Curriculum Vitae
Stephen R. Sutton

Education

B.S. Physics (1971) Washington University, St. Louis, MO

Ph. D. Earth and Planetary Sciences (1984) Washington Univ., St. Louis, Mo.

Thesis: Thermoluminescence Dating Study of Shock-metamorphosed Rocks from Meteor Crater, Arizona (Thesis advisors: Ghislaine Crozaz and Robert Walker)

Research Experience

2001-present: Senior Scientist

Department of the Geophysical Sciences and Center for Advanced Radiation Sources, University of Chicago, Chicago, IL

1990-present: Associate Director-CARS/Co-Project Leader for GeoSoilEnviroCARS at the APS

Center for Advanced Radiation Sources (CARS), University of Chicago, Chicago, IL

2001-present: Executive Director-EnviroCAT

Environmental Research Division, Argonne National Laboratory, Argonne, IL

1996-present: Beamline Spokesperson

X26A Microprobe Beamline Participating Research Team, National Synchrotron Light Source, Upton, NY

1988-2001: Senior Research Associate

Department. of the Geophysical Sciences, University of Chicago, Chicago, IL

1985-1988: Research Associate

Department of the Geophysical Sciences, University of Chicago, Chicago, IL

1984-1985: Research Associate

McDonnell Center for the Space Sciences, Department of Physics, Washington University, St. Louis, MO

1980-1984: Graduate Research Associate (McDonnell Graduate Fellow)

Department of Earth and Planetary Sciences, Washington University, St. Louis, MO

1971-1980: Space Physics Engineer

Department of Physics, Washington University, St. Louis, MO

Professional Societies

American Geophysical Union; American Chemical Society, Geochemical Society, EnviroSync

Service

NASA Lunar and Planetary Geoscience Review Panel (LPGRP) (1988-1990); NASA Cosmic Dust Allocation Committee - Member (1990-1998); NASA Planetary Instrument Definition and Development Program Review Panel (1991); NSLS Users Executive Committee - X-ray Fluorescence Special Interest Group Representative (1988-1989); GeoSync Users Committee, Co-Chairman (1989-1992); Workshop on Applications of the Advanced Light Source to Problems in the Earth Sciences, Co-convener (San Francisco, Dec., 1991); Workshop on Applications of Synchrotron Radiation to Earth Materials, Organizer (National Synchrotron Light Source, June, 1992); GeoSoilEnviroCARS Steering Committee, Chair (1993-present); DOE Research Symposium on Earth Materials, Co-organizer (1995); Advanced Photon Source Users Organization Steering Committee, Member (1995-1997); DOE Workshop on Molecular Environmental Science, Steering Committee Member (1995); EnviroSync Steering Committee, Member (1998-present); APS Workshop - Microscale and Molecular Environmental Science, Co-organizer (1998); DOE-Environmental Management Science Program, Geochemistry Proposal Review Panel Member (1999); DOE-BER Environmental Remediation Science Division Strategic Planning Workshop Member (2002); NASA-Cosmochemistry Proposal Review Panel Member (2002); MSA/GS Short Course, Reviews in Mineralogy & Geochemistry: Applications of Synchrotron Radiation in Low-Temperature & Environmental Science, Mineralogical Society of America, Vol 49, organizing committee and co-editor (2002); DOE Workshop on Geosciences User Facilities, organizer (2004); APS Workshop on Future Directions in Synchrotron Environmental Science, co-organizer (2004); NASA-Stardust Participating Scientist Review Panel Member (2005); APS General User Proposal Review Panel, Imaging Panel Chair (2005); Elements magazine, guest editor (2006); NASA Stardust Oversight Committee, member (2006-2007); Advanced Photon Source Proposal Review Panel, member (2005-2007); Nininger Meteorite Award (judge; 2007-2008); University of Delaware CCZR External Advisory Board (2007-2008).

Awards

Undergraduate Scholarships (1967-1971); McDonnell Graduate Fellowships (1980-1984); Nininger Meteorite Award (1982-1983); R&D 100 Award for X-ray Microprobe/Microscope, Co-winner (1989)

Publications

2008

Cook, D. L., T. Emge, G. F. Herzog, G. J. Flynn, A. Lanzirotti, and S. R. Sutton. XRD Analyses of Small Grains Using Synchrotron Radiation: Potential Application to Samples Returned by Stardust. Lunar and Planetary Science XXXIX, Lunar and Planetary Institute, Houston, TX, 2483.

Danielson, L. R., K. Righter, S. Sutton, M. Newville, L. Le. L-Edge XANES Measurements of the Oxidation State of Tungsten in Iron Bearing and Iron Free Silicate Glasses. Lunar and Planetary Science XXXIX, Lunar and Planetary Institute, Houston, TX, 2075.

Flynn, G. J., A. Lanzirotti, and S. R. Sutton. Elemental Compositions of Large Cluster IDPs. Lunar and Planetary Science XXXIX, Lunar and Planetary Institute, Houston, TX, 1146.

Hettiarachchi, G. M., M. J. McLaughlin, K. G. Scheckel, D. J. Chittleborough, M. Newville, S. Sutton, E. Lombi (2008) Evidence for Different Reaction Pathways for Liquid and Granular Micronutrients in a Calcareous Soil. Soil Sci. Soc. Am. J. 72 (1), 98-110.

Gallien, J.-P., H. Khodja, G. F. Herzog, S. Taylor, E. Koepsell, C. P. Daghlian, G. J. Flynn, I. Sitnitsky, A. Lanzirotti, S. R. Sutton, and L. P. Keller (2008) Characterization of carbon- and nitrogen-rich particle fragments captured from Comet 81P/Wild 2. Meteoritics and Planetary Science, in press.

Gualda, G. A. R., A. Pumukcu, A. T. Anderson, Jr., S. R. Sutton and M. Newville (2008) The onset of decompression recorded in phenocrysts of the Bishop Tuff. To be submitted.

Karner, J. M., J.J. Papike, S.R. Sutton, C.K. Shearer, P. Burger, G. McKay, and L. Le. Valence State Partitioning of Vanadium Between Pyroxene-Melt: Effects of Pyroxene and Melt Composition and Direct Determination of V Valence By XANES. Lunar and Planetary Science XXXIX, Lunar and Planetary Institute, Houston, TX, 1110.

Kitts, K., Y. Choi, P. Eng, S. Sutton, S. Ghose, D. Burnett. Discrimination and Quantification of Implanted Solar Wind in Genesis Collector Shards Using Grazing Incidence Synchrotron X-Ray Techniques: New Detector Initial Results. Lunar and Planetary Science XXXIX, Lunar and Planetary Institute, Houston, TX, 1296.

Knight, K. B., S. R. Sutton, M. Newville, A. M. Davis, N. Dauphas, R. S. Lewis, S. Amari, I. M. Steele, M. R. Savina and M. J. Pellin. Trace Element Determinations in Presolar SiC Grains by Synchrotron X-Ray Fluorescence: Commencement of a Coordinated Multimethod Study. Lunar and Planetary Science XXXIX, Lunar and Planetary Institute, Houston, TX, 2135.

Lanzirotti, A., S. R. Sutton, G. J. Flynn, M. Newville and W. Rao (2007) Chemical composition and heterogeneity of Wild 2 cometary particles determined by synchrotron x-ray fluorescence. Meteoritics & Planetary Science, in press.

Rao, M. N., L. E. Nyquist, S. J. Wentworth, D. H. Garrison, J. Herrin and S.R. Sutton (2008) Martian Fluids based on Mobile Element Studies in Salt-assemblages from Martian Meteorites. J. G. R.-Planets, in press.

Rao, M. N., L. E. Nyquist, S. R. Sutton, and D. H. Garrison (2008) Mobile Element Studies in Rocks (RAT) from Columbia Hills / West Spur At Gusev. Lunar and Planetary Science XXXIX, Lunar and Planetary Institute, Houston, TX, 1768.

Simon, S. B., S. R. Sutton and L. Grossman. Constraints on the Oxidation State of Chondrule Precursors from Titanium XANES Analysis of Semarkona Chondrules. Lunar and Planetary Science XXXIX, Lunar and Planetary Institute, Houston, TX, 1352.

Sutton, S. R., M. N. Rao, and L. E. Nyquist. Sulfur and Iron Speciation in Gas-Rich Impact-Melt Glasses from Basaltic Shergottites Determined by MicroXANES. Lunar and Planetary Science XXXIX, Lunar and Planetary Institute, Houston, TX, 1961.

Tokunaga, T., J. Wan, Y. Kim, S. Sutton, M. Newville, A. Lanzirotti, W. Rao (2008) Real-Time X-ray Absorption Spectroscopy of Uranium, Iron, and Manganese in Contaminated Sediments During Bioreduction. Environ. Sci. & Technol. 42: 2839–2844.

2007

Alderden, R. A., H. R. Mellor, S. Modok, M. D. Hall, S. R. Sutton, M. G. Newville, R. Callaghan, and T. W. Hambley (2007) Elemental tomography of cancer-cell spheroids reveals incomplete uptake of both platinum(II) and platinum(IV) complexes. Jour. Am. Chem. Soc. 129 (44), 13400-13401.

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Flynn, G. J., A. Lanzirotti, S. R. Sutton, and I. Sitnitsky (2007) Chemical Compositions of Five Large Cluster IDPs. Lunar and Planetary Science XXXVIII, LPI, 2290.

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Hettiarachchi, G. M., M. J. McLaughlin, K. G. Scheckel, D. J. Chittleborough, M. Newville, S. R. Sutton, and E. Lombi (2007) Spectroscopic and Microscopic Investigations on Mobility and Speciation of Liquid- and Granular-Fertilizers of Manganese and Zinc in a Calcareous Soil. J. Environ. Qual., in press.

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Simon, S. B., S. R. Sutton and L. Grossman (2007) The Valence of Titanium in Refractory Forsterite. Lunar and Planetary Science XXXVIII, LPI, 1892.

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Kitts, K., S. Sutton, P. Eng, S. Ghose, D. Burnett (2006) Discrimination and Quantification of Contamination and Implanted Solar Wind in Genesis Collector Shards Using Grazing Incidence Synchrotron X-Ray Techniques: Initial Results. Lunar and Planetary Science XXXVII, LPI, Lunar and Planetary Institute, 1451.

LaRiviere, P. J., D. Billmire, P. Vargas, M. Rivers and S. R. Sutton (2006) Penalized-likelihood image reconstruction for x-ray fluorescence computed tomography. Opt. Engineering 45, 077005.

Polizzotto, M. L., C. F. Harvey, G. Li, B. Badruzzman, A. Ali, M. Newville, S. Sutton, S. Fendorf (2006) Solid-phases and desorption processes of arsenic within Bangladesh sediments. Chem. Geol. 228 (1-3), 97-111.

Polizzotto, M. L., C. F. Harvey, S. R. Sutton and S. Fendorf (2006) Processes conducive to the release and transport of arsenic into aquifers of Bangladesh. Proc. Nat. Acad. Sci. USA 102, 18819-18823.

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Righter, K., S. R. Sutton, M. Newville, L. Le, C. S. Schwandt, H. Uchida, B. Lavina and R. T. Downs (2006) An experimental study of the oxidation state of vanadium in spinel and basaltic melt with implications for the origin of planetary basalt. American Mineralogist 91, 1643-1656.

Simon, S. B., S. R. Sutton, and L. Grossman (2006) Measurement of Ti^{3+}/Ti^{4+} Ratios in Pyroxene in Wark-Lovering Rims: Evidence for Formation in a Reducing Solar Nebula. Lunar and Planetary Science XXXVII, LPI, Lunar and Planetary Institute, 1772.

Sutton, S. R. (2006) User research facilities in the earth sciences. Elements 2, 7-8.

Sutton, S. R., M. W. Caffee, and M. T. Dove (2006) Synchrotron radiation, neutron and mass spectrometry techniques at user facilities. Elements 2, 15-21.

2005

Allison, N., A. A. Finch, A. W. Tudhope, M. Newville, S. R. Sutton, and R. M. Ellam (2005) Reconstruction of deglacial sea surface temperatures in the tropical Pacific from selective analysis of a fossil coral. Geophys. Res. Lett. 32, L17609, doi:10.1029/2005GL023183.

Allison, N., A. A. Finch, M. Newville, S. R. Sutton (2005) Strontium in coral aragonite: 3. Sr coordination and geochemistry in relation to skeletal architecture. Geochim. Cosmochim. Acta 69 (15), 3801-3811.

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Nishiyama, N., Y. Wang, T. Uchida, T. Irifune, M. L. Rivers, S. R. Sutton (2005) Pressure and strain dependence on the strength of sintered polycrystalline Mg_2SiO_4 ringwoodite. Geophys. Res. Lett. 32, L04307-1-L04307-4.

Prakapenka, V. B., G. Shen, M. L. Rivers, S. R. Sutton, L. Dubrovinsky (2005) Grain-size control in situ at high pressures and high temperatures in a diamond-anvil cell. J. Synchrotron Rad. 12, 560-565.

Rao, M. N., S. R. Sutton, D. S. McKay and G. Dreibus (2005) Clues to Martian Brines based on Halogens in Salts from Nakhlites and MER Samples. JGR-Planets – Early Mars Special Issue, 110, doi:10.1029/2005JE002470.

Rao, M. N., S.R. Sutton, D.S. McKay (2005) Evaporative evolution of Martian brines based on halogens in nakhlites and MER samples. Lunar and Planetary Science XXXVI, LPI, Lunar and Planetary Institute, 1148.

Righter, K., S. R. Sutton, M. Newville, L. Le, C. S. Schwandt (2005) Micro-XANES measurements on experimental spinels and the oxidation state of vanadium in coexisting spinel and silicate melt. Lunar and Planetary Science XXXVI, LPI, Lunar and Planetary Institute, 1140.

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