# Karly M. Pitman, Ph.D.

Space Science Institute • 4750 Walnut Street, Suite 205 • Boulder, Colorado • 80301 USA
720-974-5874
pitman@spacescience.org
http://www.spacescience.org/about/staff/pitman.html
http://www.linkedin.com/pub/karly-pitman/8/288/7b1

---

**ASTROPHYSICAL & PLANETARY SCIENCE RESEARCH • DEVELOPMENT & FUNDRAISING • PROJECT & ORGANIZATIONAL MANAGEMENT • LEADERSHIP & TEAM BUILDING**

Successful soft money research scientist with 15+ years experience in astrophysics, earth and planetary science. Creative, diplomatic, results-driven leader and professional with expertise in strategic and multi-year million dollar project planning, management, and professional development. Proficient in leadership and team building skills that ultimately build relationships with stakeholders and invest in the organizations supported. Qualifications include:

Research Expertise:
- Light scattering of micron-sized dust particles in astrophysical and planetary environments, emphasizing connections between theoretical models and spacecraft, laboratory, and field data
- Numerically modeling radiative transfer in and inferring physical properties of planetary surfaces (Mars), atmospheric aerosols, small bodies (icy satellites, asteroids, meteorites), and interstellar dust
- Theoretical and laboratory astrophysics of the interstellar medium and circumstellar environments

Management and Leadership Skills:
- Grant writing: solicited and unannounced opportunities with NASA and NSF;
  PI-led, institutional equipment, supercomputing, education/public outreach proposals
- Fundraising: scholarship & fund development
- Project management & strategic planning
- Accounting & finance
- Procurement & inventory control
- Risk assessment
- Diplomacy & conflict resolution
- Personnel management & training
- Team building & leadership
- Professional development: training & advancement
- Active community service record
- Committee development, strategic planning, & oversight
- Large-scale event design & execution
- Outstanding written & oral communications
- Education & public outreach
- Public relations & marketing

Technical Skills:
- Research: computer and experimental methods, data acquisition, curation, analysis and interpretation
- Laboratory and field spectroscopy: mid-UV, VNIR, mid-IR, far-IR wavelengths
- Optical function derivation
- Remote sensing and hyperspectral analysis of spacecraft data (Cassini, Dawn, Mars mission instruments)

Computing Skills:
- Platforms: Mac OS X, Unix, Linux, PC
- Languages: FORTRAN77, Fortran 90/95, C/C++, shell scripting, HTML, Perl, VBScript
- Packages: IDL, ENVI, ISIS 3, MATLAB, Mathematica, Excel
- Advanced: High performance computing on NASA, JPL, SSI supercomputing clusters;
  Parallel computing experience on CaSPer, Supermike clusters at LSU;
  Light systems administration on Mac OS X and Linux machines

**EDUCATION**

12/2005 **Louisiana State University** Baton Rouge, Louisiana
- Ph.D. in Physics and Astronomy

Dissertation: "Radiative Transfer Modeling of Thermal IR Emissivity Spectra: Applications to Martian Regolith Observations"
Adviser: Dr. Geoffrey C. Clayton

12/2002 **Louisiana State University** Baton Rouge, Louisiana
• M.S. in Physics

05/1999 **Vassar College** Poughkeepsie, New York
• A.B. in Astronomy and Geology
• Correlate in Physics
Thesis: "Review of Lunar and Asteroidal Materials and the Classification of Ordinary Chondritic Meteorites"
Adviser: Dr. Jill S. Schneiderman

08/2004 **NASA Planetary Science Summer School, Jet Propulsion Laboratory** Pasadena, California
• Competitively selected opportunity for special mission concept development training with JPL's Advanced Project Design Team X engineers)

**AWARDS**

• **Nomination, Annie Jump Cannon Award, American Astronomical Society, 2007.**
(for outstanding research and promise for future research by a postdoctoral woman astronomer)
• **NASA Postdoctoral Program Fellowship, NASA/ORAU/JPL, 2006-2009**.
(competitive proposal-driven space science research appointment at NASA Jet Propulsion Laboratory, California Institute of Technology; award totaling $156K + $24K in travel)
• **LPI Graduate Fellowship, Lunar and Planetary Institute, 2003**.
• **Board of Regents Graduate Fellowship, Louisiana State University, 1999-2003**.
(for exceptionally qualified doctoral students; award totaling $80K)
• **Westlake Scholarship, James L. and Nellie M. Westlake Foundation, 1995-1999**.
(tuition and fees scholarship for college-bound Missouri students from low-income families)
• **Francis W. Pick Scholarship, Vassar College, 1995-1999**.
(endowed fund tuition and fees scholarship; award totaling ~$120K)

**RESEARCH EXPERIENCE**

Over 15 years of work experience in astrophysics, earth and planetary science research in pre- and postdoctoral appointments and soft money positions.

2015 – present ***Executive Director / Senior Research Scientist***
Space Science Institute, Boulder, Colorado
*Fundraising & Grant Writing; Project Management & Strategic Planning; Procurement & Inventory Control; Personnel Management & Training; Diplomacy & Conflict Resolution; Accounting & Finance; Team Building & Leadership*
• Soft money nonprofit executive management. Total number of personnel under supervision: 66.
• Principal investigator on NASA grants through SSI. Responsible for writing scholarly journal articles and grant reports, leading team meetings and activities, project budgeting and resource allocation, purchasing supplies and procurement, as well as analyzing scientific data.

2015 ***Senior Research Scientist***
Planetary Science Institute, Tucson, Arizona
*Fundraising & Grant Writing; Project Management & Strategic Planning; Procurement & Inventory Control; Personnel Management & Training; Diplomacy & Conflict Resolution; Accounting & Finance; Team Building & Leadership*
• Leading and developing independent, externally funded research programs through NASA, NSF grants in both planetary science and astronomy.
• Principal investigator on 5 grants through PSI and co-investigator on 1 grant through JPL. Responsible for writing scholarly journal articles and grant reports, leading team meetings and activities, project budgeting and resource allocation, purchasing supplies and procurement, as well as analyzing scientific data.
• Manager of 5 investigation teams on projects with 3-5 year timescales. Total number of personnel under supervision, excluding student and postdoctoral workers: 12.

2012 ***Technical Review Panelist***
Earth Resources Technology, Laurel, Maryland; Cornell Technical Services, Columbia, Maryland
*Risk Assessment*
• Employed on contract to evaluate science and engineering merit for competing concepts.
• Selected for interdisciplinary expertise.
• Worked in subpanels with other scientists and engineers via telecons and sequestered jury service; iteratively prepared questions for and evaluated teams during site visits.

2010 – 2015 ***Research Scientist***
2008 – 2010 ***Associate Research Scientist***
Planetary Science Institute, Tucson, Arizona
*Fundraising & Grant Writing*
• Developed and wrote grant proposals to NASA, NSF announced opportunities.
• First co-I win in 2008. First PI wins for NASA and NSF in 2009.
• Worked on coding projects and preparing datasets for Planetary Data System compliance for the Dawn Neutron and Gamma Ray Detector (GRaND) instrument team.

2009 – present ***Affiliate Contractor***
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California
Supervisor: J. B. Dalton III
*Optical Function Derivation*
• Deriving optical constants (real and imaginary indices of refraction) for ice and cryogenic salt compounds to infer composition and abundances on outer Solar System icy satellites from Galileo Near Infrared Mapping Spectrometer and Cassini Visual & Infrared Imaging Spectrometer (VIMS).
• Preparing annual reports and group presentations for international scholarly conferences.

2009 – 2010 ***Consultant***
Dept. of Earth and Planetary Sciences, Washington University, St. Louis, Missouri
Supervisors: A. M. Hofmeister, A. K. Speck
*Laboratory UV-VIS Spectroscopy*
• Acquired and analyzed mid- to far-infrared laboratory reflectance, absorption, and transmission spectra of interstellar and circumstellar dust analogs for application to Spitzer Space Telescope, Infrared Space Observatory observations.
• Authored book chapter on silicon carbide with 4000 worldwide downloads to date.

2006 – 2009 ***NASA Postdoctoral Program Fellow***
Oak Ridge Associated Universities, Oak Ridge, Tennessee /
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California
Supervisor: B. J. Buratti (Division 32, Asteroids, Comets, Satellites Group)
*Computational Radiative Transfer Modeling; Remote Sensing & Hyperspectral Analysis*
• Developed surface-atmospheric radiative transfer separation methods for Cassini VIMS data from Titan, drawing together technology and experts from other teams and science fields.
• Responsible for data reduction and hyperspectral analysis of surface composition and cloud cover, and archiving of incoming and past data from Cassini mission for Saturnian moons.
• Prepared reports on VIMS results for Titan Orbiter Science Team.
• Managed student workers on independent projects, building in-house spacecraft observation databases and visualization tools.
• Performed disk-integrated photometry and derived bolometric Bond albedo values for Rhea, Enceladus, Dione, Tethys, and Mimas.

2005 – 2006 ***Postdoctoral Research Associate***
Dept. of Earth and Planetary Sciences, Washington University, St. Louis, Missouri
Advisers: A. M. Hofmeister; A. K. Speck

*Astromineralogy; Laboratory FT-IR Spectroscopy*
• Utilized laboratory reflectance and absorbance spectroscopy to infer composition and physical properties of circumstellar and interstellar dust (AGB, carbon stars).
• Derived optical constants using Kramers-Kronig and classical Lorentz-Lorenz dispersion theory, e.g., new optical constants for silicon carbide, a major dust carrier in carbon stars, C-rich stellar outflows, novae, and supernovae, to address community need for bulk properties from UV to far-IR.
• Created public database of mid- and far-infrared laboratory high-resolution spectra of interstellar dust grain analogs to put values measured by geologists directly into the hands of astronomers. Data are now accessed worldwide.

2003 – 2005 ***Research Assistant***
Space Science Institute, Boulder, Colorado
Adviser: M. J. Wolff
*Computational Radiative Transfer Modeling; Mars Surface and Atmosphere*
• Derived theoretical phase functions for Mars Global Surveyor Thermal Emission Spectrometer Emission Phase Function sequences of nonspherical Mars aerosols via quad-precision T-matrix computer models.
• Performed numerical discrete ordinates radiative transfer modeling of planetary regolith and compacted grains.
• Explored different particle topologies and ensembles of clustered spheres, utilizing multisphere code SCSMFO and geometrical optics codes.

2003 ***LPI Graduate Fellow***
Lunar and Planetary Institute, Houston, Texas
Adviser: A. H. Treiman
*Mars Meteorite Laboratory Analysis & Computer Modeling*
• Executed X-ray diffraction, optical microscopy, and electron microprobe analyses on Mars meteorite thin sections at LPI and NASA Johnson Space Center.
• Utilized MELTS geology software to model parent chemical compositions of meteorites.

2002 – 2004 ***Guest Researcher***
Mars Space Flight Facility, Arizona State University, Tempe, Arizona
Host: J. L. Bandfield
*Laboratory & Field IR Spectroscopy of Mars Analog Terrain*
• Performed laboratory FT-IR spectroscopy on quartz, clay, sulfate, and Mars-relevant compounds.
• Improved experimental design of sample acquisition and containment, coordinating resources at ASU and LSU, including directing an undergraduate assistant, machine shop technicians, and external laboratories.
• Designed and implemented remote sensing thermal infrared directional emissivity field experiment with Designs & Prototypes™ micro-FT-IR field portable spectrometer.
• Wrote field site proposals and negotiated resources between National Park Services, ASU, LSU, and SSI.

1999 – 2005 ***Graduate Research Assistant***
Dept. of Physics and Astronomy, Louisiana State University, Baton Rouge, Louisiana
Adviser: G. C. Clayton
*Astrophysics of the Interstellar Medium; Mineralogy of Interstellar Dust*
• Performed radiative transfer modeling of light scattering and absorption properties of interstellar dust grains.
• Discovered through research that, as of 2000, no quasi-stellar object (QSO) was known to display the broad absorption feature at 2175 Angstroms, disproving earlier reports of the feature in QSOs.
• Maintained research group websites and represented the group at conferences.

1995 – 1999 ***Undergraduate Research Assistant***
Dept. of Geology and Geography, Vassar College, Poughkeepsie, New York
Advisers: M. Sullivan; K. M. Menking
*Volcanology; Geomorphology; Paleoclimatology*
• Performed X-ray diffraction and optical microscopy analyses on rocks and minerals.
• Built weather stations and ordered, assembled, and installed equipment and supplies for new laboratory.
• Curated mineral collections and topographic map library and acquired field samples.

**LEADERSHIP EXPERIENCE**

Active leadership and service record in astronomy, geology, and planetary science societies, grant proposal and scholarly merit evaluation, planning and executing large-scale events and initiatives, and written and oral public relations.

11/2015 ***Lead***, Working Through Adversity: Strategies For Success Workshop
AAS DPS Conference – National Harbor, Maryland
*Professional Development – Training*
• Developed content and presented with expert panelists on professional ethics and diversity issues.

11/2014 ***Lead***, How To Be A PI: Project Management and Leadership Workshop
AAS DPS Conference – Tucson, Arizona
*Professional Development – Training*
• Developed content and presented with NASA officials and expert career panelists to train AAS DPS conference attendees on roles and responsibilities of principal investigators on research and analysis grants.

2013 – present ***Advisory Board Member,*** Longitudinal Study of Astronomy Graduate Students,
NSF MPS-AST Special Programs in Astronomy
PI: Dr. Rachel Ivie, American Institute of Physics
*Fundraising & Grant Writing; Committee Development & Strategic Planning*
• Developed successfully competed proposal over 3 years for NSF unannounced opportunity with AIP Statistical Research Center and American Astronomical Society committee: $149.4K.
• Designed lines of inquiry and collaborated on questions for AIP survey questionnaire to target never-before-studied reasons for attrition from the astronomy employment pipeline (e.g., dependence on soft money; government funding levels; burnout).
• Reviewing statistics reports produced from the proposers; writing scholarly publications and assisting with dissemination of survey results to astronomers; providing links to astronomy professional development and women in astronomy resources.

2013 – present ***Chair***, Professional Development Subcommittee
American Astronomical Society Division for Planetary Science
*Professional Development; Committee Development, Strategic Planning, & Oversight; Fund Development; Public Relations & Marketing*
• Leading professional development programs to support undergraduate through senior professional level planetary scientists. Duties include managing subcommittee activities and budget, drafting press releases and webmaster editing, reporting to DPS Executive Committee.
• Executive management of and content development for workshops and catered events at AAS DPS national conference, e.g., student/postdoc reception (~200 attendees annually), Women in Planetary networking lunch program (~100 attendees annually).
• Assisted in creation and administration of DPS Susan Niebur Professional Development Fund to support DPS Dependent Care Grant program.

• Sublead, MentorNet professional mentoring program, launched in 2014-2015. Executive price and contract negotiation with subcommittee lead, DPS Committee.
• Sublead, DPS Dependent Care Grant program. Set criteria and reviewed applications for awards; facilitated communication between awardees and AAS; designed web content.

10/2013 ***Lead***, Negotiation Skills for Planetary Scientists Workshop
AAS DPS Conference – Denver, Colorado
*Professional Development – Training*
• Developed content and presented original interactive program with breakout exercises for AAS DPS conference attendees.
• Coordinated expert career panelists from multiple backgrounds to answer questions on how to successfully negotiate for better pay and benefits packages.

01/2013 ***Contributing Author,*** STATUS Newsletter,
AAS Committee for the Status of Women in Astronomy
• Authored white paper entitled "Practical Strategies for Soft Money Researchers" with soft money community input on best practices for remote researchers in setting up office space, procurement, workplace safety, and maintaining work-life balance.

2011 - present ***Member***, AAS Demographic Committee
*Committee Development, Strategic Planning, & Oversight*
• AAS presidential appointment to committee, based on service in *ad hoc* working group on longitudinal studies of astronomy/employment, 2010 – present.
• Coordinated and hosted committee telecons via WebEx; developed wiki pages to move tasks forward.

2006 - present ***Session Chair***, AAS-DPS, LPSC, AGU meetings
• Leading oral and poster sessions on interdisciplinary topics, directing question and answer session and audio-visual technical support, and entertaining audience during missing talks.

2006 - present ***Referee*** for papers submitted to *Journal of Geophysical Research – Planets, Icarus, IEEE Transactions, Planetary & Space Science, Earth, Planets, & Space, American Mineralogist,* Titan After Cassini.
• Critiquing published scholarly articles and books on interdisciplinary topics in astrophysics, geology, and planetary science, employing knowledge of laboratory, theoretical, spacecraft, and observational data.
• Excellent Reviewer recognition from international journal *Earth, Planets, & Space*, 2013.

2006 - present ***NASA Review Panelist***
• Research & analysis programs: Cassini Data Analysis & Participating Scientist (CDAPS), Lunar Advanced Science & Exploration Research (LASER), Mars Data Analysis Program (MDAP), Planetary Geology & Geophysics (PG&G), Outer Planets Research (OPR), Planetary Data, Archiving, and Restoration Tools (PDART), Solar System Exploration Research Virtual Institute (SSERVI).
• Postdoc & student-led proposals: NASA Postdoctoral Program, NASA Earth & Space Science Fellowship (NESSF).

2009 - 2015 ***Red Team Proposal Reviewer***, Planetary Science Institute
• Peer-reviewed in-house proposals in mock review panels for NASA ROSES, NSF astronomy announcements of opportunities.

2000 - 2003 ***President***, Association for Women In Science – Baton Rouge chapter
*Professional Development - Training & Advancement; Large-scale Event Design & Execution; Education & Public Outreach; Public Relations & Marketing*

• Led 6 officer group in developing and executing STEM programming at professional through K-12 levels, serving the whole state of Louisiana.
• Designed and led program for monthly seminar series and networking events.
• Raised funds to support member dues and $500 scholarship.
• Designed and maintained chapter website and content for quarterly newsletters.
• Mentored scientists and engineers in person and via e-mail for career questions and networking.

2000-2003 — ***Coordinator***, AWIS Baton Rouge Take Our Daughters and Sons To Work Day
*Large-scale Event Design & Execution; Education & Public Outreach*
• Managed coordinator and content of large-scale science education and public outreach event drawing 300 middle and high school age girls per year, and assisted in securing grants for public school teachers to bring students from throughout Louisiana.

1999 — ***Program Designer***, STEM events, Vassar College
*Large-scale Event Design & Execution*
• 1st Annual Maria Mitchell Women in Science Conference: Organized symposia and booked keynote speakers; led department tours for ~50-100 K-12 students.
• Keck Northeast Astronomy Consortium: Organizer as part of the host institution for undergraduate research symposium from the "Seven Sisters" colleges.

1999 — ***Majors' Committee***, Vassar College
• Served on Majors' Committees for two departments: Physics and Astronomy; Geology and Geography. Interviewed faculty candidates; raised funds for students to attend American Physical Society centennial conference.

**EDUCATION & OUTREACH** — Extensive experience in exhibit development, judging and managing student work at different collegiate levels, K-24 STEM curriculum development, and serving as mentor and public role model.

2014 - present — ***Mentor***, MentorNet.org
• Advising undergraduate student through postdoctoral level scientists on STEM academic and employment opportunities in space and planetary sciences.

2012 - present — ***Judge***, AAS Chambliss Astronomy Achievement Student Award
• Evaluated science promise of oral and poster astrophysics presentations by graduate and undergraduate students.

2011 - present — ***Judge***, Stephen Dwornik Student Presentation Awards, Lunar & Planetary Science Conference
• Evaluated science promise of oral and poster planetary science presentations by graduate and undergraduate students.

2010 - present — ***Featured Scientist***
• NASA Solar System Exploration website, 2012: http://solarsystem.nasa.gov/index.cfm
• 51 Women in Planetary Science project, 2010 (interview representing female planetary scientist in soft money research track).
• American Physical Society Women Speakers' Program, 2011 – present.
• Sally Ride Festival, New Orleans, Louisiana, LIGO Livingston Observatory, 2010.

2010 - 2011 — ***Expert Panelist***, Early Career Scientist Workshop Career Pathways, AAS-DPS; LPSC
• Representative of soft money career track at different professional workshops targeted at postdoctoral researchers, undergraduate and graduate students.

2007 – 2008 — ***Expert Panelist***, Cassini Scientist For A Day program

• Spoke with and answered questions via remote telecon from 100 prize winners of an international grades 5-12 essay contest sponsored by Cassini-Huygens mission E/PO.

2007 – 2008 ***Mentor***, JPL Research Apprenticeship
• Developed an independent study plan for a college student's work-study experience.
• Responsible for directing and day-to-day supervising of college student in coding and visualization projects in support of Cassini VIMS research.

2007 – 2008 ***Mentor***, JPL Student Independent Research Intern (SIRI) program
• Responsible for writing job ads, interviewing, selecting, and directly supervising community college and undergraduate students in short-term (3 month) research projects.

2007 ***Featured scientist***, NASA Through the Eyes of Scientists program
• Profiled for and reviewed content by NASA education consultant for a Titan exploration grades 4-6 nationwide science education unit in support of the Cassini/Huygens mission.

2005 ***Graduate Curriculum Design Committee***, Dept. of Physics and Astronomy, LSU
• Restructured the qualifying exams and redefined the course requirements and objective means of assessment for the M.S./Ph.D. degrees in physics and astronomy.

2000-2003 ***Designer/Manager***, Physics & Astronomy Display, Take Our Daughters & Sons To Work Day
• Presented lab tours and demos to inform about research being done on campus.

2000 ***Founder/Organizer/Lecturer***, Physics Graduate Student Computing Workshop, LSU
• Petitioned department for permission and space to teach and develop original content for a new summer mini-course on real world and high performance computing skills for physics graduate students; coordinated with STEM professors throughout the university to serve as guest lecturers.

1999-2002 ***Coordinator***, Saturday Science high school public lecture series, Louisiana State University
• Advertised lectures with schools from several parishes (counties), provided audio/visual technical support to scientists.

2003 - present ***Research Supervisor***
• Supervised research for 5-10 postdocs, undergraduate and graduate students remotely at Planetary Science Institute (2013-present), Washington University – St. Louis (2008-2010), University of Missouri – Columbia (2008-2010), Jet Propulsion Laboratory (2007-2010), Arizona State University (2003-2004).

2005 - present ***Admissions Interviewer***, Alumnae & Alumni of Vassar College
• Leading face-to-face, telecon, and Skype interviews with prospective undergraduate students and writing summary reports to support their college applications.

2005 - present ***Mentor***, Vassar Career Advisory Network
• Advising young prospective scientists on employment and internship opportunities.

**PROFESSIONAL ASSOCIATIONS**

• American Astronomical Society, Full Member, 2000-present.
(Division for Planetary Sciences; Laboratory Astrophysics Division)
• American Geophysical Union, Full Member, 2000-present.
(Planetary Sciences; Mineral & Rock Physics; Atmospheric Sciences sections)
• American Physical Society, Full Member, 1999-present.
• Association for Women In Science, Full Member, 2000-2005.

**PUBLICATIONS**

**25. Pitman, K.M.**, Jamieson, C.S., Noe Dobrea, E.Z., Dalton, J. B., III., Abbey, W.J. *Optical constants of Mars calcium, magnesium, and iron carbonate analogs*, Journal of Geophysical Research – Planets, in preparation, 2015.

**24. Pitman, K.M.**, Jamieson, C.S., Noe Dobrea, E.Z., Dalton, J. B., III, Abbey, W.J. *Optical constants of kieserite and starkeyite for Mars*, Journal of Geophysical Research – Planets, in preparation, 2015.

**23. Pitman, K.M.**, Speck, A.K., Hofmeister, A.M. *Improved spinel optical functions for astronomical dust*, Astrophysical Journal, in preparation, 2015.

**22.** Speck, A.K., Buffard, A., **Pitman, K.M.**, Hofmeister, A.M. *Better alternatives to "astronomical silicate:" laboratory-based optical functions of chondritic/solar abundance glass with application to HD 161796*, Astrophysical Journal, vol. 809, doi:10.1088/0004-637X/809/1/65, 2015.

**21. Pitman, K.M.**, Noe Dobrea, E.Z., Jamieson, C.S., Dalton, J. B., III, Abbey, W.J., Joseph, E.C.S. *Reflectance spectroscopy and optical functions for hydrated Fe-sulfates*, American Mineralogist special issue "What Lurks in the Martian Rocks and Soil? Investigations of Sulfates, Phosphates, and Perchlorates" (eds. Dyar, Bishop, Lane), vol. 99, 1593-1603, 2014.

20. Jamieson, C.S., Noe Dobrea, E.Z., Dalton, J.B. III, **Pitman, K.M.,** Abbey, W.J. *The spectral variability of kieserite ($MgSO_4 . H_2O$) with temperature and grain size and its application to the Martian surface*, Journal of Geophysical Research – Planets, 119, doi:10.1002/2013JE004489, 2014.

**19. Pitman, K.M.**, Hofmeister, A.M., Speck, A.K., *Revisiting astronomical forsterite in the UV to near-IR*, Earth, Planets, & Space, Cosmic Dust: Its Formation and Evolution (III) special issue, 65, 3, pp. 129-138, 2013 **[invited]**.

18. Dalton, J.B., III, **Pitman, K.M.** *Low temperature optical constants of some hydrated sulfates relevant to planetary surfaces*, Journal of Geophysical Research – Planets, 117, E09001, doi:10.1029/2011JE004036, 2012.

**17. Pitman, K.M**., Speck, A.K., Hofmeister, A.M., Corman, A.B. *Optical properties and applications of silicon carbide in astrophysics*, Silicon Carbide – Materials, Processing and Applications in Electronic Devices, edited by Dr. Moumita Mukherjee, InTech Open Access Publishing (ISBN 978-953-307-968-4), http://www.intechopen.com/articles/show/title/optical-properties-and-applications-of-silicon-carbide-in-astrophysics, 2011.

16. Prettyman, T.H., Feldman, W.C., McSween, H.Y. Jr., Dingler, R.D., Enemark, D.C., Patrick, D.E., Storms, S.A., Hendricks, J.P., Morgenthaler, J., **Pitman, K.M.**, Reedy, R.C. Dawn's Gamma Ray and Neutron Detector. *Space Science Reviews*, ISSN 0038-6308, pp. 1-89, doi: 10.1007/s11214-011-9862-0, http://dx.doi.org/10.1007/s11214-011-9862-0, 2011.

**15. Pitman, K.M.**, Dijkstra, C., Hofmeister, A.M., Speck, A.K. *Infrared laboratory absorbance spectra of olivine: Using classical dispersion analysis to extract peak parameters*, Monthly Notices of the Royal Astronomical Society, 406, pp. 460-481, 2010.

14. Prettyman, T. H., **Pitman, K. M.** *Dawn Gamma Ray and Neutron Detector DC041 Activity Report*, NASA Dawn mission technical document, 20 Sep. 2010.

**13. Pitman, K.M.**, Buratti, B.J., Mosher, J.A. *Disk-integrated bolometric Bond albedos and rotational light curves of saturnian satellites from Cassini Visual and Infrared Mapping Spectrometer*, Icarus, 206(2), pp. 537-560, doi:10.1016/j.icarus.2009.12.001, 2010.

12. Hofmeister, A.M., **Pitman, K.M.**, Corman A.B., Speck A.K., Goncharov, A. *Optical properties of silicon carbide for astrophysical applications II. Single-crystal absorption spectra*, Astrophys. J., 696, pp. 1502-1516, 2009.

11. Rodriguez, S., Le Mouelic, S., Rannou, P., Tobie, G., Baines, K.H., Barnes, J.W., Griffith, C.A., Hirtzig, M., **Pitman, K.M.**, Sotin, C., Brown, R.H., Buratti, B.J., Clark, R.N., Nicholson, P.D. *Global circulation as the main source of cloud activity on Titan*, Nature, 459, pp. 678-682, 2009.

10. Barnes, J.W., Brown, R.H., Soderblom, J.M., Jaumann, R., Jackson, B., Le Mouelic, S., Sotin, C., Buratti, B.J., **Pitman, K.M.**, Baines, K.H., Clark, R.N., Nicholson, P.D., Turtle, E.P., Perry, J. *Shoreline features of Titan's Ontario Lacus from Cassini/VIMS observations*, Icarus, 201, pp. 217-225, 2009.

9. Barnes, J.W., Soderblom, J.M., Brown, R.H., Buratti, B.J., Sotin, C., Baines, K.H., Clark, R.N., Jaumann, R., McCord, T.B., Nelson, R.M., Le Mouelic, S., Rodriguez, S., Griffith, C., Penteado, P., Tosi, F., **Pitman, K.M.**, Soderblom, L., Stephan, K., Hayne, P., Vixie, G., Bibring, J.-P., Bellucci, G., Capaccioni, F., Cerroni, P., Coradini, A., Cruikshank, D.P., Drossart, P., Formisano, V., Langevin, Y., Matson, D.L., Nicholson, P.D., Sicardy, B. *VIMS spectral mapping observations of Titan during the Cassini prime mission*, Planetary and Space Science, 57, pp. 1950-1962, 2009.

**8. Pitman, K.M.**, Hofmeister, A.M., Corman, A.B., Speck A.K. *Optical properties of silicon carbide for astrophysical applications I. New laboratory infrared reflectance spectra and optical constants*, Astronomy and Astrophysics, 483(2), pp. 661-672, 2008.

**7. Pitman, K. M**., Buratti, B. J., Mosher, J. A., Bauer, J. M., Momary, T. W., Brown, R. H. *First high solar phase angle observations of Rhea using Cassini VIMS: Upper limits on water vapor and geologic activity*, Astrophysical Journal Letters, 680(1), pp. L65-L68, 2008.

6. Barnes, J. W., Brown, R. H., Soderblom, L., Sotin, C., Le Mouelic, S., Rodriguez, S., Jaumann, R., Beyer, R. A., Buratti, B. J., **Pitman, K**., Baines, K. H., Clark, R., Nicholson, P. *Spectroscopy, morphometry, and photoclinometry of Titan's dunefields from Cassini/VIMS*, Icarus, 195(1), pp. 400-414, 2008.

5. Hofmeister, A.M., **Pitman, K.M.** *Evidence for kinks in structural and thermodynamic properties across the forsterite-fayalite binary from thin-film IR absorption spectra*, Physics and Chemistry of Minerals, 34(5), pp. 319-333, 2007.

**4. Pitman, K.M.**, Speck, A.K., Hofmeister, A.M. *Challenging the identification of nitride dust in extreme carbon star spectra*, Monthly Notices of the Royal Astronomical Society, 371(2), pp. 1744-1754, 2006.

**3. Pitman, K.M.** *Radiative transfer modeling of thermal infrared emissivity spectra: Applications to Martian regolith observations*, Ph.D. dissertation (ISBN: 054244058X), LSU, 2005.

**2. Pitman, K.M.**, Wolff, M.J., Clayton, G.C. *Application of modern radiative transfer tools to model laboratory quartz emissivity*, Journal of Geophysical Research – Planets, 110(E08003), doi:10.1029/2005JE002428, 2005.

**1. Pitman, K.M.**, Clayton, G.C., Gordon, K.D. *The 2175 Angstrom extinction bump in QSO spectra*, The Publications of the Astronomical Society of the Pacific, 112(770), pp. 537-541, 2000.

**PRESENTATIONS/TALKS** > 100 talks, including 87 total ( > 40 first author) research conference proceedings, presentations, and invited talks as of Oct. 2015 - http://adsabs.harvard.edu/abstract_service.html

**Selected invited talks:**

**Pitman K.M.**, Laboratory Astrophysics of Dust and Planetary Surface Analogs, Thirty Meter Telescope Seminar, Pasadena, CA, Feb. 29, 2012; Lunar & Planetary Institute Seminar, Houston, TX, Apr. 13, 2012.

**Pitman K.M.** New Laboratory Spectra of Cosmic Dust Analogs, PS02: Cosmic Dust: Its Formation and Evolution, Asia Oceania Geosciences Society (AOGS) 8th Annual Meeting, Taipei, Taiwan, Aug. 8-12 2011.

**Pitman K.M.** Silicates: Dust in the Laboratory, WittFest: Origins and Evolution of Dust, University of Toledo, Oct. 11, 2010**.**

**Pitman K.M.** Advances in Producing Optical Constants for Astrophysicists, University of Missouri - Columbia, April 21, 2009; Physics and Physical Sciences Seminar, University of Houston – Clear Lake, Mar. 1, 2010.

**Pitman, K. M.**, Titan's surface and atmosphere as viewed by Cassini VIMS, Planetary Science Seminar, Division of Geological and Planetary Sciences, California Institute of Technology, April 15 2008; Planetary Science Institute, July 31 2008.

**Pitman, K. M.**, SiC optical constants: mid- to far-IR, UV (you know you want them), Space Telescope Science Institute, March 2008.

**GRANTS** (* denotes active projects)

| | |
|---|---|
| 10/28/14 | Co-I, "FLASH: FLITECAM Limits on the Abundance of Silicate," SOFIA Cycle 3 Observing, PI: Jean Chiar (SETI), 2.5 hours + $10.5K awarded. |
| 01/02/14 – 02/17/15 | PI, "Derivation of Optical Constants of Mars Carbonate Analogs (Planetary Major Equipment)," NASA Mars Fundamental Research Program, $75K awarded. |
| 11/01/13-10/31/14 | PI, "EBCM Modeling of Martian Materials," NASA SMD High End Computing, 2400096 processor-hours awarded. |
| 09/01/13-08/31/14 | Advisory Board, "Longitudinal Study of Astronomy Graduate Students," NSF MPS-AST Special Programs in Astronomy, PI: Rachel Ivie & Susan White (AIP), $149.4K awarded. |
| *02/18/13-08/18/16 | PI (12-15% support annually), "Derivation of Optical Constants of Mars Carbonate Analogs," NASA Mars Fundamental Research Program, $243.2K awarded. |
| 08/30/12 | Co-I, "FLASH: FLITECAM Limits on the Abundance of Silicate," SOFIA Cycle 1 Observing, PI: Jean Chiar (SETI), 1.5 hours + $6.5K awarded. |
| *08/09/12-08/08/16 | PI (25-35% support annually), "Study of Coherent Backscattering Effect Using Near-Infrared Spectra of Outer Planet Satellites," NASA Outer Planets Research Program, $358.8K awarded. |
| *06/01/12-08/18/16 | PI (25-30% support annually), "Refractive Indices for Martian Remote Sensing and Extended Boundary Condition Method Modeling for Surface Reflectance Analysis," NASA Mars Fundamental Research Program, $226K awarded. |

| | |
|---|---|
| *10/01/11-09/29/16 | Co-I (15% support annually), "Spectral Characterization of Planetary Surface Materials: Extended Temperature and Wavelength Coverage," NASA Planetary Geology & Geophysics, PI: James Bradley Dalton (JPL), $441.4K. |
| 09/01/10-08/31/15 | Lead PI (35% support annually), "Collaborative Research: A laboratory experimental study of astronomical dust analogs at ultraviolet-visible wavelengths," NSF Astronomy and Astrophysics Research Grants, $191.9K (PSI portion) awarded. |
| 07/29/10-07/28/14 | PI (25% support annually), "Derivation of Optical Constants of Mars Analog Alteration Products: Mg- and Fe-Sulfates," NASA Mars Fundamental Research Program, $294.5K awarded. |
| 10/01/08 – 09/30/09 | Co-I (50% support), "Maps of the bolometric Bond albedos of Saturn's icy satellites," NASA Cassini Data Analysis Program, PI: Bonnie J. Buratti (JPL), $219.2K awarded. |