

# Curriculum Vitae

## Dr. Daniel P. Glavin

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### Education:

B.S. (Physics – 1996) University of California, San Diego (UCSD), *Graduated with honors*  
Ph.D. (Earth Sciences – 2001) Scripps Institution of Oceanography, UCSD

### Professional Experience:

NASA Astrobiology Institute (NAI) DDF Program, PI (2008)  
NASA ROSES Lunar Sortie Science Opportunities Program, PI (2007-08)  
NASA ROSES Cosmochemistry Program, PI (2007-08)  
NASA Goddard IRAD Lunar Volatiles Study, PI (2007)  
NASA ROSES Sample Return Laboratory Instruments and Data Analysis Program, PI (2006-07)  
NASA ROSES Astrobiology: Exobiology and Evolutionary Biology, PI (2006 - 07)  
Member of the STARDUST Organics Preliminary Examination Team, NASA (2006)  
NAI, Goddard Center for Astrobiology Team Member (2005 – present)  
Max Planck Society Post-doctoral Fellow, NASA (2001 – 03)  
NSCORT Exobiology Pre-doctoral Fellow, NASA (1998 – 01)

### Biography:

Dr. Glavin is an Astrobiologist at NASA's Goddard Space Flight Center, with a research emphasis in organic chemistry and meteorite analysis. In 1998, he was awarded a NASA Specialized Center for Research and Training (NSCORT) Fellowship for graduate research in Dr. Jeff Bada's laboratory at the Scripps Institution of Oceanography in San Diego, CA. For his Ph.D. thesis he investigated the sublimation of amino acids from meteorite grains as a potential survival mechanism for amino acids in micrometeorites and interplanetary dust particles during atmospheric entry. He also developed extraction protocols for the analysis of extraterrestrial amino acids in a variety of carbonaceous chondrites, Antarctic micrometeorites, lunar and martian meteorites using high performance liquid chromatography. Working with the NASA Jet Propulsion Laboratory, Dr. Glavin helped develop a laboratory prototype for the Mars Organic Detector (MOD) instrument that was selected for the 2003 NASA Mars Sample Return mission that was unfortunately cancelled in 1999. After receiving his Ph.D. in Earth Science in 2001, Dr. Glavin worked as a post-doctorate research scientist for Dr. Guenter Lugmair at the Max Planck Institute (MPI) for Chemistry in Mainz, Germany.

Dr. Glavin became a NASA civil servant in 2004 and is currently working on the development of the Sample Analysis at Mars (SAM) gas chromatograph mass spectrometer instrument that was recently selected for the NASA Mars Science Laboratory (MSL) mission. In addition, Dr. Glavin is the principal investigator on a 2005 NASA ROSES Astrobiology proposal to investigate the distribution and isotopic composition of purines and pyrimidines in carbonaceous chondrites and the principal investigator on a 2006 ROSES SRLIDAP to develop instrumentation for the analysis of amino acids in Stardust material. He is currently supporting the efforts of the Stardust PET Organics Analysis Sub-Team by analyzing comet exposed aerogel and foil for amino acids and other amine compounds. Dr. Glavin sits on NASA committees including the 2004 Mars Human Precursor Science Steering Group. He is a scientific Co-Investigator for the NASA Astrobiology Institute at the Goddard Center for Astrobiology and continues to be a leader in the Astrobiology community. His research has been cited over 260 times by others in the field.

## Selected Peer-Reviewed Publications:

- Glavin, D. P.**, and Dworkin, J. P. 2007. Detection of cometary amine compounds in samples returned by Stardust. *Meteorit. Planet. Sci.* in press.
- Sandford, S. A. et al. (**Glavin, D. P.** is a co-author) 2006. Organics captured from Comet Wild 2 by the Stardust spacecraft. *Science* **314**: 1720-1724.
- Brownlee, D. et al. (**Glavin, D. P.** is a co-author) 2006. Comet 81P/Wild 2 under a microscope. *Science* **314**: 1711-1716.
- Glavin, D. P.**, Dworkin, J. P., Aubrey, A., Botta, O., Doty III, J. H., Martins, Z., and Bada, J. L. 2006. Amino acid analyses of Antarctic CM2 meteorites using liquid chromatography-time of flight-mass spectrometry. *Meteorit. Planet. Sci.* **41**: 889-902.
- Glavin, D. P.**, Cleaves, H. J., Buch, A., Schubert, M., Aubrey, A., Bada, J. L., and Mahaffy, P. R. 2006. Sublimation extraction coupled with gas chromatography-mass spectrometry: a new technique for future in situ analyses of purines and pyrimidines on Mars. *Planet. Space Sci.* **54**: 1584-1591.
- Bada, J. L. et al. (**Glavin, D. P.** is a co-author) 2005. New strategies to detect life on Mars. *Astron. Geophys.* **46**: 26-27.
- Glavin, D. P.**, J. P. Dworkin, M. Lupisella, G. Kmínek, and J. D. Rummel. 2004. Biological contamination studies of lunar landing sites: implications for future planetary protection and life detection on the Moon and Mars. *Int. J. Astrobiol.* **3**: 265-271.
- Glavin, D. P.**, H. J. Cleaves, M. Schubert, A. Aubrey, and J. L. Bada. 2004. New method for estimating bacterial cell abundances in natural samples by use of sublimation. *Appl. Environ. Microbiol.* **70**: 5923-5928.
- Glavin, D. P.**, Matrajt, G., and Bada, J. L. 2004. Re-examination of amino acids in Antarctic micrometeorites. *Adv. Space Res.* **33**: 106-113.
- Glavin, D. P.**, Kubny, A., Jagoutz, E., and Lugmair, G. W. (2004) Mn-Cr isotope systematics of the D'Orbigny angrite. *Meteorit. Planet. Sci.* **39**, 693-700.
- Glavin, D. P.**, Schubert, M., and Bada, J. L. (2002) Direct isolation of purines and pyrimidines from nucleic acids using sublimation. *Anal. Chem.* **74**, 6408-6412.
- Botta, O., **Glavin, D. P.**, Kmínek, G., and Bada, J. L. (2002) Relative amino acid concentrations as a signature for parent body processes of carbonaceous chondrites. *Orig. Life Evol. Biosph.* **32**, 143-163.
- Kmínek, G., Botta, O., **Glavin, D. P.**, and Bada, J. L. (2002) Amino acids in the Tagish Lake meteorite. *Meteorit. Planet. Sci.* **37**, 697-701.
- Glavin, D. P.** and Bada, J. L. (2001) Survival of amino acids in micrometeorites during atmospheric entry. *Astrobiology* **1**, 259-269.
- Ehrenfreund, P., **Glavin, D. P.**, Botta, O., Cooper, G., and Bada, J. L. (2001) Extraterrestrial amino acids in Orgueil and Ivuna: Tracing the parent body of CI type carbonaceous chondrites. *Proc. Natl. Acad. Sci. USA* **98**, 2138-2141.
- Glavin, D. P.**, Schubert, M., Botta, O., Kmínek, G., and Bada, J. L. (2001) Detecting pyrolysis products from bacteria on Mars. *Earth Planet. Sci. Lett.* **185**, 1-5.
- Kmínek, G., Bada, J. L., Botta, O., **Glavin, D. P.**, Grunthaler, F. (2000) MOD: An organic detector for the future robotic exploration of Mars. *Planet. Space Sci.* **48**, 1087-1091.
- Hutt, L. D., **Glavin, D. P.**, Bada, J. L. and Mathies, R. A. (1999) Microfabricated capillary electrophoresis amino acid chirality analyzer for extraterrestrial exploration. *Anal. Chem.* **71**, 4000-06.
- Glavin, D. P.**, Bada, J. L., Brinton, K. L. F., and McDonald, G. D. (1999) Amino acids in the Martian meteorite Nakhla. *Proc. Natl. Acad. Sci. USA* **96**, 8835-38.
- Bada, J. L., **Glavin, D. P.**, McDonald, G. D., and Becker, L. (1998) A search for endogenous amino acids in Martian meteorite ALH84001. *Science* **279**, 362-65.
- Glavin, D. P.** and Bada, J. L. (1998) Isolation of amino acids from natural samples using sublimation. *Anal. Chem.* **70**, 3119-22.