. & Bishop J.L. (2009) Simulation of the image generation process for CRISM spectrometer data. IEEE WHISPERS First Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing, Grenoble, France, doi: 10.1109/WHISPERS.2009.5289001.
265. Bishop J.L., McKeown N.K., Mustard J.F., Buczkowski D.L., Clark R.N., Ehlmann B.L., Marzo G.A., Milliken R.E., Murchie S.L., Noe Dobrea E., Parente M., Roush T.L., Swayze G.A. & Wray J.J. (2009) Distribution and variability of phyllosilicates on Mars observed by MRO/CRISM. *International Clay Conference*, Castellana Marina, Italy, Abstract #MC1b.Mon.L4.
266. McKeown N.K., Bishop J.L., Noe Dobrea E. & Silver E. (2009) Characteristics of clay units in the Mawrth Vallis region, Mars. *International Clay Conference*, Castellana Marina, Italy.
267. Murchie S.L., Seelos F.P., Buczkowski D.L., Mustard J.F., Ehlmann B.L., Milliken R.E., Noe Dobrea E., Bishop J.L., McKeown N.K., Wiseman S., Arvidson R.E., Wray J.J., Swayze G.A. & Clark R.N. (2009) Diversity of Martian phyllosilicate deposits from orbital remote sensing. *International Clay Conference*, Castellana Marina, Italy.
268. Mustard J.F., Ehlmann B.L., Murchie S.L., Fraeman A.A., Milliken R., Noe Dobrea E.Z., Bishop J.L., Arvidson R.E., Swayze G.A. & Clark R.N. (2009) Character of Martian phyllosilicate-bearing early crust from orbital remote sensing. *International Clay Conference*, Castellana Marina, Italy.
269. Amador E.S., Bishop J.L., McKeown N.K., Parente M. & Clark J.T. (2009) Detection of Kaolinite at Mawrth Vallis, Mars: Analysis of Laboratory mixtures and development of remote sensing parameters. *40th Lunar Planet Science Conf.*, Abstract # 2188.
270. Bishop J.L., Dyar M.D., Majzlan J. & Lane M.D. (2009) Spectral properties of copiapites with variable cation compositions and implications for characterizations of copiapite on Mars. *40th Lunar Planet Science Conf.*, Abstract #2073.
271. Bishop J.L., McKeown N.K., Des Marais D., Noe Dobrea E.Z., Parente M., Seelos F.P., Murchie S.L. & Mustard J.F. (2009) The ancient phyllosilicates at Mawrth Vallis and what they can tell us about possible habitable environments on early Mars. *40th Lunar Planet Science Conf.*, Abstract #2239.
272. Dyar M.D., Holden J.F., Bishop J.L. & Lane M.D. (2009) Spectroscopic characterization of hydrothermal sulfide chimneys at the Juan de Fuca Ridge. *40th Lunar Planet Science Conf.*, Abstract #2221.
273. Dyar M.D., Murad E., Sklute E.C., Bishop J.L. & Muirhead A.C. (2009) Mössbauer and reflectance spectroscopy of iron oxide mixtures. *40th Lunar Planet Science Conf.*, Abstract #2209.
274. Lane M.D., Glotch T.D., Dyar M.D., Bishop J.L., Pieters C.M., Klima R., Hiroi T. & Sunshine J.M. (2009) Thermal infrared spectroscopy of a synthetic olivine series (forsterite-fayalite) and interpretation of the Nili Fossae, Syrtis Major, and Isidis regions of Mars. *40th Lunar Planet Science Conf.*, Abstract #2469.
275. Lichtenberg K.A., Arvidson R.E., Morris R.V., Murchie S.L., Bishop J.L., Glotch T.D., Noe Dobrea E., Mustard J.F., Andrews-Hanna J. & Roach L.H. (2009) Stratigraphy and relationship of hydrated minerals in the layered deposits of Aram Chaos, Mars. *40th Lunar Planet Science Conf.*, Abstract #2326.
276. Makarewicz H.D., Parente M. & Bishop J.L. (2009) Determining the composition of phyllosilicates using automated Gaussian modeling of spectral features. *40th Lunar Planet Science Conf.*, Abstract #1358.
277. McKeown N.K., Noe Dobrea E.Z., Bishop J.L. & Silver E.A. (2009) Coordinated lab, field, and aerial study of the Painted Desert, AZ, as a potential analog site for phyllosilicates at Mawrth Vallis, Mars. *40th Lunar Planet Science Conf.*, Abstract #2509.
278. McKeown N.K., Bishop J.L., Wray J.J., Noe Dobrea E.Z. & Silver E.A. (2009) Textures and morphologies of phyllosilicate-bearing units at Mawrth Vallis. *40th Lunar Planet Science Conf.*, Abstract #2433.

279. Muirhead A.C., Bishop J.L. & McKeown N.K. (2009) The VNIR spectral properties of iron oxide/oxyhydroxide mixtures and application to iron oxides in the Mawrth Vallis region of Mars. *40th Lunar Planet Science Conf.*, Abstract #1652.
280. Noe Dobrea E.Z., McKeown N.K., Bishop J.L. & Silver E. (2009) Terrestrial analog studies of Mawrth Vallis, Mars: the Painted Desert. *40th Lunar Planet Science Conf.*, Abstract #2165.
281. Parente M., Clark J.T., Bishop J.L. & Brown A.J. (2009) Simulating CRISM images: a tool for researchers in testing and confirming geologic analyses of CRISM images of Mars. *40th Lunar Planet Science Conf.*, Abstract #2487.
282. Roach L.H., Mustard J.F., Murchie S.L., Bishop J.L., Ehlmann B.L., Lichtenberg K.A. & Parente M. (2009) Sulfate and hematite stratigraphy in Capri Chasma, Valles Marineris. *40th Lunar Planet Science Conf.*, Abstract #1826.
283. Roach L.H., Mustard J.F., Murchie S.L., Bishop J.L., Ehlmann B.L., Milliken R.E., Lichtenberg K.A. & Parente M. (2009) Hydrated mineral stratigraphy in Ius Chasma, Valles Marineris. *40th Lunar Planet Science Conf.*, Abstract #1834.
284. Wray J.J., Milliken R.E., Swayze G.A., Dundas C.M., Bishop J.L., Murchie S.L., Seelos F.P. & Squyres S.W. (2009) Columbus Crater and other possible paleolakes in Terra Sirenum, Mars. *40th Lunar Planet Science Conf.*, Abstract #1896.
285. Bishop, J. L., M. Parente, M. Lane, M. D. Dyar, D. L. Bish, P. Sarrazin, P. King, N. McKeown, R. Milliken, L. Roach, G. Swayze, C. Weitz, S. Murchie, and J. F. Mustard (2008), Coordinating CRISM Observations of Sulfates near Valles Marineris with the Subsurface Bright Salty Soils Exposed in Gusev Crater via Lab Experiments. *AGU Fall Meeting*, Abstract #B13E-04.
286. Makarewicz H.D., Parente M. & Bishop J.L. (2008) Characterizing Mafic and Clay Components in Libya Montes, Mars, using Automated Gaussian Modeling of Spectral Features found in MRO/CRISM Images. *AGU Fall Meeting*, Abstract #P41B1378M.
287. Murchie S., Seelos F., Roach L., Mustard J., Milliken R., Arvidson R., Wiseman S., Lichtenberg K., Andrews-Hanna J., Bibring J., Bishop J.L., Parente M. & Morris R. (2008) New evidence for the origin of layered deposits in Valles Marineris. *AGU Fall Meeting*, Abstract #P44A-02.
288. Roach L.H., Mustard J.F., Murchie S.L., Milliken R.E., Crowley J.K., Bishop J.L. & Arvidson R.E. (2008) Sulfates and Other Hydrated Minerals in Ius Chasma, Valles Marineris and Implications for Water Geochemistry. *AGU Fall Meeting*, Abstract #P43B-1394.
289. Lane M.D., Bishop J.L., Dyar M.D., King P.L. & Hyde B.C. (2008) Iron sulfate and sulfide spectroscopy at thermal infrared wavelengths for application to Mars. *AGU Fall Meeting*, Abstract #P43B-1398.
290. Knutson J., Dyar M.D., Sklute E.C., Lane M.D. & Bishop J.L. (2008) Using Crystal Structure Groups to Understand Mössbauer parameters of Ferric Sulfates. *AGU Fall Meeting*, Abstract #P43B-1403.
291. Clark R.N., Swayze G.A., Murchie S.L., Mustard J.F., Milliken R.E., Ehlmann B.L., McKeown N.K., Calvin W.M., Wray J.J. & Bishop J.L. (2008) Diversity of Mineralogy and Occurrences of Phyllosilicates on Mars. *AGU Fall Meeting*, Abstract #P43D-04.
292. Ehlmann B.L., Mustard J.F., Murchie S.L., Poulet F., Bishop J.L. & Team C.S. (2008) Orbital Identification of Carbonate-Bearing Rocks on Mars. *AGU Fall Meeting*, Abstract #P43D-05.
293. McKeown N.K., Bishop J.L., Noe Dobrea E.Z., Parente M., Ehlmann B.L., Mustard J.F., Murchie S.L., Bibring J. & Silver E. (2008) Phyllosilicates in Mawrth Vallis: Implications for a past aqueous environment *AGU Fall Meeting*, Abstract #P43D-06.
294. Lichtenberg K., Arvidson R., Bishop J., Glotch T.D., Noe Dobrea E., Murchie S., Mustard J., Roach L. & CRISM Team t. (2008) Mg- and Fe-sulfate layers in Aram Chaos, Mars. *AGU Fall Meeting*, Abstract #P44A-09.
295. Tucker J.M., Dyar M.D., Schaefer M.W., Clegg S.M., Barefield J.E., Wiens R.C. & Bishop J.L. (2008) Laser-induced Breakdown Spectroscopy of Phyllosilicates for ChemCam Calibration. *AGU Fall Meeting*, Abstract #P53A-1429.

296. Marzo G.A., Davila A.F., Fairen A.G., Roush T.L., Bishop J.L., Dohm J.M. & McKay C.P. (2008) Evidence for Relatively Recent Hydrothermal Activity Due to an Impact within the Syrtis Major *AGU Fall Meeting*, Abstract #P53A-1438.
297. Parente M. & Bishop J.L. (2008) A new technique for identification of minerals in hyperspectral images. Application to robust characterization of phyllosilicate deposits at Mawrth Vallis using CRISM images. In *AGU Fall Meeting*, pp. Abstract #P53B-1442.
298. Wiseman S.M., Arvidson R.E., Morris R.V., Poulet F., Bishop J.L., Andrews-Hanna J.C., Marais D.J.D., Griffes J.L., Murchie S.L. & Seelos F.P. (2009) Evidence for Unconformable Deposition of Hydrated Sulfate-bearing Evaporitic Deposits in Northern Sinus Meridiani, Mars. *AGU Fall Meeting*, Abstract #P53B-1448.
299. Bishop, J. L., McKeown, N. K., Noe Dobrea, E. Z., Murchie, S. L. & Mustard, J. F. (2008) Aqueous processes and active chemistry inferred from the phyllosilicate record at Mawrth Vallis, Mars. *First Workshop on Martian Phyllosilicates: Recorders of Aqueous Processes*, Paris, France, Abstract #7038.
300. Murchie, S. L., Mustard, J. F., Ehlmann, B. L., Milliken, R. E., Bishop, J. L. & Seelos, F. P. (2008) An overview of classes of Martian phyllosilicate deposits from orbital remote sensing. *First Workshop on Martian Phyllosilicates: Recorders of Aqueous Processes*, Paris, France, Abstract #7029.
301. Mustard, J. F., Murchie, S. L., Ehlmann, B. L., Milliken, R. E., Bibring, J.-P., Poulet, F., Bishop, J. L., Noe Dobrea, E. Z. & Roach, L. H. (2008) Geologic environments of phyllosilicate deposits from orbit. *First Workshop on Martian Phyllosilicates: Recorders of Aqueous Processes*, Paris, France, Abstract #7026.
302. Parente, M., Bishop, J. L. & Cuadros, J. (2008) Lab experiments to simulate coatings on phyllosilicate rocks and comparison with CRISM data of Mars. *First Workshop on Martian Phyllosilicates: Recorders of Aqueous Processes*, Paris, France, abs. #7039.
303. Roach, L. H., Mustard, J. F., Murchie, S. L., Milliken, R. E., Lichtenberg, K. A., Ehlmann, B. L., Bishop, J. L. & Arvidson, R. E. (2008) New hydrated spectral phase and stratigraphy of smectite clays, sulfates and other hydrated minerals in Ius Chasma, Valles Marineris. *First Workshop on Martian Phyllosilicates: Recorders of Aqueous Processes*, Paris, France, Abstract #7017.
304. Tucker, J. M., Dyar, M. D., Clegg, S. M., Wiens, R. C., Barefield II, R. C., Schaefer, M. W. & Bishop, J. L. (2008) Quantitative chemistry of phyllosilicate minerals using laser-induced breakdown spectroscopy. *First Workshop on Martian Phyllosilicates: Recorders of Aqueous Processes*, Paris, France, abs. #7028.
305. McKeown, N. K., Bishop, J. L., Cuadros, J., Amador, E. & Silver, E. (2008) Characterization of phyllosilicate units at Mawrth Vallis: comparison of CRISM observations and intimate phyllosilicate mixtures. *First Workshop on Martian Phyllosilicates: Recorders of Aqueous Processes*, Paris, France, Abstract #7033.
306. Bishop J. L., Alpers C. N., Coleman M. L., Sobron P., Lane M. D., Dyar M. D. & Schiffman P. (2008) Sulfates on Mars: Comparison with spectral properties of analog sites. *Goldschmidt Conf.*, Abstract #18D_1668.
307. Bishop J. L., Lane M. D., Dyar M. D., Parente M., Roach L. A., Murchie S. L. & Mustard J. F. (2008) Sulfates on Mars: How recent discoveries from CRISM, OMEGA and the MERs are changing our view of the planet. *Goldschmidt Conf.*, Abstract #18D_1678.
308. Bishop J. L., McKeown N. K., Noe Dobrea E. Z., Ehlmann B. L., Michalski J. R., Milliken R. E., Poulet F., Mustard J. F., Swayze G. A., Murchie S. L., Bibring J.-P. & the CRISM Team (2008) Phyllosilicate diversity observed by CRISM in Mawrth Vallis: Identification of nontronite, montmorillonite, kaolinite, and hydrated silica. *39th Lunar Planet Science Conf.*, Abstract #2124.
309. Bishop J. L., Parente M., Weitz C., Noe Dobrea E. Z., Calvin W. M., Milliken R. E., Roach L. A., Murchie S. L., McKeown N. K., Mustard J. F. & the CRISM Team, (2008) Characterization of light-toned sulfate and hydrated silica layers at Juventae Chasma using CRISM, OMEGA, HiRISE and CTX Images. *39th Lunar Planet Science Conf.*, Abstract #2334.

310. McKeown N.K., Bishop J.L., Noe Dobrea E.Z., Ehlmann B.L., Michalski J.R., Mustard J.F., Murchie S.L., Silver E., Bibring J.-P. & Poulet F. (2008) The distribution of phyllosilicates in Mawrth Vallis as seen by CRISM. *39th Lunar Planet Science Conf.*, Abstract #1400.
311. Heldmann J., Conley C., Brown A.J., Fletcher L., Bishop J.L. & McKay C.P. (2008) Atacama Desert mudflow as an analog for recent gully activity on Mars. *39th Lunar Planet Science Conf.*, Abstract #2214.
312. Ehlmann B.L., Mustard J.F., Bishop J.L., Swayze G.A., Roach L.H., Clark R.N., Milliken R.E., Poulet F., Murchie S.L. & the MRO CRISM Team (2008) Distinct provinces of aqueous alteration in the western Isidis region identified with MRO-CRISM. *39th Lunar Planet Science Conf.*, Abstract #2326.
313. Milliken R.E., Swayze G.A., Arvidson R., Bishop J.L., Clark R., Ehlmann B.L., Grotzinger J., Morris R., Murchie S., Mustard J. & Weitz C. (2008) Spectral evidence for sedimentary silica on Mars. *39th Lunar Planet. Science Conf.*, Abstract #2025.
314. Michalski J.R., Bibring J.-P., Bishop J.L., Golombek M., Loizeau D., Mangold N., Noe Dobrea E.Z. & Poulet F. (2008) The case for mawrth: rationale for selecting the mawrth vallis region as the MSL landing site. *39th Lunar Planet. Science Conf.*, Abstract #1634.
315. Mustard J.F., Murchie S.L., Ehlmann B.L., Milliken R.E., Bibring J.-P., Poulet F., Bishop J.L., Roach L., Seelos F. & CRISM Team t. (2008) Regional geology and stratigraphy of the Nili Fossae-Syrtis-Isidis region: New insights from CRISM and MRO data. *39th Lunar Planet. Science Conf.*, Abstract #1701.
316. Roach L.H., Mustard J.F., Murchie S.L., Aharonson O., Lowenstein T.K., Weitz C.M., Arvidson R.E., Bishop J.L., Lewis K.W., Lichtenberg K., Seelos F. & CRISM Team t. (2008) Sulfate mineral stratigraphy in Valles Marineris Interior Layered Deposits. *39th Lunar Planet. Science Conf.*, Abstract #1891.
317. Roach L.H., Mustard J.F., Murchie S.L., Bibring J.-P., Arvidson R.E., Bishop J.L., Milliken R.E. & Seelos F. (2008) Constraints on the rate of sulfate phase changes in Valles Marineris Interior Layered Deposits. *39th Lunar Planet. Science Conf.*, Abstract #1823.
318. Clark J.T., Bishop J.L., Parente M., Brown A.J. & McKeown N.K. (2008) Constraining sulfate abundances on Mars using CRISM spectra and laboratory mixtures. *39th Lunar Planet. Science Conf.*, Abstract #1540.
319. Noe Dobrea E.Z., Bishop J.L., McKeown N.K., Swayze G.A., Michalski J.R., Poulet F., Bibring J.-P., Mustard J., Ehlmann B.L., Arvidson R., Morris R.V., Murchie S., McEwen A.S., Malaret E. & Hash C. (2008) The hydrated outcrops of the Mawrth Vallis region: CRISM analysis of extent and alteration zones. *39th Lunar Planet. Science Conf.*, Abstract #1077.
320. Honma A., L. B.J., McKeown N.K., Brown A.J. & Parente M. (2008) Constraining phyllosilicate abundances on Mars using CRISM spectra and laboratory mixtures. *39th Lunar Planet. Science Conf.*, Abstract #1457.
321. Brown A.J., Bish D.L. & Bishop J.L. (2008) Dehydration of ferrous sulfates monitored by XRD - implications for chemin. *39th Lunar Planet. Science Conf.*, Abstract #1008.
322. Bishop J. L., Garcia N., Dyar M. D., Parente M., Murad E., Mancinelli R. L., Drief A., and Lane M. D. (2008) Maghemite as an astrobiology indicator on the Martian surface: Reduction of iron oxides by early organic compounds to generate magnetic phases, *Geophysical Research Abstracts*, 10, EGU2008-A-11557.
323. Bishop J. L., et al. (2008) Characterization of aqueous processes on Mars through identification of phyllosilicates, sulfates and hydrated silica using CRISM hyperspectral images, *Geophysical Research Abstracts*, 10, EGU2008-A-11529.
324. Bishop J. L., Bibring J.-P., Brown A. J., Clark R. N., Dyar M. D., Ehlmann B. L., Milliken R. E., Murchie S. L., Mustard J. F., Pelkey S. M., Swayze G. A. & the CRISM Team (2007) Characterization of phyllosilicates on Mars: A comparison of CRISM hyperspectral data of Mawrth Vallis with phyllosilicates and hydrated materials. *44th Annual Mtg Clay Minerals Society*.

325. Bishop J. L., Catling D. C. & Parente M. (2007). Juventae Chasma as a Potential MSL Landing Site. *2nd MSL Landing Site Workshop*, http://marsoweb.nas.nasa.gov/landingsites/msl/workshops/2nd_workshop/program.html.
326. Bishop J. L., Lane M. D., Dyar M. D. & Brown A. J. (2007). Multi-spectral study of phyllosilicates and applications to Mars. *38th Lunar Planet. Science Conf.*, Abstract #1815.
327. Bishop J. L., Murchie S. L., Brown A. J., Pelkey S. M., Roach L. A., Mustard J. F., Bibring J.-P. & the CRISM Team (2007). Sulfates in Juventae Chasma as seen by CRISM. *38th Lunar Planet. Science Conf.*, Abstract #2252.
328. Parente M., Bishop J.L. & Bell J.F., III. (2007) Spectral unmixing for sulfate identification in Pancam images. *38th Lunar Planet. Science Conf.*, Abstract #1934.
329. Murchie S., Bishop J., Humm D., Morris R., Pelkey S., Seelos F. & Seelos K. (2007) Characteristics of the Mars Pathfinder landing site from CRISM hyperspectral imaging. *38th Lunar Planet. Science Conf.*, Abstract #1478.
330. Murchie S., Bibring J.-P., Bishop J., Humm D., Milliken R.E., Mustard J., Pelkey S., Roach L.A., Seelos F. & Seelos K. (2007) First CRISM observations of layered material in western Candor Chasma. *38th Lunar Planet. Science Conf.*, Abstract #1476.
331. Lane M.D., Dyar M.D. & Bishop J.L. (2007) Spectra of phosphate minerals as obtained by visible-near infrared reflectance, thermal infrared emission, and Mössbauer laboratory analyses. *38th Lunar Planet. Science Conf.*, Abstract #2210.
332. Lane M.D., Bishop J.L., Dyar M.D., Parente M., King P.L. & Hyde B.C. (2007) Identifying the phosphate and ferric sulfate minerals in the Paso Robles soils (Gusev Crater, Mars) using an integrated spectral approach. *38th Lunar Planet. Science Conf.*, Abstract #2176.
333. Klima R., Pieters C., Sunshine J., Hiroi T., Bishop J., Lane M.D., Dyar M.D. & Treiman A.H. (2007) Coordinated spectroscopic and petrologic investigation of LAP 04840: First results of infrared, thermal and Raman spectroscopy. *38th Lunar Planet. Science Conf.*, Abstract #1710.
334. Dyar M.D., Sklute E.C., Schaefer M.W. & Bishop J.L. (2007) Mössbauer spectroscopy of clay minerals at variable temperatures. *38th Lunar Planet. Science Conf.*, Abstract #2282.
335. Brown A.J., Byrne S., Roush T., Tornabene L.L., Herkenhoff K.E., Bishop J.L., Hansen C., Green R.O., Russell P., McEwen A.S., Murchie S.L., CRISM Team t. & HiRISE Team t. (2007) Evolution of water ice mound deposit in "Louth" crater as observed by CRISM and HiRISE. *38th Lunar Planet. Science Conf.*, Abstract #2262.
336. Brown A.J., Byrne S., Roush T., Herkenhoff K.E., Bishop J.L., Hansen C., Green R.O., Russell P., McEwen A.S., Murchie S.L., CRISM Team t. & HiRISE Team t. (2007) High resolution observations of Korolev crater and Mrs Chippys Ring during summer by CRISM and HiRISE. *38th Lunar Planet. Science Conf.*, Abstract #2308.
337. Bishop J. L., Murchie S. L., Tornabene L. L., Pelkey S. M., Gulick V. C., Ehlmann B. L., Mustard J. F., Brown A. J. & the CRISM Team (2007) Characterization of phyllosilicates in Libya Montes and the southern Isidis Planitia region using CRISM and HiRISE images. *7th Int'l Mars Conf.*, Abstract #3294.
338. Bishop J. L., Noe Dobrea E. Z., Murchie S. L., Weitz C. M., Calvin W. M., Roach L. A., Pelkey S. M., Brown A. J., Mustard J. F., Bibring J.-P. & the CRISM Team (2007) Sulfates and mafic minerals in Juventae Chasma as seen by CRISM in coordination with OMEGA, HiRISE and Context images. *7th Int'l Mars Conf.*, Abstract #3350.
339. Ehlmann B.L., Mustard J.F., Bishop J.L., Swayze G.A., Pelkey S.M., Clark R.N., Milliken R.E., Poulet F., Calvin W.M., Murchie S.L., Roach L.H., Griffes J.L. & MRO CRISM Team t. (2007) New secondary minerals detected by MRO CRISM and their geologic settings: kaolinite, chlorite, illite/muscovite, and the possibility of serpentine or carbonate in nili fossae. *7th Int'l Mars Conf.*, Abstract #3270.

340. Lane M.D., Bishop J.L., Dyar M.D., Parente M., King P.L. & Hyde B.C. (2007) The ferric sulfate and ferric phosphate minerals in the light-toned Paso Robles rover track soils: A multi-instrument analysis. *7th Int'l Mars Conf.*, Abstract #3331.
341. Murchie S., Milliken R.E., Roach L.A., Bibring J.-P., Mustard J., Pelkey S., Seelos F., Bishop J., Grotzinger J., McEwen A.S. & CRISM Team t. (2007) CRISM mapping of layered deposits in western Candor Chasma. *7th Int'l Mars Conf.*, Abstract #3238.
342. Mustard J., Murchie S., Pelkey S.M., Ehlmann B.L., Milliken R.E., Grant J.A., Bibring J.-P., Poulet F., Bishop J., Roach L., Seelos F., Humm D. & CRISM Team t. (2007) Overview of hydrated silicate minerals observed on Mars by CRISM. *7th Int'l Mars Conf.*, Abstract #3240.
343. Parente M., Bishop J.L. & Bell J.F., III. (2007) Automatic identification of dominant phases and anomalies in Pancam images of Gusev soils. *7th Int'l Mars Conf.*, Abstract #3390.
344. Roach L.A., Mustard J.F., Murchie S.L., Bishop J.L., Weitz C.M., Knudson A.T., Bibring J.-P., Pelkey S.M. & Ehlmann B.L. (2007) Magnesium and iron sulfate variety and distribution in east Candor and Capri Chasma, Valles Marineris. *7th Int'l Mars Conf.*, Abstract #3223.
345. Roach L.H., Mustard J.F., Murchie S.L., Bishop J.L., Weitz C.M., Knudson A.T., Bibring J.-P., Pelkey S.M., Ehlmann B.L. & CRISM Team t. (2007) Magnesium and iron sulfate variety and distribution in east candor and capri chasma, valles marineris. *7th Int'l Mars Conf.*, Abstract #3223.
346. Swayze G.A., Milliken R.E., Clark R.N., Bishop J.L., Ehlmann B.L., Pelkey S.M., Mustard J.F., Murchie S.L., Brown A.J. & MRO CRISM Team t. (2007) Spectral evidence for hydrated volcanic and/or impact glass on Mars with MRO CRISM. *7th Int'l Mars Conf.*, Abstract #3384.
347. Bishop J. L., Lane M. D., Dyar M. D., and Brown A. J. (2006) Sulfates on Mars: Indicators of aqueous processes on Mars. *Astrobiology* 6(1), 187 (AbSciCon, Wash. DC, Abstract #169).
348. Bishop J. L., Rothschild L. J., and Rogoff D. A. (2006) Nanophase iron oxides as an ultraviolet sunscreen for ancient photosynthetic microbes: A possible link between early organisms, banded-iron formations, and the oxygenation of the atmosphere. *Astrobiology* 6(1), 232 (AbSciCon, Wash. DC, Abstract #171).
349. Bishop J. L., Dyar M. D., Parente M., Drief A., Mancinelli R. L., Lane M. D. and Murad E. (2006) Understanding Surface Processes on Mars Through Study of Iron Oxides/Oxyhydroxides: Clues to Surface Alteration and Aqueous Processes. *37th Lunar Planet. Science Conf.*, Abstract #1438.
350. Bishop J. L., Schiffman P., Dyar M. D., Lane M. D., Murad E. and Drief A. (2006) Soil-Forming Processes on Mars as Determined by Mineralogy: Analysis of Recent Martian Spectral, Chemical And Magnetic Data and Comparison with Altered Tephra From Haleakala, Maui. *37th Lunar Planet. Science Conf.*, Abstract #1423.
351. Lane M.D., Dyar M.D., Bishop J.L., King P.L. & Cloutis E.A. (2006) Laboratory emission, visible-near infrared, and Mössbauer spectroscopy of iron sulfates: Application to the bright Paso Robles soils in Gusev crater, Mars. *37th Lunar Planet. Science Conf.*, Abstract #1799.
352. Parente M. & Bishop J.L. (2006) Deconvolution of reflectance spectra using nonlinear least squares curve fitting: Application to Martian meteorites. *37th Lunar Planet. Science Conf.*, Abstract #1535.
353. Rothstein Y., Dyar M.D. & Bishop J.L. (2006) Mössbauer and reflectance spectroscopy of synthetic jarosite with variable compositions and temperatures. *37th Lunar Planet. Science Conf.*, Abstract #1727.
354. Bishop J. L., Rothstein Y., Dyar M. D., Lane M. D., Klima R. L., and Brophy G. P. (2005) Distinguishing Na, K, and H₃O⁺ Jarosite and Alunite on Mars using VNIR, Emittance and Mössbauer Spectroscopy on the MER and Mars Express/OMEGA Missions. *AGU Fall Meeting*, Abstract #P21A-0126.
355. Lane M.D., Bishop J.L. & Dyar M.D. (2005) The use of the thermal infrared region for studying the chemistry and hydration state of sulfates on Mars. *AGU Fall Meeting*, Abstract #P21C-0164.
356. Bishop J. L., Lane M. D., Dyar M. D., Brown A. J., and Parente M. (2006) Sulfates on Mars as markers of aqueous processes: An integrated multi-disciplinary study of minerals, Mars analog sites

- and recent mission data. *Mars Water Workshop*, NASA-Ames Research Center, Moffett Field, CA, February 23-24, 2006.
357. Bishop J. L., Bibring J.-P., Dyar M. D., Gendrin A., Lane M. D., Mustard J. F., Parente M., and Poulet F., (2005) Searching for Aqueous Activity on Mars through Analyses of OMEGA Spectra. *AAS-DPS 37th Annual Meeting*, Cambridge, U.K., BAAS Vol. 37 No.3 #21.08.
 358. Rogoff D., Rothschild L. J., Bishop J. L. & Carpenter E. J. (2005) The ultraviolet (UV) protectin pigment in cyanobacteria, scytonemin: the effects of the external protectant, iron, and its implications for life on Mars. *2005 Biennial Meeting of the NASA Astrobiology Institute*, Abstract, Astrobiology, 5:317-318.
 359. Bishop J. L., Lane M. D., and Dyar M. D. (2005) Spectral identification of hydrated sulfates on Mars and comparison with sulfate-rich terrestrial sites. *European Geosciences Union*, Vienna, Austria, Abstract #EGU05-A-05737.
 360. Bishop J. L., Schiffman P., Lane M. D., and Dyar M. D. (2005) Sulfataric alteration in Hawaii as a mechanism for formation of the sulfates observed on Mars by OMEGA and the MER instruments. *36th Lunar Planet. Science Conf.*, Abstract #1456.
 361. Dyar M. D., Lane M. D., Bishop J. L., O'Connor V., Cloutis E. A., and Hiroi T. (2005) Integrated spectroscopic studies of hydrous sulfate minerals. *36th Lunar Planet. Science Conf.*, Abstract #1622.
 362. Lane M. D., Bishop J. L., Dyar M. D., Cloutis E. A., Forray F. L., and Hiroi T. (2005) Integrated spectroscopic studies of anhydrous sulfate minerals. *36th Lunar Planet. Science Conf.*, Abstract #1442.
 363. Schiffman P., Zierenberg R. A., Marks N., and Bishop J. L. (2004) Acid fog Deposition of Crusts on Basaltic Tephra Deposits in the Sand Wash Region of Kilauea Volcano: A Possible Mechanism for Siliceous-Sulfatic Crusts on Mars. *Eos Trans. AGU* 85 (47), Fall Meet. Suppl., Abstract #P21A-0208.
 364. Bishop J. L. and Murad E. (2004) Spectroscopic Characterization of Minerals and Biogeochemical Markers in Mars Analog Samples: *32nd Int'l Geological Congress*, Florence, Abstract #247-7.
 365. Parente M. and Bishop J. L. (2004) The deconvolution of absorption features in VNIR reflectance spectra of martian meteorites and other Mars analog samples. *32nd Int'l Geological Congress*, Florence, Abstract #108-24.
 366. Bishop J. L., Banfield J. F., Lane M. D., and Dyar M. D. 2004. Spectroscopic Analysis of Fe- and S-bearing Materials for Remote Sensing of Biomarkers on Mars. *Astrobiology Conference*.
 367. Bishop J. L., Schiffman P., Drief A., and Southard R. J. (2004) Cemented volcanic soils, martian spectra and implications for the martian climate. *35th Lunar Planet. Science Conf.*, Abstract #1796.
 368. Bishop J. L., Schiffman P., Southard R. J., Drief A., Verosub K. L., and Smith D. J. (2004) Classifying terrestrial volcanic alteration processes and defining alteration processes they represent on Mars. *35th Lunar Planet. Science Conf.*, Abstract #1780.
 369. Pieters C. M., Dyar M. D., Hiroi T., Bishop J. L., Sunshine J., and Klima R. (2004) Pigeonite masquerading as olivine at Mars: First results from Mars spectroscopy consortium. *35th Lunar Planet. Science Conf.*, Abstract #1171.
 370. Sunshine J. M., Bishop J. L., Dyar M. D., Hiroi T., Klima R., and Pieters C. M. (2004) Near-infrared spectra of martian pyroxene separates: First results from Mars spectroscopy consortium. *35th Lunar Planet. Science Conf.*, Abstract #1636.
 371. Murchie S., Barnouin-Jha O., Barnouin-Jha K., Bishop J. L., Johnson J., McSween H., and R. Morris (2004) Old desert varnish-like coatings and young conglomerate-like rocks at the Mars Pathfinder landing site. *35th Lunar Planet. Science Conf.*, Abstract #1740.
 372. Minitti M. E., Lane M. D. and Bishop J. L. (2004) A new hematite formation mechanism for Mars. *35th Lunar Planet. Science Conf.*, Abstract #1999.

373. Bishop J. L., Parente M., and Hamilton V. E. (2003) Identifying Minerals on Mars Through VNIR and Mid-IR Spectral Deconvolution based on the Martian Meteorites. *Eos Trans. AGU* 84, Fall Meet. Suppl., Abstract #P21B-0045.
374. Bishop J. L. and Warren-Rhodes K. (2003) Spectral properties of a nitrate-bearing halite rock from the Chilean desert and applications to Astrobiology on Mars. *AAS-DPS 35th Annual Meeting*, Monterey, Calif. BAAS Vol. 35 No. 4. p.947.
375. Parente M. and Bishop J. L. (2003) Revised Modified Gaussian Model analyses of martian meteorite spectra. *AAS-DPS 35th Annual Meeting*, Monterey, Calif. BAAS Vol. 35 No. 4. p.949.
376. Bishop J. L., Drief A. and M. D. Dyar (2003) Physical Alteration of Martian Dust Grains, its Influence on Detection of Clays and Identification of Aqueous Processes on Mars. In *Sixth Int'l Conf. on Mars*, Pasadena, CA, CD-ROM Abstract #3008.
377. Bishop J. L., Schiffman P., Southard R. J., Drief A. and K. L. Verosub (2003) Constraints on Martian Surface Material from a Study of Volcanic Alteration in Iceland and Hawaii. *Sixth Int'l Conf. on Mars*, Pasadena, CA, CD-ROM Abstract #3009.
378. Murchie S., Barnouin-Jha O., Barnouin-Jha K., Bishop J. L., Johnson J., McSween H., and R. Morris (2003) New insights into the geology of the Mars Pathfinder landing site from spectral and morphologic analysis of the 12-color superpan panorama. *Sixth Int'l Conf. on Mars*, Pasadena, CA, CD-ROM Abstract #3060.
379. Murchie S., Arvidson R., Beisser K., Bibring J.-P, Bishop J. L., Boldt J., Bussey B., Choo T., Clancy R.T., Darlington E.H., Des Marais D., Fasold M., Fort D., Green R., Guinness E., Hayes J., Heyler G., Humm D., Lee R., Lees J., Lohr D., Malaret E., Morris R., Mustard J., Rhodes E., Robinson M., Roush T., Schaefer E., Seagrave G., Silverglate P., Smith M., Strohbahn K., Thompson P., and Tossman B. (2003) CRISM: compact reconnaissance imaging spectrometer for mars on the mars reconnaissance orbiter. *Sixth Int'l Conf. on Mars*, Pasadena, CA, CD-ROM Abstract #3062.
380. Bishop J. L. (2003) Identification of secondary minerals on Mars: Importance for water, chemical alteration, and life. Eur. Geophys. Soc. Meeting, Nice, France, CD-ROM Abstract #08115.
381. Bishop J. L., Drief A., and Dyar M. D. (2003) The influence of abrasion on Martian dust grains: Evidence from a study of antigorite grains. In *Lunar and Planet. Sci. XXXIV*, CD-ROM Abstract #1512.
382. Bishop J. L., Minitti M. E., Lane M. D., and Weitz C. M. (2003) The influence of glassy coatings on volcanic rocks from Mauna Iki, Hawaii, and applications to rocks on Mars. In *Lunar and Planet. Sci. XXXIV*, CD-ROM Abstract #1516.
383. Minitti M. E., Weitz C. M., Lane M. D., and Bishop J. L. (2003) Composition and spectra of several Hawaiian rock coatings. In *Lunar and Planet. Sci. XXXIV*, CD-ROM Abstract #1937.
384. Bishop J. L. (2002) Searching for evidence of aqueous processes on Mars through spectral identification of alteration minerals. *Eos. Trans. AGU*, 82(47) Fall Meet. Suppl., Abstract #P61B-0348.
385. Gazis P. R. and Bishop J. L. (2002) Development of rule-based autonomous spectral analysis techniques for planetary surfaces: preliminary results using lab spectra. *Eos. Trans. AGU*, 82(47) Fall Meet. Suppl., Abstract #P72A-0478.
386. Bishop J. L. and Rothschild L. J (2002) Iron Oxide May Have Filtered UV for Early Photosynthetic Microbes, Astrobiology Science Conference, NASA Ames Research Center, Moffett Field, CA, p. 141.
387. Bishop J. L. (2002) Rock coatings and alteration rinds; How they might form on Mars and what they can tell us. In *Lunar and Planet. Sci. XXXIII*, CD-ROM Abstract #1170.
388. Bishop J. L., Pieters C. M., Dyar M. D., Hamilton V. E., and Harloff J., (2002) A spectral, chemical and mineralogical study of Mars analogue rocks. In *Lunar and Planet. Sci. XXXIII*, CD-ROM Abstract #1168.
389. Mancinelli R. L., Bishop J. L., and De S. (2002) Magnetite in Desert Varnish and Applications to Rock Varnish on Mars. In *Lunar and Planet. Sci. XXXIII*, CD-ROM Abstract #1046.

390. Minitti M. E., Lane M. D. and Bishop J. L. (2002) Oxidized Volcanic Materials as a Potential Explanation for Gray Hematite Regions on Mars. In *Lunar and Planet. Sci.* XXXIII, CD-ROM Abstract #1674.
391. Bishop J. L. and Hamilton V. E. (2001) Spectroscopic Detection of Minerals in Martian Meteorites using Reflectance and Emittance Spectroscopy and Applications to Surface Mineralogy on Mars, *Eos. Trans. AGU*, 82(47) Fall Meet. Suppl., Abstract #P52B-0580.
392. Bishop J. L. and Hamilton V. E. (2001) Reflectance and Emittance Spectra of Martian Meteorites, Meteoritical Society Annual Meeting, Rome, Sept. 2001.
393. Bishop J. L. (2001) A Study of Soil and Duricrust Models for Mars. In *Lunar and Planet. Sci.* XXXII, CD-ROM Abstract #1468.
394. Bishop J. L., Schiffman P., Murad E. and Southard R. (2001) Iceland as a Model for Chemical Alteration on Mars. In *Lunar and Planet. Sci.* XXXII, CD-ROM Abstract #1435.
395. Bishop J. L. (2001) Mineralogy considerations for 2003 MER site selection and the importance for astrobiology. *First Mars 2003 Landing Site Workshop*, Ames Research Center, Moffett Field, CA (<http://www.lpi.usra.edu/meetings/mer2003/>).
396. Bishop J. L. (2000) Identification of secondary minerals on Mars: Importance for water and chemical alteration. *AGU Fall Meeting*, San Francisco, CA, Dec. 2000, Abstract #4574.
397. Bishop J. L. (2000) Mineral identification in palagonitically altered volcanic material as an indicator of geochemical history. *Volcano/Ice Interaction on Earth and Mars*, Reykjavik, Iceland, p. 5.
398. Bishop J. L. (2000) Mineral identification as an indicator of water and geochemical history on Mars. *Concepts and Approaches for Mars Exploration*, LPI, Houston, TX.
399. Bishop J. L., Mancinelli R. L., Madsen M. B., and Zent A. P. (2000) Maghemite Formation via Organics and the Prospect for Maghemite as a Biomarker Mineral on Mars. *First Astrobiology Science Conf. April 3-5, 2000*, NASA-ARC, Moffett Field, CA.
400. Bishop J. L., Madsen M. B., Murad E. and Wagner P. A. (2000) Identification of Crystalline Minerals in Volcanic Alteration Products and Applications to the Surface of Mars. In *Lunar and Planet. Sci.* XXXI, CD-ROM Abstract #1874.
401. Bishop J. L., Mancinelli R. L., Olsen M., Wagner P. A. and Zent A. P. (2000) Ferrihydrite Alteration to Magnetite, Maghemite and Hematite; Implications for Iron Oxides on Mars. In *Lunar and Planet. Sci.* XXXI, CD-ROM Abstract #1946.
402. Newsom H. E., Bishop J. L., Cockell C., Roush T. and Johnson J. R. (2000) The search for life on Mars in surface samples: lessons from the 1999 Marsokhod field test. In *Lunar and Planet. Sci.* XXXI, CD-ROM Abstract #1931.
403. Bishop J. L. (1999) Chemical and Physical Interactions of Martian Surface Material, AAS-DPS 31st Annual Meeting, Padua, Italy. Vol. 31 No. 4.
404. Bishop J. L., Lane M. D., Murad E. and Mancinelli R. L. (1999) Composition and Origin of Martian Surface Material, Remote Detection of Minerals, and Applications to Astrobiology. *Mars 2001: Integrated Science in Preparation for Sample Return and Human Exploration*, Houston, TX, 6-8.
405. Bishop J. L., Murchie S., Pieters C. and Zent A. (1999) A model for generation of martian surface dust, soil and rock coatings: Physical vs. Chemical interactions, and palagonitic plus hydrothermal alteration, 5th Mars Conference, JPL, July, 1999, CD-ROM abs.# 6220.
406. Calvin W. M., Bishop J. L. and Erard S. (1999) Clues from the SWIR: Mineralogical constraints from 1 to 4 μm , 5th Mars Conference, JPL, July, 1999, CD-ROM abs.# 6125.
407. Bishop J. L. (1999) Hydrothermal alteration products as key to formation of duricrust and rock coatings on Mars. In *Lunar and Planet. Sci.* XXX, Abstract #1887, Lunar and Planetary Institute, Houston (CD-ROM).
408. Bishop J. L., Pieters C. M., Mustard J. F. and Hiroi T. (1999) Spectral identification of major and minor constituents of Martian meteorite ALH 84001 and the importance for remote sensing on Mars. In *Lunar and Planet. Sci.* XXX, Abstract #2038, Lunar and Planetary Institute, Houston (CD-ROM).

409. Bishop J. L. and Smith P. (1999) Results from Mars Pathfinder: Mineralogical composition of Martian dust and soils and a link to possible alteration processes on the Martian rocks. *International Symposium on the Mars Exploration Programme and Sample Return Missions*. Paris, abstract # O4S2(182), 3 pp.
410. Bishop J. L., Scheinost A., Bell J., Britt D., Johnson J. and Murchie S. (1998) Ferrihydrite-schwertmannite-silicate mixtures as a model of Martian soils measured by Pathfinder. In *Lunar and Planet. Sci. XXIX*, Abstract #1803, Lunar and Planetary Institute, Houston (CD-ROM).
411. Mancinelli R. L., White M. R., Bishop J. L., and Banin A. (1998) Mineralogical analysis of ammonium in clays: The fate of N on Mars. In *Lunar and Planet. Sci. XXIX*, Abstract #1815, Lunar and Planetary Institute, Houston (CD-ROM).
412. Bishop J. L., Pieters C. M. and Hiroi T. (1997) The source of organic spectral features in ALH 84001: Lab contamination, terrestrial or extra-terrestrial? *Meteorit. Planet. Sci.* 32, A14-15.
413. Bishop J. L., Murad E., Madejova J., Komadel P., Wagner U. and Fröschl H. (1997) Analysis of OH site occupancy in smectite clays using infrared and Mössbauer spectroscopy. *11th International Clay Conference*, Ottawa, A9.
414. Bishop J. L., Friedl J. and Schwertmann U. (1997) Spectroscopic identification of minerals in hematite-bearing soils and sediments; Implications for chemistry and mineralogy of the martian surface. *Conference on Early Mars: Geologic and Hydrologic Evolution, Physical and Chemical Environments, and the Implications for Life*, Houston, TX, 9-10.
415. Bishop J. L., Pieters C. M. and Hiroi T. (1997) Spectroscopic properties of Martian meteorite ALH84001 and identification of minerals and organic species. *Lunar and Planet. Sci. XXVIII*, LPI, Houston, 117-118.
416. Bishop J. L., Arnold G. and Junghans K. (1996) Emittance and reflectance spectroscopy of smectite clays as analogs for the martian surface material. GSA, Denver, CO.
417. Arnold G., Bishop J. L. and Junghans K. (1996) Emittance and reflectance spectroscopy of palagonitic soils as analogs for the martian surface material. GSA, Denver, CO.
418. Bishop J. L., Ferrante R. F. and Moore M. H. (1996) Spectroscopic analysis of soil-H₂O-CO₂ ice mixtures at temperatures ranging from 75 to 160 K and implications for Mars, DPS, Tucson, AZ, p. 1061.
419. Dummel A. and Bishop J. L. (1996) Influence of polarization on spectrophotometric measurements and the implications for Mars, DPS, Tucson, AZ, p.1061-2.
420. Junghans K., Bishop J. L. and Arnold G. (1996) Analysis of optical constants, single-scattering albedo and absorption efficiency of quartz and applications for planetary remote sensing, DPS, Tucson, AZ, p. 1158-9.
421. Bishop J. L. and Pieters C. M. (1996) Spectral analysis of the martian meteorite ALH 84001. *Meteoritics and Planetary Science* 31, A15-A16.
422. Bishop J. L. (1996) Spectroscopic analysis of Mars soil analogs-techniques for mineralogical characterization of Mars and detection of organic material or carbonates. *8th Issol Meeting and 11th International Conf. on the Origin of Life*, p. 127.
423. Bishop J. L. (1996) Visible and infrared reflectance spectroscopy of physical and chemical ferric-smectite mixtures as Mars soil analogs. *Lunar and Planet. Sci. XXVII*, LPI, Houston, 117-118.
424. Bishop J. L. and Dummel A. (1996) The influence of fine-grained hematite powder on the spectral properties of Mars soils analogs; VIS-NIR bi-directional reflectance spectroscopy of mixtures. *Lunar and Planet. Sci. XXVII*, LPI, Houston, 119-120.
425. Arnold G., Bishop J. L., Junghans K. and Schade U. (1996) Relationships between the optical constants and spectroscopic features of particulate quartz. Implications for remote sensing of planetary surfaces. *Lunar and Planet. Sci. XXVII*, LPI, Houston, 39-40.

426. Arnold G., Bishop J. L. and Schade U. (1996) Ellipsometry, reflectance and emittance spectroscopy of quartz particle size separates, palagonitic soils and montmorillonite. Implications for remote sensing of planetary surfaces. *Lunar and Planet. Sci.* XXVII, LPI, Houston, 41-42.
427. Bishop J. L. (1995) Reflectance spectroscopy of schwertmannite and implications for the surface material on Mars. AAS-DPS 27th Annual Meeting, Mauna Lani, Hawaii, 36.
428. Arnold G., Bishop J. L. and Beinroth A. (1995) Ellipsometry, reflectance and emittance spectroscopy of quartz particle size separates and palagonitic soils: Implications for remote sensing of planetary surfaces. AAS-DPS 27th Annual Meeting, Mauna Lani, Hawaii, 36.
429. Bishop J. L. (1995) Spectroscopic analyses of Mars soil analogs under martian environmental conditions. *Annales Geophysicae Part III Space & Planetary Sciences*, Supplement to Volume 13 (Eur. Geophys. Soc.) C798.
430. Bishop J. L. (1995) Reflectance and emission spectroscopy of physical and chemical ferric-smectite mixtures as Mars soil analogs. *Lunar and Planet. Sci.* XXVI, LPI, Houston, 123-124.
431. Arnold G., Bishop J. L., Schade U. and Wäsch R. (1995) Reflectance spectroscopy of palagonite, aluminous phyllosilicate, glass and ferric oxide mixtures: Implications for surface composition of bright Martian soil. *Lunar and Planet. Sci.* XXVI, LPI, Houston, 53-54.
432. Bishop J. L., Pieters C., Mustard J., Pratt S. and Hiroi T. (1994) Spectral analyses of ALH 84001, a meteorite from Mars. *Meteoritics* 29, 444-445.
433. Bishop J. L. and Pieters C. M. (1994) Reflectance spectra of Mars soil analogs measured under reduced atmospheric pressures and temperatures. *Lunar and Planet. Sci.* XXV, LPI, Houston, 117-118.
434. Bishop J. L., Englert P. A. J., Andersen D. W., Kralik C., Koeberl C., Pieters C. M., Froeschl H. and Wharton R. A. (1994) Spectroscopic and geochemical analyses of sediments from Lake Hoare, Antarctica and applications to dry valleys on Mars. *Lunar and Planet. Sci.* XXV, LPI, Houston, 119-120.
435. Bishop J. L., Murchie S., Pratt S., Mustard J. and Pieters C. (1993) The importance of environmental conditions in reflectance spectroscopy of laboratory analogs for Mars surface materials. *Mars: Past, Present and Future- Results of the MSATT Program, LPI Technical Report 93-06*, Part 1, 4-6.
436. Bishop J. L., Pieters C. M. and Burns R. G. (1993) Ferric sulfate montmorillonites as Mars soil analogs. *Mars: Past, Present and Future- Results of the MSATT Program, LPI Technical Report 93-06*, Part 1, 6-8.
437. Plumb R. C., Bishop J. L. and Edwards J. O. (1993) The pH of Mars. *Mars: Past, Present and Future- Results of the MSATT Program, LPI Technical Report 93-06*, Part 1, 40-41.
438. Bishop J. L., Pieters C. M. and Burns R. G. (1993) Reflectance spectra of sulfate- and carbonate-bearing Fe³⁺-doped montmorillonites as Mars soil analogs. *Lunar and Planet. Sci.* XXIV, LPI, Houston, 115-116.
439. Bishop J. L., Pieters C. M., Pratt S. F. and Patterson W. (1993) The effects of atmospheric pressure on infrared reflectance spectra of martian analogs. *Lunar and Planet. Sci.* XXIV, LPI, Houston, 117-118.
440. Bishop J. L. and Pieters C. M. (1992) Effects of the chemical environment on the spectroscopic properties of clays: Applications for Mars. *MSATT Workshop on Chemical Weathering on Mars, LPI Technical Report 92-04*, 4-6.
441. Bishop J. L. and Pieters C. M. (1992) The spectroscopic properties of clays: Effects of the chemical environment. *Infrared Spectroscopy of Surfaces*, San Juan Capistrano, 16-17.
442. Bishop J. L. and Pieters C. M. (1992) Strength of IR hydration bands: Application to the martian surface. *Lunar Planet. Sci. Conf.* XXIII, LPI, Houston, 109-110.
443. Bishop J. L., Pieters C. M. and Burns R. G. (1992) Ferrihydrite found in Fe-rich montmorillonite and its relationship to the reflectance spectra of Mars. *Lunar Planet. Sci. Conf.* XXIII, LPI, Houston, 111-112.

444. Bishop J. L., Pieters C. M. and Coyne L. M. (1991) Mid-IR and NIR diffuse reflectance of montmorillonites as Mars surface analog materials. *The Clay Minerals Society, 28th Annual Meeting*, Houston.
445. Bishop J. L. and Pieters C. M. (1991) Mid-IR spectroscopy of Antarctic Consortium meteorites: B-7904, Y-82162 and Y-86720. *Meteoritics* 26, 319.
446. Pieters C. M., Britt D. and Bishop J. L. (1991) VIS/NIR reflectance spectra of CI/CM Antarctic Consortium meteorites: B7904, Y82162, Y86720. *Meteoritics* 26, 385.
447. Bishop J. L., Pieters C. M., Coyne L. M., Edwards J. O. and Chang S. (1991) Spectroscopic analyses of Fe and water in clays. A martian surface weathering study. *Lunar Planet. Sci. Conf. XXII*, LPI, Houston, 107-108.
448. Bishop J. L., Koeberl C., Wharton R., McKay C. and Englert P. (1990) Geochemical analysis of sediments from Lake Hoare, Antarctica. *Lunar Planet. Sci. Conf. XXI*, LPI, Houston, 91-92.
449. Koeberl C., Reimold W. U., Bishop J. L. and Miller R. McG. (1990) Roter Kamm impact crater, SWA/Namibia: New geochemical and isotopic studies and further evidence for post-impact hydrothermal activity, *Lunar Planet. Sci. Conf. XXI*, LPI, Houston, 647-648.
450. Bishop J. L., Koeberl C. and Reimold U. (1989) Geochemistry of the Roter Kamm crater in SWA/Namibia. *Meteoritics* 24.

UNIVERSITY AND INTERNAL REPORTS:

- Bishop J. L. (1994) Spectroscopic analyses of chemically altered montmorillonites and applications to the soils on Mars. *Ph.D. Thesis, Dept. of Chemistry, Brown University*.
- Bishop J. L. (1988) The effects of water, octahedral cation substitution and exchangeable cation composition on the shortwave infrared reflectance spectrum of montmorillonite. M.S. Report, *Dept. of Applied Earth Science, Stanford University*.
- Bishop J. L. (1986) SIMS studies of zirconium oxide chemistry. *Nuclear Fuel Engineering and Manufacturing Department, General Electric Co.* (FMT Transmittal No. 86-212-0038).

BOOK REVIEWS:

- Bishop J. L. (2005) Review of *Life in the Universe, Expectations and Constraints*, Springer-Verlag, Berlin (2004) ISBN 3-540-20627-2, 172 pp. by D. Schulze-Makuch and L. N. Irwin.
- Bishop J. L. (2003) Review of *Micas: Crystal Chemistry and Metamorphic Petrology*.: Reviews in Mineralogy and Geochemistry, Vol. 46, The Mineralogical Society of America, Washington, DC (2002) ISBN 0-939950-58-8, 499 pp. edited by Mottana, A., Sassi, F. P., Thompson, J. B., Jr., and Guggenheim, S.