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Education

Ph.D., 2004: Geological Sciences, Arizona State University
B.A., 1999: Astrogeophysics, Colgate University

Employment

Sept. 2007-present: Assistant Professor, Stony Brook University
2006-2007: Caltech Postdoctoral Scholar at JPL
2005-2006: Postdoctoral Scholar, California Institute of Technology
2004-2005: Mars Exploration Rover Mission—Mini-TES Payload Downlink
Lead and Mineralogy and Geochemistry Science Theme Group
Lead
2004-2005: Postdoctoral Research Associate, Arizona State University
2001-2004: Graduate Research Assistant, Arizona State University
1999-2001: Graduate Teaching Assistant, Arizona State University

Teaching Experience

Spring 2008: GEO 106: Planetary Geology
Fall 2007: GEO 607-03: The Geology of Saturn's Moons
Spring 2006: Project lead for 8 students in Caltech's undergraduate Introductory Earth
Science Class
Spring 2001: Head Teaching Assistant, Department of Geological Sciences, ASU
Geology 103: Introduction to Physical Geology Laboratory
1999-2000: Teaching Assistant, Department of Geological Sciences, ASU
Geology 103: Introduction to Physical Geology Laboratory
1996-1999: Teaching Assistant, Department of Physics and Astronomy, Colgate
University, ASTR 101, ASTR 102 laboratories.

Field Experience

2002: Participant, NASA/JPL Field Integrated Design and Operations (FIDO)
rover field test, Gray Mountain, AZ. Supported simulated 2003 Mars
Exploration Rover (MER) operations.
2002: Student, Geology 598: Advanced Field Geology Remote Sensing in Field:
instructor: Dr. Philip Christensen
2000-2005: Field Instructor, National Remote Sensing Educator Workshop
Assisted Dr. Philip Christensen in bi-annual field trips to the Granite Wash
Mountains, AZ for K-12 teachers.
2000: Student, Colgate University Off-Campus Program

Honors and Awards

2004: NASA Group Achievement Award for Mars Exploration Rovers
2003: NASA Group Achievement Award for 2001 Odyssey THEMIS
2001-2004: NASA Graduate Student Researcher Program Fellow
1999: Founders Award, Colgate University Department of Physics and Astronomy,
“awarded periodically by the department to a senior who has demonstrated four
years of outstanding progress and development of his or her understanding of
physics or astronomy.”
1998-1999: NASA Space Grant Undergraduate Researcher
1997: Keck Northeast Astronomy Consortium Undergraduate Researcher

Professional Service

External reviewer for NSF program
External reviewer for NASA MDAP program
NASA MFRP, MDAP, PIDDP, MIDP, and Participating Scientist Review Panels
Reviewer for journals *JGR-Planets*, *Icarus*, *Geology*, *American Mineralogist*
2001: Arizona State University Geology Club Vice President
1999-Present: Numerous public outreach and education presentations

Professional Membership

American Geophysical Union
Geological Society of America
Mineralogical Society of America
Clay Minerals Society

Book Chapters

Bell, J. F. III, **T. D. Glotch**, V. Hamilton, T. McConnochie, A. McEwen, and P. Christensen, Visible Wavelength Multispectral Observations from Martian Orbit, In: J. F. Bell, III (Ed.) *The Martian Surface: Composition, Mineralogy, and Physical Properties*, Cambridge University Press, *in press*.

Christensen, P. R., J. L. Bandfield, D. Rogers, **T. D. Glotch**, V. E. Hamilton, M. B. Wyatt, R. Clark, Global Mineralogy Mapped from the Mars Global Surveyor Thermal Emission Spectrometer, In: J. F. Bell, III (Ed.) *The Martian Surface: Composition, Mineralogy, and Physical Properties*, Cambridge University Press, *in press*.

Ruff, S. W., P. R. Christensen, **T. D. Glotch**, D. L. Blaney, J. E. Moersch, and M. B. Wyatt, The Mineralogy of Gusev Crater and Meridiani Planum Derived from the Miniature Thermal Emission Spectrometers on the Spirit and Opportunity Rovers, In: J. F. Bell, III (Ed.) *The Martian Surface: Composition, Mineralogy, and Physical Properties*, Cambridge University Press, *in press*.

Publications (including in prep)

Glotch, T. D., and G. R. Rossman (2008). Mid-infrared spectra and optical constants of seven iron oxide/oxyhydroxide minerals, *Icarus*, in preparation.

- Bleacher, J. E., L. S. Glaze, R. Greeley, E. Hauber, S. M. Baloga, S. E. H. Sakimoto, D. A. Williams, and T. D. Glotch (2008). Spatial and alignment analyses for a field of small volcanic vents south of Pavonis Mons and implications for the Tharsis province, Mars, *Geophys. Res. Lett.*, in preparation.
- Calvin, W. M. and 18 others (including **T. D. Glotch**) (2008). Hematite spherules at Meridiani: Results from the MI, Mini-TES and Pancam, *J. Geophys. Res.*, in press.
- Glotch, T. D.**, and M. D. Kraft (2008). Thermal transformations of akaganéite and lepidocrocite to hematite: Assessment of possible precursors to Martian crystalline hematite, *Phys. Chem. Min.*, doi:10.1007/s00269-008-0249-z.
- Osterloo, M. M., V. E. Hamilton, J. L. Bandfield, **T. D. Glotch**, A. M. Baldridge, P. R. Christensen, L. L. Tornabene, and F. S. Anderson (2008). Chloride-bearing materials in the southern highlands of Mars, *Science*, 319, 1651-1654.
- Grant, J.A. and 10 others (including **T. D. Glotch**) (2008). HiRISE imaging of impact megabreccia and sub-meter aqueous strata in Holden Crater, Mars, *Geology*, 36, 195-198.
- Glotch, T. D.**, G. R. Rossman, and O. Aharonson (2007). Mid-infrared (5-100 μm) reflectance spectra and optical constants of 10 phyllosilicate minerals, *Icarus*, 192, 605-62.
- Glotch, T. D.**, and A. D. Rogers (2007). Aqueous deposition of hematite and sulfate-rich light-toned layered deposits in Aureum and Iani Chaos, Mars, *J. Geophys. Res.*, 112, E06001, doi:10.1029/2006JE00286.
- Squyres, S. W. and 38 others (including **T. D. Glotch**) (2006). Overview of the Opportunity Mars Exploration Rover mission to Meridiani Planum: Eagle Crater to Purgatory Ripple, *J. Geophys. Res.*, 111, E12S12, doi:10.1029/2006JE002771.
- Glotch, T. D.**, and J. L. Bandfield (2006). Determination and interpretation of surface and atmospheric Mini-TES spectral endmembers at the Meridiani Planum landing site, *J. Geophys. Res.*, 111, E12S06, doi:10.1029/2005JE002671.
- Glotch, T. D.**, J. L. Bandfield, P. R. Christensen, W. M. Calvin, S. M. McLennan, B. C. Clark, A. D. Rogers, and S. W. Squyres (2006). The mineralogy of the light-toned outcrop at Meridiani Planum as seen by the Miniature Thermal Emission Spectrometer and implications for its formation, *J. Geophys. Res.*, 111, E12S03, doi:10.1029/2005JE002672.
- Squyres, S. W. and 17 others (including **T. D. Glotch**) (2006). Two years at Meridiani Planum: Results from the Opportunity Rover, *Science*, 313, 1403-1407.
- Squyres, S. W. and 20 others (including **T. D. Glotch**) (2006). Bedrock formation at Meridiani Planum, *Nature*, 443, E1-E2.
- Glotch, T. D.**, P. R. Christensen, and T. G. Sharp (2006). Fresnel modeling of hematite crystal surfaces and application to martian hematite spherules, *Icarus*, 181, 408-418.
- McLennan, S. M. and 31 others (including **T. D. Glotch**) (2005). Provenance and diagenesis of the evaporate-bearing Burns formation, Meridiani Planum, Mars, *EPSL*, 240, 95-121.

- Glotch, T. D.** and P. R. Christensen (2005). Geologic and mineralogic mapping of Aram Chaos: Evidence for a water-rich history, *J. Geophys. Res.*, 110, E09006, doi:10.1029/2004JE002389.
- Soderblom, L. A. and 42 others (including **T. D. Glotch**) (2004). Soils of Eagle Crater and Meridiani Planum at the Opportunity Rover Landing Site, *Science*, 306, 1723-1726.
- Christensen, P. R., M.B. Wyatt, **T. D. Glotch**, and 24 others (2004). Initial Results from the Miniature Thermal Emission Spectrometer Experiment at the Opportunity Landing Site on Meridiani Planum, *Science*, 306, 1733-1739.
- Christensen, P. R. and 24 others (including **T. D. Glotch**) (2004). Initial Results from the Miniature Thermal Emission Spectrometer Experiment at the Spirit Landing Site in Gusev Crater, *Science*, 305, 837-842.
- Glotch, T. D.**, R. V. Morris, P. R. Christensen, and T. G. Sharp (2004). Effects of precursor mineralogy on the thermal infrared emission spectra of hematite: Application to martian hematite mineralization. *Journal of Geophysical Research*, 109, E07003, doi:10.1029/2003JE002224.
- Bandfield, J. L., **T. D. Glotch**, and P. R. Christensen (2003). Spectroscopic identification of carbonates in the martian dust, *Science*, 301, 1084-1087.
- Botke, W. F. Jr., S. G. Love, D. Tytell, and **T. Glotch** (2000). Interpreting the elliptical crater populations on Mars, Venus, and the Moon. *Icarus*, 145, 108-121.

Selected Abstracts

- Glotch, T. D.** (2008). Mid-IR optical constants of six iron oxide/oxyhydroxide minerals, *Lunar Planet Sci.* XXXIX, abstract 1912.
- Glotch, T. D.**, and M. D. Kraft (2007). Thermal transformations of lepidocrocite and akaganéite to hematite: Examination of possible precursors to martian crystalline hematite. *Seventh Intl. Conf. Mars*, abstract 3148.
- Glotch, T. D.**, J. L. Bandfield, and M. Osterloo (2007). A spectrally unique unit dispersed though the southern highlands of Mars, *Lunar Planet. Sci.* XXXVIII, abstract 1820, 2007
- Glotch, T. D.**, S. M. Chemtob, and G. R. Rossman (2007). Attenuated total reflection as an in situ infrared spectroscopic method for mineral identification, *Lunar Planet. Sci.* XXXVIII, abstract 1731.
- Glotch, T. D.** (2006). Olivine and pyroxene-rich deposits in Holden Crater, Mars, *AGU Fall Meeting*, abstract 10074.
- Glotch, T. D.**, G. R. Rossman, and J. R. Michalski (2006). Estimated mid-infrared (200-2000 cm^{-1}) optical constants of some silica polymorphs, *Div. Plant. Sci.* 38, Abstract 62.05.
- Glotch, T. D.**, J. L. Bandfield, P. R. Christensen, W. M. Calvin, S. M. McLennan, and B. C. Clark (2006). Mineralogy of the light-toned outcrop at Meridiani Planum as seen by Mini-TES, *Lunar Planet. Sci.* XXXVII, abstract 2021.

- Glotch, T. D.,** J. L. Bandfield, and P. R. Christensen (2005). Factor analysis and target transformation of Mini-TES spectra: Recovery of scene endmembers at Meridiani Planum, *Lunar Planet. Sci. XXXVI*, abstract 2174.
- Glotch, T. D.,** D. Rogers, and P. R. Christensen (2005). A newly discovered hematite-rich unit in Aureum Chaos: Comparison of hematite and associated units with those in Aram Chaos, *Lunar Planet. Sci. XXXVI*, abstract 2159.
- Glotch, T. D.,** J. L. Bandfield, and P. R. Christensen (2004). Target transformation and factor analysis of Mini-TES spectra and comparison to TES and laboratory hematite spectra, *AGU Fall Meeting*, abstract 8222.
- Glotch, T. D.,** R. V. Morris, T. G. Sharp, and P. R. Christensen (2003). Fine-grained goethite as a precursor for martian gray hematite. *Sixth Intl. Conf. Mars*, abstract 3188.
- Glotch, T. D.,** and P. R. Christensen (2003). The geology of Aram Chaos. *Lunar Planet. Sci. XXXIV*, abstract 2008.
- Glotch, T. D.,** R. V. Morris, and P. R. Christensen (2002). Effect of aluminum substitution on the emissivity spectra of hematite. *Lunar Planet. Sci. XXXIII*, abstract 1847.
- Glotch, T. D.,** J. R. Holloway, and P. R. Christensen (2001). Experimental replication of the surface of the Sinus Meridiani hematite region. *Lunar Planet. Sci. XXXII*, abstract 2020.

Invited Talks:

Long Island Science Club—April 2008
Stony Brook University—March, 2007
Dartmouth College—February, 2007
Brown University—April, 2006
Colgate University—September, 2005