

Dr. Jamie E. Elsila (Cook)

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Education:

Ph.D. (Chemistry - 2004) Stanford University, Stanford, CA
B.A. (Chemistry, *summa cum laude* - 1996) Kalamazoo College, Kalamazoo, MI

Professional Experience:

Research scientist, NASA Goddard Space Flight Center, Astrochemistry Lab (2007- present)
NASA Astrobiology Institute, Goddard Center for Astrobiology Team Member (2007-present)
Principal Investigator, SETI Institute (2006-2007)
Post-doctoral Researcher, NASA Ames Research Center (2004-2006)
Graduate Student, Stanford University (1999-2004)
Peace Corps Volunteer, Masasi, Tanzania (1996-1998)
Student Intern, NASA Ames Research Center (1996)

Grants, Fellowships, and Professional Honors:

NASA Cosmochemistry Program research grant (PI, 2010-2012)
NASA Postdoctoral Fellowship (2005 – 2006)
National Research Council Postdoctoral Research Associateship (2004 – 2005)
Franklin Veatch Memorial Fellowship, Stanford University (2002 – 2003)
National Science Foundation Graduate Research Fellowship (1999 – 2001)
Phi Beta Kappa, 1995

Biography:

Dr. Elsila is an Astrochemist at NASA's Goddard Space Flight Center with a research emphasis on stable isotopic signatures of extraterrestrial organic compounds. She performed her doctoral research in Dr. Richard Zare's laboratory at Stanford University, using two-step laser mass spectrometry ($\mu\text{L}2\text{MS}$) to characterize the organic content of a variety of extraterrestrial and terrestrial samples. After earning her Ph.D. in Chemistry in 2004, she won a NASA Astrobiology Institute postdoctoral fellowship (NRC/NPP) and worked in the Astrochemistry Laboratory at NASA Ames Research Center, where she studied the chemistry of extraterrestrial organic compounds in interstellar ice analogs and carbonaceous chondrite meteorites. She continued this work as a Principal Investigator at the SETI Institute before moving to NASA Goddard as a civil servant in 2007. She is responsible for the isotopic measurement side of Goddard's Astrobiology Analytical Laboratory and focuses her research on the measurement of carbon, nitrogen, and hydrogen stable isotopic ratios in extraterrestrial organics, including amino acids in carbonaceous chondrites and cometary material returned by the Stardust mission. She is also a scientific Co-Investigator for the NASA Astrobiology Institute at the Goddard Center for Astrobiology.

Peer-Reviewed Publications:

- Elsila J.E.**, Callahan M.P., Glavin D.P., Dworkin J.P., and Bruckner H. (2011) Distribution and stable isotopic composition of amino acids from fungal peptaibiotics: Assessing the potential for meteoritic contamination. *Astrobiology*, **11**, 123-133.
- Glavin D.P., Callahan M.P., Dworkin J.P., and **Elsila J. E.** (2011) The effects of parent body processes on amino acids in carbonaceous chondrites. *Meteor. Planet. Sci.* **45**, 1948-1972.
- Glavin D.P., Aubrey A.D., Callahan M.P., Dworkin J.P., **Elsila J.E.**, Parker E.T., and Bada J.L. (2010) Extraterrestrial amino acids in the Almahata Sitta meteorite. *Meteor. Planet. Sci.*, **45**, 1695-1709.
- Sandford S.A., Bajt S., Clemett S.J., Cody G.D., Cooper G., Degregorio B.T., de Vera V., Dworkin J.P., **Elsila J.E.**, Flynn G.J. and others. (2010) Assessment and control of organic and other contaminants associated with the Stardust sample return from comet 81P/Wild 2. *Meteor. Planet. Sci.*, **45**, 406-433.
- Elsila, J.E.**, Glavin, D.P, Dworkin, J.P. (2009) Cometary glycine detected in samples returned by Stardust. *Meteor. Planet. Sci.*, **44**, 1323-1330.
- Nuevo, M., Milam, S.N., Sandford, S.A., **Elsila, J.E.**, Dworkin, J.P. (2009) Formation of uracil from the UV photo-irradiation of pyrimidine in pure H₂O ices. *Astrobiology*, **9**, 683-695.
- Ashbourn, S.F.M., **Elsila, J.E.**, Dworkin, J.P., Bernstein, M.P., Sandford, S.A., Allamandola, L.J. (2007) Ultraviolet photolysis of anthracene in H₂O interstellar ice analogs: potential connection to meteoritic organics. *Meteor. & Plan. Sci.*, **42**, 2035-2041.
- Elsila, J.E.**, Dworkin, J.P., Bernstein, M.P., Martin, M., Sandford, S.A. (2007) Mechanisms of amino acid formation in interstellar ice analogs. *Astrophys. J.*, **660**, 911-918
- Elsila, J.E.**, Hammond, M.R., Bernstein, M.P., Sandford, S.A., Zare, R.N. (2006) UV photolysis of quinoline in interstellar ice analogs. *Meteor. & Plan. Sci.* **41**(5), 785-796.
- Elsila, J.E.**, de Leon, N.P., Plows, F.L., Buseck, P.R., Zare, R.N. (2005) Extracts of impact breccia samples from Sudbury, Gardnos, and Ries impact craters and the effects of aggregation on C60 detection. *Geochim. Cosmochim. Acta*, **69**, 2891-2899.
- Elsila, J.E.**, de Leon, N.P., Buseck, P.R., Zare, R.N. (2005) Alkylation of polycyclic aromatic hydrocarbons in carbonaceous chondrites. *Geochim. Cosmochim. Acta*, **69**, 1349-1357.
- Elsila, J.E.**, de Leon, N.P., Zare, R.N. (2004) Factors affecting quantitative analysis in laser desorption/laser ionization mass spectrometry. *Anal. Chem.* **76**(9), 2430-2437.
- Dworkin J.P., Gillette, J. S., Bernstein, M. P., Sandford, S. A., Allamandola, L. J., **Elsila, J. E.** McGlothlin, D. R. & Zare, R.N. (2004) An evolutionary connection between interstellar ices and IDPs? Clues from mass spectroscopy measurements of laboratory simulations. *Adv. Space Res.*, **33**, 67-71.
- Imanaka, H., Khare, B.N., **Elsila, J.E.**, Bakes, E.L.O., McKay, C.P., Cruikshank, D.P., Sugita, S., Matsui, T., Zare, R.N. (2004) Laboratory experiments of Titan tholin formed in cold plasma at various pressures: implications for nitrogen-containing polycyclic aromatic compounds in Titan haze. *Icarus* **168**: 344-366.
- Mahajan, T.B., **Elsila, J.E.**, Deamer, D.W., Zare, R.N.. (2003) Formation of carbon-carbon

- bonds in the photochemical alkylation of polycyclic aromatic hydrocarbons. *Orig. Life Evol. Biosph.* **33**, 17-35.
- Plows, F.L., **Elsila, J.E.**, Zare, R.N., Buseck, P.R. (2003) Evidence that polycyclic aromatic hydrocarbons in two carbonaceous chondrites predate parent-body formation. *Geochim. Cosmochim. Acta* **67**(7), 1429-1436.
- Bernstein M.P., Moore M.H., **Elsila J.E.**, Sandford S.A., Allamandola L.J., and Zare R.N. (2003) Side group addition to the polycyclic aromatic hydrocarbon coronene by proton irradiation in cosmic ice analogs. *Astrophys. J.*, 582, L25-L29.
- Bernstein, M.P., **Elsila, J.E.**, Dworkin, J.P., Sandford, S.A., Allamandola, L.J., Zare, R.N. (2002) Side group addition to the polycyclic aromatic hydrocarbon coronene by ultraviolet photolysis in cosmic ice analogs. *Astrophys. J.*, **576**: 1115-1120.
- Elsila, J.E.**, Allamandola, L. J., Sandford, S.A. (1997) The 2140 cm^{-1} (4.673 microns) solid CO band: the case for interstellar O_2 and N_2 and the photochemistry of nonpolar interstellar ice analogs. *Astrophys. J.* **479**: 818-838.