

# BENJAMIN PAUL WEISS

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## Education

<b>California Institute of Technology</b> , Pasadena, CA	
Ph.D., Planetary Science and Geology	2003
M.S., Planetary Science and Geology	2001
<b>Amherst College</b> , Amherst, MA	1991-1995
B. A. Physics, magna cum laude	1995

## Professional Experience

Victor P. Starr Assistant Professor of Planetary Sciences, Massachusetts Institute of Technology	2006-
Assistant Professor of Planetary Sciences, Massachusetts Institute of Technology	2004-2006
Visiting Assistant Professor, Massachusetts Institute of Technology	2003-2004
Scientist, California Institute of Technology	2003-2004
Research Assistant, California Institute of Technology	1997-2003
Princeton-In-Asia International Fellow, Temasek Polytechnic, Singapore	1995-1997

## Honors and Awards

Victor P. Starr Career Development Chair, 2006  
Invited Speaker, Seventh Annual Chinese-American Beckman Frontiers of Science Symposium, the United States National Academy of Sciences and the Chinese Academy of Sciences, 2004  
Invited Participant, Sixth Annual Japanese-American Beckman Frontiers of Science Symposium, the United States National Academy of Sciences and the Japan Society for the Promotion of Science, 2003  
Runner Up, Planetary Sciences Best Student Paper Award 2002, Meteoritical Society and the Geological Society of America Division of Planetary Geology, 2003  
Milton and Francis Clauser Doctoral Prize, 2003  
Everhart Distinguished Graduate Student Lecturer Award, 2002  
Outstanding Student Paper Award, Geomagnetism and Paleomagnetism Section, American Geophysical Union Fall Meeting, 2000  
Princeton-in-Asia International Fellow, 1995-1996  
Barry M. Goldwater Scholar, 1994-1995  
Magna cum Laude, Amherst College, 1995  
Elected to Sigma Xi, 1995  
Winner, Amherst College Great Minds Challenge, 1993  
Bausch & Lomb Science Award, 1987

Selected as youngest Amateur Astronomer Principal Investigator (PI) on Hubble Space Telescope (HST), 1987

## Professional Activities

- Member, NASA Astrobiology Drilling Project, Pilbara Craton, Western Australia  
Science Review Panel, NASA Mars Scout Program
- External Reviewer, NASA Cosmochemistry Program, NASA Exobiology Program,  
NASA Planetary Instrument Definition and Development Program, NASA  
Stardust Sample Analysis Program, NSF Instrumentation and Facilities program,  
NSF Geophysics program
- Referee, *Earth and Planetary Science Letters*, *Eos Transactions of the AGU*,  
*Geochemistry Geophysics Geosystems*, *Geochimica et Cosmochimica Acta*,  
*Geology*, *Geophysical Research Letters*, *Meteoritics and Planetary Science*,  
*Physics of the Earth and Planetary Interiors*, *Science*
- Session Convener and Chairman, “New Developments in Magnetic Instrumentation,  
Data Acquisition, and Processing”, American Geophysical Union Spring  
Meeting, Washington, DC, May, 2002
- Member, Mars Community Panel for National Research Council Decadal Study on  
Planetary Exploration: 2003-2013, 2001
- Session Convener and Chairman, “Planetary Paleomagnetism”, American Geophysical  
Union Fall Meeting, San Francisco, CA, December, 2001
- Session Chairman, “Astrobiology Instruments, Methods, and Missions”, SPIE 46<sup>th</sup>  
International Symposium on Optical Science and Technology, San Diego, CA,  
July, 2001
- Panelist, The Planetary Society’s Children’s Press Conference, Pasadena, CA, October,  
2000
- Session Chairman, Caltech Summer Undergraduate Research Fellowship Seminar Day,  
Pasadena, CA, October, 2000
- Session Chairman, “Astrobiology: Meteorites”, 31<sup>st</sup> Lunar and Planetary Science  
Conference, Houston, TX, March, 2000
- Member, American Geophysical Union, American Physical Society, Mineralogical  
Society of America, and Mission to Early Earth Focus Group of NASA  
Astrobiology Institute

## Publications

- Weiss, B. P., E. A. Lima, L. E. Fong, F. J. Baudenbacher (2007) Magnetic field  
paleointensity using SQUID microscopy, *Geology*, submitted.
- Maloof, A.C., R.E. Kopp, J.P. Grotzinger, D.A. Fike, T.Bosak, H. Vali, P.M.  
Poussart, B.P. Weiss, and J.L. Kirschvink (2007) Sedimentary iron cycling  
and the origin and preservation of magnetization in platform carbonate muds,  
Andros Island, Bahamas, *Earth Planet. Sci. Lett.*, submitted.
- Weiss, B. P., E. A. Lima, L. E. Fong, F. J. Baudenbacher (2007) Paleomagnetic  
analysis using SQUID microscopy, *J. Geophys Res.*, submitted.
- Louzada, K. L., S. T. Stewart, B. P. Weiss (2007) The effect of shock on the  
magnetic properties of pyrrhotite, the Martian crust, and meteorites,  
*Geophys. Res. Lett.*, in press.

- Kopp, R. E., C. Z. Nash, A. Kobayashi, B. P. Weiss, D. A. Bazylinski, J. L. Kirschvink (2006) Ferromagnetic resonance spectroscopy for assessment of magnetic anisotropy and magnetostatic interactions: a case study of mutant magnetotactic bacteria, *J. Geophys. Res.*, **111**, B12S25, doi:10.1029/2006JB004529.
- Maloof, A. C., G. P. Halverson, J. L. Kirschvink, D. P. Schrag, B. P. Weiss, P. F. Hoffman (2006) Combined paleomagnetic, isotopic and stratigraphic evidence for true polar wander from the Neoproterozoic Akademikerbreen Group, Svalbard, *GSA Bulletin*, **118**, 1099-1124.
- Kopp, R. E., B. P. Weiss, A. C. Maloof, H. Vali, C. Z. Nash, J. L. Kirschvink (2006) Chains, clumps, and strings: Magnetofossil taphonomy with ferromagnetic resonance spectroscopy, *Earth Planet. Sci. Lett.*, **247**, 10-26.
- Wieczorek, M. A., B. L. Jolliff, A. Khan, M. E. Pritchard, B. P. Weiss, J. Williams, L. L. Hood, K. Righter, C. R. Neal, C. K. Shearer, I. S. McCallum, S. Tompkins, B. R. Hawke, C. Peterson, J. J. Gillis, and B. Bussey (2006) The constitution and structure of the lunar interior, in *New Views of the Moon, Rev. Mineral. Geochem.* **60**, 221-364.
- Gattacceca, J., M. Boustie, B. P. Weiss, P. Rochette, E. A. Lima, L. E. Fong, F. J. Baudenbacher, (2006) Investigating impact demagnetization through laser impacts and SQUID microscopy, *Geology*, **34**, 333-336.
- Louzada, K. L., S. T. Stewart, B. P. Weiss (2005). Shock demagnetization of pyrrhotite ( $\text{Fe}_{1-x}\text{S}$ ,  $x \leq 0.13$ ) and implications for the Martian crust and meteorites, *Shock Compression of Condensed Matter-2005*.
- Shuster, D. L. and B. P. Weiss (2005) Martian surface paleotemperatures from thermochronology of meteorites, *Science*, **309**, 594-597.
- Storrs, A. D., C. Dunne, J.-M. Conan, L. Mugnier, B. P. Weiss, and B. Zellner (2005) A closer look at main belt asteroids 1: WF/PC images, *Icarus*, **73**, 409-416.
- Vali, H., Weiss, B. P., Li, Y., Sears, S. K., Kim, S. S., Kirschvink, J. L., and Zhang, C. (2004) Formation of tabular single domain magnetite induced by *Geobacter metallireducens* GS-15, *Proc. Natl. Acad. Sci. USA*, **101**, 16121-16126.
- Weiss, B. P., S. S. Kim, J. L. Kirschvink, R. E. Kopp, M. Sankaran, A. Kobayashi, and A. Komeili (2004) Ferromagnetic resonance and low-temperature magnetic tests for biogenic magnetite, *Earth Planet. Sci. Lett.*, **224**, 73-89.
- Weiss, B. P., S. S. Kim, J. L. Kirschvink, R. E. Kopp, M. Sankaran, A. Kobayashi, and A. Komeili (2004) Magnetic tests for magnetosome chains in Martian meteorite ALH84001, *Proc. Natl. Acad. Sci. USA*, **101**, 8281-8284.
- Moore, J. M., L. A. Leshin, D. D. Bogard, C. K. Shearer, N. G. Barlow, A. F. C. Haldemann, R. J. Wilson, B. P. Weiss, A. H. Treiman, R. N. Clark, S. M. Clifford (2002) Mars: Its place in the solar system, in *The Future of Solar System Exploration, 2003-2013: Community Contributions to the NRC Solar System Exploration Decadal Survey*, Ed. M. V. Sykes (Astronomical Society of the Pacific, San Francisco) p. 155-158.
- Weiss, B. P., D. L. Shuster, and S. T. Stewart (2002) Temperatures on Mars from  $^{40}\text{Ar}/^{39}\text{Ar}$  thermochronology of ALH84001, *Earth Planet. Sci. Lett.*, **201**, 465-472.
- Weiss, B. P., H. Vali, F. J. Baudenbacher, J. L. Kirschvink, S. T. Stewart, and D. L.

- Shuster (2002) Records of an ancient Martian magnetic field in ALH84001, *Earth Planet. Sci. Lett.*, **201**, 449-463.\*  
 \*One of top 20 most cited Mars papers published between 2002-2004, *ISI Essential Science Indicators Mars Special Topics*
- Kirschvink, J. L. and B. P. Weiss (2002) Mars, panspermia, and the origin of life: Where did it all begin? *Palaeontologia Electronica*, **4**, 2, editorial 2: 8p.  
 (available online at [http://palaeo-electronica.org/paleo/2001\\_2/editor/mars.htm](http://palaeo-electronica.org/paleo/2001_2/editor/mars.htm))
- Weiss, B. P., F. J. Baudenbacher, J. P. Wikswo, and J. L. Kirschvink (2001) Magnetic microscopy promises a leap in sensitivity and resolution, *Eos Trans. AGU*, **82**, 513 & 518.
- Weiss, B. P., J. L. Kirschvink, F. J. Baudenbacher, H. Vali, N. T. Peters, F. A. Macdonald, and J. P. Wikswo (2000) A low temperature transfer of ALH84001 from Mars to Earth, *Science*, **290**, 791-795.
- Weiss, B. P. and A. P. Ingersoll (2000) Cold spots in the martian polar regions: Evidence for carbon dioxide depletion?, *Icarus*, **144**, 432-435.
- Weiss, B. P., Y. L. Yung, and K. H. Nealson (2000) Atmospheric energy for subsurface life on Mars? *Proc. Natl. Acad. Sci. USA*, **97**, 1395-1399.
- Storrs, A., B. Weiss, B. Zellner, W. Burleson, R. Sicitu, E. Wells, C. Kowal, and D. Tholen (1999) Imaging observations of asteroids with Hubble Space Telescope, *Icarus*, **137**, 260-268.

## Talks and Presentations

### Invited

- Seventh Santa Fe Conference on Rock Magnetism, June 2006  
 American Geophysical Union Spring Meeting, *Eos Trans. AGU*, 87 (36), Jt. Assem. Suppl., Abstract GP24A-01, Washington, DC, May 2006  
 University of Washington Astrobiology Seminar, May 2006  
 University of Washington Department of Earth and Space Sciences, May 2006  
 University of Toronto Department of Physics, Toronto, Canada, March 2006  
 Harvard Department of Earth and Planetary Science, Cambridge, MA, October 2005  
 WHOI Geodynamics Seminar, Woods Hole, MA, March 2005  
 Yale Department of Geology and Geophysics, New Haven, CT, February 2005  
 Seventh Annual Chinese-American Frontiers of Science, National Academy of Sciences, Irvine, CA, October 2004  
 Petroleum Development of Oman meeting at MIT, Cambridge, MA, September 2004  
 University of Colorado at Boulder Department of Geological Sciences, Boulder, CO, April 2004  
 American Geophysical Union Fall Meeting, San Francisco, CA, *Eos Trans. AGU*, 84 (46), Fall Meet. Suppl., Abstract GP22A-02, December 2003  
 Exobiology Principal Investigators' Seventh Triennial Science Conference, NASA Ames Research Center, Mountain View, CA, August 2003  
 Petroleum Development Oman, Muscat, Oman, May 2003  
 NASA Jet Propulsion Laboratory, Pasadena, CA, January 2003  
 UCLA Planetary Science, Los Angeles, CA, October 2002  
 Thirteenth International Conference on Biomagnetism, Jena, Germany, August 2002

Meeting on Magnetotactic Bacteria on Earth, Mars and in ALH84001, NASA Ames  
Research Center, Mountain View, CA, June 2002  
Caltech Alumni Seminar Day, Pasadena, CA, May 2002  
MIT Department of Earth, Atmospheric and Planetary Sciences, Cambridge, MA, April  
2002  
Everhart Lecture, Caltech, Pasadena, CA, February 2002  
Mars Atmospheric Chemistry and Astrobiology Conference, Caltech, Pasadena, CA,  
December 2001  
SPIE 46<sup>th</sup> Annual Meeting International Symposium on Optical Science and  
Technology, San Diego, CA, July 2001  
Caltech Geological and Planetary Sciences 75<sup>th</sup> Anniversary Reunion, Pasadena, CA,  
May 2001  
American Geophysical Union Fall Meeting, *Eos Trans. AGU*, 81 (48), Fall Meet. Suppl.,  
Abstract GP12B-01, San Francisco, CA, December 2000  
Fifth Santa Fe Conference on Rock Magnetism, Santa Fe, NM, July 2000  
NASA Jet Propulsion Laboratory, Pasadena CA, 1999

### **Contributed**

Lunar and Planetary Science Conference XXXVIII, CD-ROM abstract #2360, Houston,  
TX, March 2007  
American Geophysical Union Fall Meeting, *Eos Trans. AGU*, 86 (52), Fall Meet. Suppl.,  
abstract GP41C-04, San Francisco, CA, December 2005  
Lunar and Planetary Science Conference XXXVI, CD-ROM abstract #1156, Houston,  
TX, March 2005  
Vernadsky Institute-Brown University Microsymposium 41, Houston, TX, March 2005  
American Geophysical Union Spring Meeting, Washington, DC, *Eos Trans. AGU*, 83  
(19), Fall Meet. Suppl., abstract GP51A-05, December 2004  
Sixth Annual Japanese-American Beckman Frontiers of Science Symposium,  
Kanagawa, Japan, December 2003  
Exobiology Principal Investigators' Seventh Triennial Science Conference, NASA Ames  
Research Center, Mountain View, CA, August 2003  
Goldschmidt Conference, Davos, Switzerland, *Geochim. Cosmochim. Acta Suppl.* 66,  
(15A): A827-A827, August 2002  
American Geophysical Union Spring Meeting, Washington, DC, *Eos Trans. AGU*, 83  
(19), Spring Meet. Suppl., abstract GP51A-05, May 2002  
Lunar and Planetary Science Conference XXXIII, CD-ROM abstract #1991, Houston,  
TX, March 2002  
Lunar and Planetary Science Conference XXXII, CD-ROM abstract #1244, Houston,  
TX, March 2001  
Caltech Planetary Science, Pasadena, CA, November 2000  
Lunar and Planetary Science Conference XXXI, CD-ROM abstract #2078, Houston,  
TX, March 2000  
Caltech Planetary Science, Pasadena, CA, October 1999  
American Geophysical Union Fall Meeting, San Francisco, CA, December 1999  
The Fifth International Conference on Mars, CD-ROM abstracts #6204 and #6192,  
Pasadena, CA, July 1999

American Geophysical Union Fall Meeting, San Francisco, CA, December 1998

**Coauthored Abstracts and Presentations**

- Lunar and Planetary Science Conference XXXVIII, CD-ROM abstract #2405, Houston, TX, March 2007
- Lunar and Planetary Science Conference XXXVIII, CD-ROM abstract #2344, Houston, TX, March 2007
- Lunar and Planetary Science Conference XXXVIII, CD-ROM abstract #2316, Houston, TX, March 2007
- Workshop on Science Associated with the Lunar Exploration Architecture, Tempe, AZ, February 2007
- American Astronomical Society Division for Planetary Sciences 38, *Bulletin of the American Astronomical Society*, 38, 3, abstract #13.02, 2006
- American Geophysical Union Fall Meeting, *Eos Trans. AGU*, 87 (52), Fall Meet. Suppl., abstract GP34A-06, San Francisco, CA, December 2006
- American Geophysical Union Fall Meeting, *Eos Trans. AGU*, 87 (52), Fall Meet. Suppl., abstract MR51B-0968, San Francisco, CA, December 2006
- American Geophysical Union Fall Meeting, *Eos Trans. AGU*, 87 (52), Fall Meet. Suppl., abstract GP23A-07, San Francisco, CA, December 2006
- Geological Society of America Annual Meeting, Paper #164-1, Philadelphia, PA, 2006
- Geological Society of America Annual Meeting, Paper #164-6, Philadelphia, PA, 2006
- Goldschmidt Conference, Abstract #206.00, *Geochim. Cosmochim. Acta Suppl.*, 70, 18, p. 330, Melbourne, Australia, August 2006.
- Goldschmidt Conference, Abstract #206.00, *Geochim. Cosmochim. Acta Suppl.*, 70, 18, p. 320, Melbourne, Australia, August 2006.
- Southern California Geobiology Symposium, Riverside, CA, April 2006
- Lunar and Planetary Science Conference XXXVII, CD-ROM abstract #2143, Houston, TX, March 2006
- Astrobiology Science Conference, Washington, DC, *Astrobiology* 6(1), Abstract 20, March 2006
- American Geophysical Union Fall Meeting, *Eos Trans. AGU*, 86 (52), Fall Meet. Suppl., Abstract B42A-03, San Francisco, CA, December 2005
- American Geophysical Union Fall Meeting, *Eos Trans. AGU*, 86 (52), Fall Meet. Suppl., Abstract B41A-0866, San Francisco, CA, December 2005
- American Geophysical Union Fall Meeting, *Eos Trans. AGU*, 86 (52), Fall Meet. Suppl., Abstract B24A-07, San Francisco, CA, December 2005
- American Geophysical Union Fall Meeting, *Eos Trans. AGU*, 86 (52), Fall Meet. Suppl., abstract B24A-03, San Francisco, CA, December 2005
- Mars Crater Consortium Meeting abstract #0803, Flagstaff, AZ, October 2005
- Workshop on the Role of Volatiles and Atmospheres on Martian Impact Craters, Laurel, MD, CD-ROM abstract #3046, July 2005
- Workshop on the Role of Volatiles and Atmospheres on Martian Impact Craters, Laurel, MD, CD-ROM abstract #3045, July 2005
- Southern California Geobiology Symposium, Los Angeles, CA, April 2005
- Lunar and Planetary Science Conference XXXVI, CD-ROM abstract #1134, Houston, TX, March 2005

American Geophysical Union Spring Meeting, San Francisco, CA, *Eos Trans. AGU*, 85 (47), Fall Meet. Suppl., abstract GP21C-03, December 2004  
Sixth Santa Fe Conference for Rock Magnetism, Santa Fe, NM, June 2004  
American Astronomical Society Division for Planetary Sciences 33, *Bulletin of the American Astronomical Society*, 33, 1055, abstract #14.10, 2001  
American Astronomical Society Division for Planetary Sciences 26, *Bulletin of the American Astronomical Society*, 26, 1176, abstract #29.23, 1994  
American Geophysical Union Spring Meeting, Washington, DC, *Eos Trans. AGU*, Spring Meet. Suppl., May 1994