
CURRICULUM VITA

T.C. Onstott

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(a) Professional Preparation

Calif. Inst. of Technology	Geophysics	B.S. 1976
Princeton University	Geology	M.A. 1978
Princeton University	Geology	Ph.D. 1980
Princeton University/Univ. of Toronto	$^{40}\text{Ar}/^{39}\text{Ar}$ geochronology	1980-1983.

(b) Appointments

Full Professor, Princeton University, 2001-present.
Associate Professor, Princeton University, 1990-2001.
Assistant Professor, Princeton University, 1985-1990.
Research associate, Princeton University, 1983-1985.
Research Assistant at U.S.G.S. Flagstaff, Arizona, 1974-1976.

Other Professional Experiences:

U.S. representative to IGCP 108/144 "Correlation of West Africa and Eastern Brazil", 1980-1984.
Chairman, GSA Special Symposium on "Radiometric Calibration of thermal histories of rocks" GSA Nat. Mtg., 1985.
Chairman of U.S. working group for IGCP 204 "Precambrian Geology of the Amazonas Craton", 1987-1988.
Editor, Special Issue of Precamb. Res., 42, 1988.
Associate editor for Precambrian Research, 1988-1994.
Editor, Special Issue of Precamb. Res., "Precambrian Paleomagnetism, Paleogeography and Paleoclimates, 1994.
Co-Chairman of Deep Microbiology Working Group, Subsurface Science Program, U.S. Dept. of Energy, 1994-1996.
Co-Chairman of Special Session on Subsurface Microbial Processes, Fall Meeting of American Geophysical Union, 1996.
Member of Review Panel for Environmental Management Science Program, U.S. Dept. of Energy, 1996.
Program Committee Member for 1997 SPIE Conference for Investigation of Extraterrestrial Microorganisms.
Participant of NASA Workshop on Mars Drilling, NASA Ames, Dec. 1996
Participant of NASA Workshop on Mars Sample Return, NASA Ames, June 1997
Member of Athena Proposal Team in charge of Planetary Protection Issues, 06/97 to 04/98
Participant of NASA Workshop on Deep Drilling Mars Mission, Los Alamos, May, 1998.
Member of Review Panel for LExEn Program, NSF, May 2000.
Organized Workshop on Biogeochemical Processes at Lead, South Dakota as part of Underground Laboratory Conference, Jan. 2000.
Drafted Earth Lab report to NSF, 2004.
S1 Principal Investigator for Deep Underground Science and Engineering Laboratory, (DUSEL) 2004-2007.
Member of the DUSEL Experiment Development and Coordination committee 2007-2009.
Presenter at NASA Workshop on Deep Drilling Mars Mission, NASA Ames, Feb., 2008.

Co-Director of Indiana-Princeton-Tennessee Astrobiology Institute, 2004-2008.
Co-Chairman of Special Session on Underground Laboratories, Fall Meeting of American Geophysical Union, 2008.
Co-Chairman of Special Session on Rocks, Fractures, Fluids, and Life: Insights From Underground Research Laboratories, Fall Meeting of American Geophysical Union, 2010.
NSF DEB Review Panel Member, 2012
U.S. DOE Early Career Proposals Review Panel Member, 2013.
NASA - Member of the Mars 2020 Science and Definition Team, Spring/Summer 2013.
NASA – Member of the Advisory Committee on Planetary Protection – 2014-today

Awards and Fellowships

Presidential Young Investigator Award, 1985-1989
Jubilee Medal, Geological Society of South Africa, 1988
Award for Meritorious Research in Subsurface Microbiology, U.S. Dept. of Energy, 1995
Award for Meritorious Research in NABIR Program, U.S. Dept. of Energy, 1998
Appreciation Award for Research Excellence, Office of Science, U.S. Dept. of Energy, 2002
TIME100 Most Influential People in the World, 2007

Refereed Journals and Reviews

* Undergraduate, graduate or postdoctoral advisees

1. 2016 Youmi Oh, Brandon Stackhouse*, Maggie C.Y. Lau*, Jonathan Moch*, Tullis C. Onstott, Christian Juncher Jørgensen, Ludovica D'Imperio, Bo Elberling, Craig A. Emmerton, Vincent L. St. Louis and David Medvigy, A scalable model explaining methane consumption in Arctic mineral soils. *Geophysical Research Letters*, 43, 5143--5150, doi:10.1002/2016GL069049.
2. 2016 Magnabosca C., Timmers P. H. A., Lau M. C. Y., Borgonie G., Linage-Alvarez B., Kuloyo O., Alleva R., Kieft T. L., Slater G. S., van Heerden E., Sherwood Lollar B. and Onstott T. C. The case for a dynamical subsurface ecosystem. *BioRxiv* DOI:<http://dx.doi.org/10.1101/040204>.
3. 2016 Maggie C.Y. Lau*, Thomas L. Kieft, Olukayode Kuloyo, Borja Linage, Esta van Heerden, Melody R. Lindsay, Cara Magnabosco, Wei Wang, Jessica B. Wiggins, Ling Guo, David H. Perlman, Saw Kyin, Henry H. Shwe, Rachel L. Harris, Youmi Oh, Min Joo Yi and Tullis C. Onstott, The RNA portrait of the active C, N and S metabolic landscape at 1.34 km depth. *PNAS* *in press*.
4. 2016 Y. Chen*, Kevin K. Lehmann, Y. Peng, L.M. Pratt, J.R. White, S.B. Cadieux, B. Sherwood Lollar, G. Lacrampe-Couloume and T.C. Onstott, Hydrogen isotopic composition of Arctic and atmospheric CH₄ determined by a portable near-IR cavity ring-down spectrometer with a cryogenic pre-concentrator. *Astrobiology*, [10.1089/ast.2015.1395](https://doi.org/10.1089/ast.2015.1395).
5. 2016 B. Stackhouse*, M.C.Y. Lau*, T. Vishnivetskaya, N. Burton*, R. Wang*, A. Southworth*, L. Whyte, and T.C. Onstott, Atmospheric CH₄ oxidation by Arctic permafrost and mineral cryosols as a function of water saturation and temperature. *Geobiology*, doi: [10.1111/gbi.12193](https://doi.org/10.1111/gbi.12193).
6. 2016 R. L. Sanders*, R. L. Sleighter, P. G. Hatcher, T. C. Onstott, L. G. Whyte, B. Stackhouse*, and S. C. B. Myneni, Strikingly Different Form of Organic Carbon in Soils of Polar Regions, *Env. Sci. Tech.*, *in review*.
7. 2015 Cara Magnabosco*, Kathleen Ryan*, Maggie C.Y. Lau*, Olukayode Kuloyo, Barbara Sherwood Lollar, Thomas L. Kieft, Esta van Heerden, and T.C. Onstott, A Metagenomic Window into Carbon Metabolism at 3 km Depth in Precambrian Continental Crust. *The ISME Journal*, doi:10.1038/ismej.2015.150.
8. 2015 G. Borgonie, B. Linage-Alvarez, A.O. Ojo, S.O.C Mundle, L.B. Freese, C. Van Rooyen, O. Kuloyo, J. Albertyn, C. Pohl, E.D. Cason, J. Vermeulen, C. Pienaar, D. Litthauer, H. Van Niekerk, J. Van Eeden, B. Sherwood Lollar, T.C. Onstott and E. Van Heerden, Eukaryotic opportunists dominate the deep-subsurface biosphere in South Africa. *Nature Communications* 6:8952, DOI: 10.1038/ncomms9952.
9. 2015 Simkus, D. N., G. F. Slater, B. Sherwood Lollar, K. Wilkie, T. L. Kieft, C. Magnabosco, M.C.Y. Lau, M. J. Pullin, S. B. Hendrickson, K. E. Wommack, E. G. Sakowski, E. van Heerden, O. Kuloyo, B. Linage, G. Borgonie, T. C. Onstott, Variations in microbial carbon sources and cycling in the deep continental subsurface. *Geochim. Cosmochim. Acta*, 173:264–283.
10. 2015 Brandon T. Stackhouse*, Tatiana A. Vishnivetskaya, Alice Layton, Susan Pfiffner, Nadia C. Mykytczuk, Lyle G. Whyte, Nabil Saad, and Tullis C. Onstott, Vertical gas fluxes, geochemical characteristics, and microbial community of polygonal active layer and permafrost during progressive spring thaw. *Journal of Geophysical Research: Biogeosciences* 120: doi:10.1002/2015JG003004.
11. 2015 Borgonie G, Linage-Alvarez B, Ojo A, Shivambu S, Kuloyo O, Cason E, Maphanga S, Vermeulen J, Litthauer D, Ralston C, Onstott TC, Sherwood-Lollar B, van Heerden E, Deep subsurface mine stalactites trap endemic fissure fluid Archaea, Bacteria, and Nematoda possibly originating from ancient seas. *Frontiers in Microbiology*, 6:833.

12. 2015 T.C. Onstott Deep Subsurface Microbiology. In Gargaud M, Irvine W (Eds.) Encyclopedia of Astrobiology, Vol. x, pp xx–xxx. Heidelberg New York Dordrecht London.
13. 2015 M.C.Y. Lau*, B.T. Stackhouse*, A.C. Layton, A. Chauhan, T.A. Vishnivetskaya, K. Chourey, N.C.S. Mykytczuk, P.C. Bennett, G. Lamarche-Gagnon, N. Burton, J. Ronholm, W.H. Pollard, C.R. Omelon, D.M. Medvigy, R.L. Hettich, S.M. Pfiffner, L.G. Whyte and T.C. Onstott. An active atmospheric methane sink in high Arctic mineral cryosols. *ISME Journal*, doi:10.1038/ismej.2015.13.
14. 2015 J. Labonté, E. Field, M. Lau, D Chivian, E. van_Heerden, K. E. Wommack, T. L. Kieft, T.C. Onstott and R. Stepanauskas. Single cell genomics indicates horizontal gene transfer and viral infections in a deep subsurface Firmicutes population. *Frontiers in Microbiology* 1-14: doi:10.1038/ismej.2015.48.
15. 2014 Sherwood Lollar, B., Onstott, T.C., Lacrampe-Coulome, G., and Ballentine, C., Continental lithosphere doubles global H₂ flux estimates for the deep biosphere. *Nature* 516:379-382, doi:10.1038/nature14017.
16. 2014 Chauhan, A., Layton, A.C., Vishnivetskaya, T.A., Williams, D., Pfiffner, S.M., Rekepalli, B., Stackhouse, B., Lau, M.C.Y., Phelps, T.J., Mykytczuk, N., Ronholm, J., Whyte, L., Onstott, T.C., Saylor, G.S. Metagenomes from thawing low-soil-organic-carbon mineral cryosols and permafrost of the Canadian high Arctic. *Genome Announcements* 2(6):e01217-14. doi:10.1128/genomeA.01217-14.
17. 2014 Magnabosco*, C., C.Y.M. Lau*, T.C. Onstott, T.L. Kieft, M. Tekere, J. Olivier, B. Linage-Alvarez, O. Kulooyo, M. Erasmus, E. Cason, E. van Heerden, and G. Borgonie. Comparisons of the composition and biogeographic distribution of the bacterial communities occupying South African thermal springs with those inhabiting deep subsurface fracture water. *Frontiers in Microbiology*, doi: 10.3389/fmicb.2014.00679.
18. 2014 Lau, C.Y. M*, C. Cameron, C. Magnabosco*, C.T. Brown, F., Schilkey, S. Grim, S. Hendrickson, M. Pullin, G. Lacrampe-Couloume, B. Sherwood Lollar, Esta van Heerden, T.L. Kieft and T.C. Onstott, Phylogeny and phylogeography of functional genes shared among seven terrestrial subsurface metagenomes reveal N-cycling and microbial evolutionary relationships. *Frontiers in Microbiology*, doi: 10.3389/fmicb.2014.00531.
19. 2014 Y. Chen (陈宇衡), P. Mahaffy, V. Holmes, J. Burris, P. Morey, Y. Tang, K.K. Lehmann, B. Sherwood Lollar, G. Lacrampe Couloume and T.C. Onstott, Isotopic Analyses of CH₄ during Planetary Surface Missions Using Near Infrared Cavity Ring-down Spectroscopy. *Planetary and Space Sciences*, 105:117-126, 10.1016/j.pss.2014.11.016.
20. 2014 M. Kang, C. Kanno, M. Reid, X. Zhang, D. Mauzerall, M. Celia, Y. Chen, T. C. Onstott, Methane emission from old abandoned oil and gas wells in northwest Pennsylvania. *Proc. National Academy of Sciences*, 10.1073/pnas.1408315111.
21. 2014 Wilkins, M., Daly, P. Mouser, Sharma, D. Cole, Wrighton, J. Biddle, J.K. Fredrickson, T.L. Kieft, T.C. Onstott, Petersen, S.M. Pfiffner, T.J. Phelps, and M. Schrenk Trends and Future Challenges in Sampling the Deep Terrestrial Biosphere. *Frontiers in Microbiology* 5: doi: 10.3389/ fmicb.2014.00481.
22. 2014 Allan, J., J. Ronholm, N. C. S. Mykytczuk, C. W. Greer, T. C. Onstott and L. G. Whyte, Methanogen community composition and rates of methane consumption in Canadian High Arctic permafrost soils. *Environmental Microbiology Reports* doi:10.1111/1758-2229.12139.
23. 2014 Vishnivetskaya, TA, AC Layton, MCY Lau*, A Chauhan, KR Cheng, AJ Meyers, JR Murphy, AW Rogers, GS Saarunya, DE Williams, SM Pfiffner, L Whyte, JP Biggerstaff, BT Stackhouse*, TJ Phelps, GS Saylor and TC Onstott, Commercial DNA extraction kits impact observed microbial community composition in permafrost samples. *FEMS Microbiol Ecol.* 87:217-230. doi: 10.1111/1574-6941.12219.
24. 2014 Onstott, T.C., Magnabosco, C.*, Aubrey, A.D., Burton, A.S., Dworkin, J.P., Elsila, J.E., Grunsfeld, S., Cao, B.H., Hein, J.E., Glavin, D.P., Kieft, T.L., Silver, B.J.*, vanHeerden, E., Opperman, D.J. and Bada, J.L.,

Does Aspartic Acid Racemization Constrain the Depth Limit of the Subsurface Biosphere? *Geobiology*, DOI: 10.1111/gbi.12069.

25. 2013 Y. Chen*, J. Kessler*, K. K. Lehmann, B. Sherwood Lollar, G. Lacrampe Couloume and T.C. Onstott, Measurement of the $^{13}\text{C}/^{12}\text{C}$ of atmospheric CH_4 using near-IR Cavity Ringdown Spectroscopy, *Analytical Chemistry* 85:11,250-11,257.
26. 2012 Mailloux, B.J.*, Dochenetz, A., Bishop, M., Dong, H.*, Ziolkowski, L.A., Wommack, K.E., Sakowski, E.G., Onstott, T.C. and Slater, G.F. A carbon free filter for collection of large volume samples of cellular biomass from oligotrophic waters. *Jour. Microbio. Methods* 90:145-151, doi:10.1016/j.mimet.2012.04.016.
27. 2012 Murdoch, L., Germanovich, L., Wang, H., Onstott, T.C., Elsworth, D., Stetler, L., and Boutt, D. Hydrogeology of the Vicinity of DUSEL Homestake. *Hydrogeology Journal* 20:27-43.
28. 2012 Rummel, J.D., M.S. Race, G. Horneck, J. Arnould, A. Baker, L. Billings, P. Boston, C. Chyba, C. Cleland, S. Clifford, C. Conley, P. Ehrenfreund, E. Foote, J. Gabrynowicz, A. Kerrest, G. Kminek, C. McKay, T.C. Onstott, D. Paige, T. Peters, S. Priest, R. Randolph, P. Rettberg, B. Stackhouse, E. Wilson, J-C Worms, Ethical Considerations for Planetary Protection in Space Exploration: A Workshop. *Astrobiology* 12:1017-1023.
29. 2012 Wanger, G., Moser, D.*, Hay, M. Myneni, S., Onstott, T.C. and Southam, G., Mobile Hydrocarbon Microspheres from >2 Billion Year Old Carbon-bearing Seams in the South African Deep Subsurface. *Geobiology* 10: 496-505.
30. 2012 Silver, B.J., Raymond, R., Sigman, D., Prokopenko, M., Sherwood Lollar, B., Lacrampe-Couloume, G., Fogel, M., Pratt, L., Leticariu, L., Onstott, T.C., The origin of NO_3^- and N_2 in deep subsurface fracture water of South Africa. *Chem. Geol.* 294-295:51-62.
31. 2012 Graham, D.E., Matthew D. Wallenstein, Tatiana A. Vishnivetskaya, Mark P. Waldrop, Tommy J. Phelps, Susan M. Pfiffner, T.C. Onstott, Lyle G. Whyte, Elizaveta M. Rivkina, David A. Gilichinsky, Dwayne A. Elias, Rachel Mackelprang, Nathan C. VerBerkmoes, Robert L. Hettich, Dirk Wagner, Stan D. Wulfschleger, and Janet K. Jansson, Commentary Microbes in Thawing Permafrost: The Unknown Variable in the Climate Change Equation, *The ISME Journal* 6:709-712.
32. 2011 Scheibe, T.D., S.S. Hubbard, T.C. Onstott and M.F. DeFlaun, Lessons Learned from Bacterial Transport Research at the South Oyster Site, Review Paper, *Ground Water* 45:745-763.
33. 2011 Lippmann-Pipke, J., Sherwood Lollar, B., Niedermann, S., Stronick, N., Naumann, R., vanHeerden, E. and Onstott, T.C. 2 Ga old crustal neon component implies long water-rock reaction times of deep fracture water. *Chem. Geol.* 283:287-296 (doi:10.1016/j.chemgeo.2011.01.028).
34. 2011 Borgonie, G., Antonio García-Moyano, Derek Litthauer, Wim Bert, Armand Bester, Esta van Heerden, and Tullis C. Onstott. Nematoda from the terrestrial deep subsurface of South Africa. *Nature*, 474:79-82, doi:10.1038/nature09974.
35. 2011 Peters, C.A., Dobson, P.F., Oldenburg, C.M., Wang, J.S.Y., Onstott, T.C., Scherer, G.W., Freifeld, B.M., Ramakrishnan, T.S., Stabinski, E.L., Liang, K. and Verma, S. LUCI: A facility at DUSEL for large-scale experimental study of geologic carbon sequestration. *Energy Procedia*, 4: 5050–5057 (doi:10.1016/j.egypro.2011.02.478).
36. 2011 Johnson, A.P., Pratt, L.M., Vishnivetskaya, T., Pfiffner, S., Bryan, R.A., Dadachova, E., Whyte, L., Radtke, K., Chan, E., I, Tronick, S.*, Borgonie, G., Mancinelli, R.M., Rothshchild, L.J., Rogoff, D.A., Horikawa, D.D., Onstott, T.C. Extended Survival of Several Organisms and Amino Acids under Simulated Martian Surface Conditions. *Icarus*, 211:1162–1178 (doi:10.1016/j.icarus.2010.11.011).

37. 2011 Onstott, T.C., Chan, E., Polizzotto, M., Lanzon, J. and DeFlaun, M.F. Precipitation of Arsenic Under Sulfate Reducing Conditions and Subsequent Leaching Under Aerobic Conditions. *App. Geochem.* 26: 269–285, doi:10.1016/j.apgeochem.2010.11.027.
38. 2011 Davidson, Mark M.*, Silver, Bianca J.*, T.C. Onstott, D.P. Moser*, Lisa M. Pratt, E.A. Boice, B. Sherwood Lollar, J. Lippmann-Pipke, S. M. Pfiffner, T.L. Kieft, W. Seymore and C. Ralston, Capture of Planktonic Microbial Diversity in Fractures by Long Term Monitoring of Flowing Boreholes, Evander Basin, South Africa. *Geomicrobiology Journal*, 28:275–300, DOI: 10.1080/01490451.2010.499928.
39. 2010 K. Zacny, D. McKay, L. Beegle, T.C. Onstott, R. Mueller, G. Mungas, P. Chu and J. Craft, Novel Method of Regolith Sample Return from Extraterrestrial Body using a Puff of Gas. Institute of Electrical and Electronics Engineers Aerospace Conference 2010, paper #1082, p. 1-10.
40. 2010 Randy L. Stotler, Shaun K. Frape, Barry M. Freifeld, Brian Holden, Tullis C. Onstott, Timo Ruskeeniemi, Eric Chan, A Method For Hydrogeological and Geochemical Measurement Beneath Deep Permafrost. *Ground Water* 49: 348-364, DOI: 10.1111/j.1745-6584.2010.00724.x.
41. 2010 Silver, Bianca J.*, Tullis Onstott, Li-Hung Lin, George Rose, Colin Ralston, Barbara Sherwood-Lollar, Susan M. Pfiffner, Thomas L. Kieft and Sean McCuddy. *In situ* cultivation of subsurface microorganisms in a deep mafic sill: implications for SLiMEs. *Geomicrobiology Journal* 27:329-348.
42. 2010 Onstott, T.C., Hinton, S.M., Silver, B.J.* and King, Jr., H.E. Coupling Hydrocarbon Degradation to Anaerobic Respiration and Mineral Diagenesis: Theoretical Constraints. *Geobiology*, 8:69-88.
43. 2009 Davidson, Mark M.*, M.E. Bisher, Lisa M. Pratt, Jon Fong, Gordon Southam, Susan M. Pfiffner, Z. Reches and T.C. Onstott, Sulfur Isotope Enrichment during Maintenance Metabolism of the Thermophilic Sulfate Reducing *Desulfotomaculum putei*. *Applied and Environmental Microbiology* 75: 5621–5630.
44. 2009 Onstott, T.C., Daniel J. McGown*, Corien Bakermans, Timo Ruskeeniemi, Lasse Ahonen, Jon Telling, Carl Boettiger, Ruby Ho, Bruno Soffientino, Susan M. Pfiffner, Sarah DiFurio, Barbara Sherwood Lollar, Shaun Frape, Randy Stotler, Lisa M. Pratt, and Tatiana A. Vishnivetskaya, Microbial Sulfur Cycling in Subpermafrost Saline Fracture Water at the Lupin Gold Mine, Nunavut, Canada. *Microbial Ecology* 58:786-807.
45. 2009 Stotler, R.L., Shaun K. Frape, Timo Ruskeeniemi, Lasse Ahonen, Tullis C. Onstott and Monique Y. Hobbs, Hydrogeochemistry of groundwater's in and below the base of thick permafrost at Lupin, Nunavut, Canada. *Jour. of Hydrology* 373:80-95.
46. 2009 West, L.* , D.J. McGown*, T.C. Onstott, R.V. Morris, P. Suchecki and L.M. Pratt, High Lake gossan deposit: An Arctic analogue for ancient Martian surficial processes? *Planetary and Space Science* 57:1302-1311.
47. 2009 Paul Backes, Tullis Onstott, Yoseph Bar-Cohen, Mircea Badescu, Lisa Pratt, Daniel Helmick, Stewart Sherrit, Adam Johnson and Xiaoqi Bao. Planetary Sample Sealing for Caching. *IEEEAC*, 978-1-4244-2622-5.
48. 2009 Smith, David J.*, Andrew C. Schuerger, Mark M. Davidson, Stephen W. Pacala, Corien Bakermans, and Tullis C. Onstott. Survivability of *Psychrobacter cryohalolentis* K5 Under Simulated Martian Surface Conditions. *Astrobiology Journal* 9: DOI: 10.1089/ast.2007.0231.
49. 2009 Zacny, K., Bar-Cohen, Y., Davis, K., Coste, P., Paulsen, G., Sherrit, S., George, J., Derkowski, B., Gorevan, S., Boucher, D., Guerrero, J., Kubota, T., Thomson, B.J., Stanley, S., Thomas, P., Lan, N., McKay, C., Onstott, T.C., Stoker, C., Glass, B., Wakabayashi, S., Whyte, L., Visentin, G., Re, E., Richter, L., Badescu, M., Bao, X., Fincher, R., Hoshino, T., Magnani, P. and Menon, C., Chap. 6. Extraterrestrial Drilling and

Exploration in Drilling in Extreme Environments: Penetration and Sampling on Earth and Other Planets, Bar-Cohen and Zacny (eds.) Wiley&Sons.

50. 2008 Sherwood Lollar, B., Lacrampe-Couloume, G., Voglesonger, K., Onstott, T.C., Pratt, L.M. and Slater, G.F., Isotopic signatures of CH₄ and higher hydrocarbon gases from Precambrian Shield sites: A model for abiogenic polymerization of hydrocarbons. *Geochimica et Cosmochimica Acta* 72:4778-4795.
51. 2008 Wanger, G., Onstott, T. C. and Southam, G., Stars of the terrestrial deep subsurface: A novel 'star-shaped' bacterial morphotype from a South African platinum mine. *Geobiology* 6: 325–330.
52. 2008 Dylan Chivian, Eric J. Alm, Eoin L. Brodie, David E. Culley, Paramvir S. Dehal, Todd Z. DeSantis, Thomas M. Gihring, Alla Lapidus, Li-Hung Lin, Stephen R. Lowry, Duane P. Moser, Paul Richardson, Gordon Southam, Greg Wanger, Lisa M. Pratt, Gary L. Andersen, Terry C. Hazen, Fred J. Brockman, Adam P. Arkin, and Tullis C. Onstott. Environmental genomics reveals a single species ecosystem deep within the Earth. *Science* 322:275-278.
53. 2008 Freifeld, B.M., Onstott, T.C., Pratt, L.M., Stotler, R., Pfiffner, S., Chan, E.*, Johnson, A., Holden, B., DiFurio, S., Ruskeeniemi, T., Frape, S., Neill, I. Arctic Ground Surface Temperature History using a Borehole Distributed Temperature Sensor at High Lake, Nunavut, Canada. *Geophys. Res. Letters*, 35: L14309, doi:10.1029/2008GL034762.
54. 2008 Pfiffner, S. M., T.C. Onstott, T. Ruskeeniemi, T., M. Talikka, C. Bakermans, D. McGown*, E. Chan*, A. Johnson, T. J. Phelps, M. Le Puil, S. A. Difurio, L.M. Pratt, R. Stotler, S. Frape, J. Telling, B. Sherwood-Lollar, I. Neill, and B. Zerbin. Challenges for Coring Deep Permafrost on Earth and Mars. *Astrobiology Journal* 8:623-638.
55. 2008 Mac Lean, L.C.W., Pray, T.J., Onstott, T.C. and Southam, G. High-resolution structural and chemical studies of framboidal pyrite formed within a bacterial biofilm. *Geobiology* 6: 471–480.
56. 2007 Sherwood Lollar, B., Voglesonger, K., Lin, L.-H., Abrajano, T.A., Onstott, T.C. and Pratt, L.M. Hydrogeologic controls on episodic H₂ release from Precambrian fractured rocks - Energy for deep subsurface life on Earth and Mars. *Astrobiology Journal* 7:971-986.
57. 2007 Mac Lean, L.C.W., Pray, T.J., Onstott, T.C. and Southam, G. Mineralogical, Chemical and Biological Characterization of an Anaerobic Biofilm Collected from a Borehole in a Deep Gold Mine in South Africa. *Geomicrobiology Journal* 24:491–504.
58. 2007 Elwood Madden, M., S. Ulrich, T.C. Onstott, and T. Phelps, Salinity-induced hydrate dissociation: a mechanism for recent methane release on Mars. *Geophys. Research Letters* 34, L11202, doi:10.1029/2006GL029156.
59. 2007 Mailloux, Brian J.*, Devlin, S., Fuller, M. E., Onstott, T. C., DeFlaun, M. F., Choi, K-H, Green-Blum, M., Swift, D. J. P., McCarthy, J., and Dong, H. The Limited Role of Aquifer Heterogeneity on Metal Reduction in an Atlantic Coastal Plain Determined by Push-Pull Tests. *Appl. Geochem.* 22:974-995.
60. 2007 DeFlaun, M. F., Fredrickson, J. K., Dong, H., Pfiffner, S. M., Onstott, T. C., Balkwill, D. L., Streger, S. H., Stackebrandt, E., Knoessen, S. and van Heerden, E. Isolation and characterization of a *Geobacillus thermoleovorans* species from an ultra-deep South African gold mine. *Systematic and Applied Microbiology* 30:152-162.
61. 2006 Lin, L.H.*, Wang, P-L, Rumble, D., Lippmann-Pipke, J., Boice, E., Pratt, L. M., Sherwood Lollar, B., Brodie, Eoin, Hazen, T., Andersen, G., DeSantis, T., Moser, D. P., Kershaw, D. and Onstott, T. C. Long term biosustainability in a high energy, low diversity crustal biome. *Science* 314:479-482.

62. 2006 Onstott, T. C., Lin, L.-H., Davidson, M., Mislouack, B., Borcsik, M., Hall, J., Slater, G., Ward, J., Sherwood Lollar, B., Lippmann-Pipke, J., Boice, E., Pratt, L. M., Pfiffner, S. M., Moser, D. P., Gihring, T. M., Kieft, T., Phelps, T. J., van Heerden, E., Litthaur, D., DeFlaun, M., Rothmel, R., Wanger, G. and Southam, G. The origin and age of biogeochemical trends in deep fracture water of the Witwatersrand Basin, South Africa. *Geomicrobiology Journal* 23:369-414.
63. 2006 Pfiffner, S. M., Cantu, J.M., Smithgall, A., Peacock, A., White, D.C., Moser, D. P., Onstott, T. C. and van Heerden, E. Phospholipid Fatty Acid Profiles and Biodensity Estimates for Water, Rock and Air Samples Recovered from Witwatersrand Basin Mines. *Geomicrobiology Journal* 23:431-442.
64. 2006 Slater, G. F., Lippmann-Pipke, J., Reddy, C. M., Lacrampe-Couloume, G., Onstott, T.C., Sherwood Lollar, B. ¹⁴C distribution in methane and DIC in South African gold mines: Implications to timing of methanogenesis. *Geomicrobiology Journal* 23:453-462.
65. 2006 Wanger, G., Onstott, T. C. and Southam, G. Structural and Chemical Characterization of a Natural Fracture Surface from 2.8 Kilometers Below Land Surface: Biofilms in the Deep Subsurface. *Geomicrobiology Journal* 23:443-452.
66. 2006 Gihring, T. M., Moser, D. P., Lin, L.-H.* , Davidson, M.* , Onstott, T. C., Morgan, L., Milleson, M., Kieft, T., Trimarco, E., Balkwill, D.L. and Dollhopf, M. The distribution of microbial taxa in the subsurface water of the Kalahari Shield, South Africa. *Geomicrobiology Journal* 23:415-430.
67. 2006 Lin, L-H.* , Gihring, T. M., Sherwood Lollar, B., Boice, E., Pratt, L. M., Lippmann-Pipke, J., Bellamy, R.E.S., Hall, J. and Onstott, T. C. Planktonic microbial communities associated with fracture-derived groundwater in a deep gold mine of South Africa. *Geomicrobiology Journal* 23:474-497.
68. 2006 Trimarco, E., Balkwill, D.L., Davidson, M.M. and Onstott, T.C. In Situ Enrichment of a Diverse Community of Bacteria from a 4-5 km Deep Fault Zone in South Africa. *Geomicrobiology Journal* 23:463-473.
69. 2006 Onstott, T. C., McGown, D.* , Kessler, J.* , Sherwood Lollar, B., Lehmann, K. K. and Clifford, S. Martian CH₄: sources, flux and detection. *Astrobiology* 6:377-395.
70. 2006 Sherwood Lollar, B., Lacrampe-Couloume, G., Slater, G.F., Ward, J., Moser, D.P., Lin, L.H.* and Onstott, T.C. Unravelling abiogenic and biogenic sources of methane in the Earth's deep subsurface. *Chem. Geol.* 226:328-339.
71. 2005 Lin, L-H* , Hall, J.A.* , Lippmann, J., Ward, J.A., Sherwood-Lollar, B. and Onstott, T.C., Radiolytic H₂ in the continental crust: Nuclear power for deep subsurface microbial communities, *Geochem. Geophys. Geosys.* 6: 10.1029/2004GC000907.
72. 2005 Kieft, T.L., McCuddy, S.M, Onstott, T. C., Davidson, M., Lin, L-H, Mislouack, B., Pratt, L.M., Boice, E., Sherwood Lollar, B., Lippmann-Pipke, J., Pfiffner, S. M., Phelps, T. J., Gihring, T., Moser, D., and van Heerden A. Geochemically Generated, Energy-Rich Substrates and Indigenous Microorganisms in Deep, Ancient Groundwater, *Geomicrobiology Journal*, 22:325-355.
73. 2005 Moser, D. P., T. M. Gihring, F. J. Brockman, J. K. Fredrickson, D. L. Balkwill, M. E. Dollhopf, B. Sherwood Lollar, L. M. Pratt, E. Boice, G. Southam, G. Wanger, B. J., Baker, S. M. Pfiffner, L.-H. Lin, and T. C. Onstott. *Desulfotomaculum* spp. and *Methanobacterium* spp. Dominate 4-5 km Deep Fault. *Appl. Environ. Microbiol.* 71:8773-8783.
74. 2005 Lin, L-H, Slater, G. F., Sherwood Lollar, B., Lacrampe-Couloume, G. and Onstott, T. C. Yields and hydrogen isotopic compositions of radiolytic H₂ and the implications for deep biosphere in continental crust. *Geochim. Cosmochim. Acta* 69:893-903.

75. 2004 Balkwill, D.L., Kieft, T.L., Tsukuda, T., Kostandarithes, H.M., Onstott, T.C., Macnaughton, S., Bownas, J. and Fredrickson, J.K. Identification of iron-reducing *Thermus* strains as *Thermus scotoductus*. *Extremophiles* 8:37-44.
76. 2004 Onstott, T.C. Impact of CO₂ Injections on Deep Subsurface Microbial Ecosystems and Potential Ramifications for the Surface Biosphere. In *The CO₂ Capture and Storage Project, Vol. II*, D.C. Thomas and S.M. Benson, eds., 1207-1239.
77. 2004 Hall, J.A., Mailloux, B.J., Onstott, T.C., Scheibe, T.D., Fuller, M.E., Dong, H. and DeFlaun, M.F. Physical versus chemical effects on bacterial transport as determined during in situ sediment core pulse experiments. *Jour. Cont. Hydrology* 76:295-314.
78. 2004 Ward, J.A., Slater, G.F., Lacrampe-Couloume, G., Lin, L.-H., Hall, J.A., Moser, D.P., Bonin, A., Bellamy, R.E.S., Onstott, T.C. and Sherwood Lollar, B. Microbial Hydrocarbon Gases in the Witwatersrand Basin, South Africa: Implications for Deep Biosphere. *Geochim. Cosmochim. Acta*, 68:239-3250.
79. 2004 Fuller M. E., Mailloux B. J., Streger S., Hall J. A., Zhang P., Vainberg S., Johnson W. P., Onstott T. C., and DeFlaun M. F. Application of a vital fluorescent staining method for simultaneous, near-real-time concentration monitoring of two bacterial strains in an Atlantic Coastal Plain aquifer in Oyster, Virginia. *Applied and Environmental Microbiology* 70:1680-1687.
80. 2003 Fuller M. E., Tullis C. Onstott, R. Bruce Hallet, Brian J. Mailloux, Mary F. DeFlaun, Enrique Alvarez, Tommy J. Phelps, Timothy Griffin, Chris Hemingway, George F. Rose. A Modular Injection System, Multilevel Sampler, and Manifold for Tracer Tests. [Ground water](#) 6:816-827.
81. 2003 Baker, B.J., Moser, D.P., MacGregor, B.J., Fishbain, S., Wagner, M., Fry, N.K., Jackson, B., Speolstra, N., Loos, S., Takai, K., Sherwood-Lollar, B., Fredrickson, J.K., Balkwill, D. L., Onstott, T.C., Wimpee, C.F. and Stahl, D.A. Related Assemblages of Sulfate-reducing Bacteria Associated with Ultradeep Gold Mines of South Africa and Deep Basalt Aquifers of Washington State. *Environmental Microbiology* 5:267-277.
82. 2003 Omar, G., Onstott, T.C. and Hoek, J. The Origin of Deep Subsurface Microbial Communities in the Witwatersrand Basin, South Africa as Deduced from Apatite Fission Track Analyses. *Geofluids* 3:69-80.
83. 2003 Moser, D.P., Onstott, T. C., Fredrickson, J.K., Brockman, F. J., Balkwill, D. L., Drake, G.R., Pfiffner, S., White, D.C., Takai, K., Pratt, L.M., Fong, J., Sherwood-Lollar, B., Slater, G., Phelps, T.J., Spoelstra, N., DeFlaun, M., Southam, G., Welty, A.T., Baker, B. J., and Hoek, J. Temporal shifts in Microbial Community Structure and Geochemistry of an Ultradeep South African Gold Mine Borehole. *Geomicrobiology Journal* 20:1-32.
84. 2003 Mailloux, B.J., Fuller, M.E., Rose, G.F., Onstott, T.C., DeFlaun, M.F., Alvarez, E., Hemingway, C., Hallet, R.B., Phelps, T.J., and Griffin, T. Design of a Modular Injector, Multi-level Sampler, and Sampling Manifold for Groundwater Tracer Experiments. *Groundwater* 41:816-827.
85. 2003 Musslewhite, C.L., McInerney, M.J., Dong, H., Onstott, T.C., Green-Blum, M.X., Swift, D., Macnaughton, S. The factors controlling microbial distribution and activity in the shallow subsurface. *Geomicrobiology Journal* 20:245-261.
86. 2003 Lippmann, J., Stute, M., Torgersen, T., Moser, D.P., Hall, J., Lihung, L-H, Borcsik, M. Bellamy, R.E.S. and Onstott, T.C. Dating ultra-deep mine waters with noble gases and ³⁶Cl, Witwatersrand Basin, South Africa. *Geochim. Cosmochim. Acta*. 67:4597-4619.
87. 2003 Mailloux, B.J., Fuller, M.E., Onstott, T.C., Hall, J., Dong, H., DeFlaun, M.F., Streger, S.H., Rothmel, R.K., Green, M., Swift, D.J.P. and Radke, J. The role of physical heterogeneity on the field-scale transport and attachment of bacteria. *Water Resources Research*, 39(6) 1142, doi:10.1029/2002WR001591.

88. 2003 Mormile, M.R., Biesen, M.A., Gutierrez, M.C., Ventosa, A., Pavlovich, J.B., Onstott, T.C. and Fredrickson, J.K., Isolation of *Halobacterium salinarum* Retrieved Directly from Halite Brine Inclusions. *Environmental Microbiology* 5:1094-1102.
89. 2003 Onstott, T.C., Moser, D.P., Fredrickson, J.K., Brockman, F.J., Pfiffner, S.M., Phelps, T.J., White, D.C., Peacock, A., Balkwill, D., Hoover, R., Krumholz, L.R., Borscik, M., Kieft, T.L. and Wilson, R.B. Indigenous versus contaminant microbes in ultradeep mines. *Env. Microbiol.* 5:1168-1191.
90. 2002 Dong H., Onstott, T.C., DeFlaun, M.F., Streger, S.H., Rothmel, R.K. and Mailloux, B.J. Relative Dominance of Physical vs. Chemical Effects on the Transport of Adhesion Deficient Bacteria in Intact Cores from South Oyster, Va. *Environ. Science & Tech.* 36:891-900.
91. 2002 Dong, H., Onstott, T.C., Ko., C.H., Elimelech, M., Hollingsworth, A.D., DeFlaun, M.F., Brown, D.G. and Mailloux, B.J. Theoretical Prediction of Collision Efficiency Between an Adhesion-Deficient Bacterium and Aquifer Sediments. *Colloids and Surfaces B: Biointerfaces* 24:229-245.
92. 2002 Dong, H., Rothmel, R., Onstott, T.C., Fuller, M.E., DeFlaun, M.F., Streger, S.H., Dunlap, R., and Fletcher, M. Simultaneous Transport of Two Bacterial Strains in Intact Cores from Oyster, Virginia: Biological Effects and Numerical Modeling. *Applied and Environmental Microbiology* 68:2120-2132.
93. 2001 Johnson, W.P., Zhang, P., Fuller, M.E., Scheibe, T.D., Mailloux, B.J., Onstott, T.C. DeFlaun, M.F., Hubbard, S.S., Radtke, J., Kovacik, W.P. and Holben, W.E., Ferrographic tracking of bacterial transport in the field at the Narrow Channel Focus Area, Oyster, VA. *Environ. Science and Tech.* 35:182-191.
94. 2001 DeFlaun, M.F., Fuller, M.E., Zhang, P., Johnson, W.P., Mailloux, B.J., Onstott, T.C., Holben, W.E., Kovacik, W.P. and Balkwill, D.L., Comparison of Innovative Methods for Monitoring Bacterial Transport. *Journal of Microbial Methods* 47:219-231.
95. 2001 Fuller, M.E., Mailloux, B.J., Zhang, P., Hall, J.A., Vainberg, S., Johnson, W.P., Onstott, T.C. and DeFlaun, M.F., Field-scale evaluation of CFDA/SE-staining coupled with multiple detection methods for assessing the transport of bacteria in situ. *FEMS Microbial Ecology*, 37:55-66.
96. 2001 Takai, K., Moser, D.P., Onstott, T.C., Speolstra, N., Pfiffner, S.M., Dohnalkova, A. and Fredrickson, J.K. *Alcaliphilus auruminator* gen. nov., sp. nov., an extremely alkaliphilic bacterium isolated from a deep South African gold mine. *Inter. Jour. Sys. Bacteriology* 51:1245-1256.
97. 2001 Takai, K., Moser, D.P., DeFlaun, M.F., Onstott, T.C. and Fredrickson, J.K. Archaeal diversity in waters from deep South African Gold mines. *Applied Environmental Microbiology* 67:5750-5760.
98. 2000 Dong, H., Fredrickson, J.K., Kennedy, D.W., Zachara, J.M., Kukkadapu, R.K. and Onstott T.C. Mineral transformations associated with the microbial reduction of magnetite. *Chem. Geology* 169:299-316.
99. 2000 Tobin, K.J., Fredrickson, J.K., Colwell, F.S., Smith, R.S. and Onstott, T.C. Recent calcite spar in an aquifer waste plume: A possible example of contamination driven calcite precipitation. *Chem. Geology* 169:449-460.
100. 2000 Fuller, M.E., Gillespie, K.M., Dong, H., Parsons, B.S., Onstott, T.C. and DeFlaun, M.F. Examining bacterial transport in intact cores from Oyster, Virginia: Effect of sedimentary facies type on bacterial breakthrough and retention. *Water Resources Research* 36:2417-2431.
101. 2000 Lin, L-H, Onstott, T.C. and Dong, H., Backscattered ³⁹Ar loss in fine-grained minerals: Implications for ⁴⁰Ar/³⁹Ar geochronology of clay. *Geochim. Cosmochim. Acta.* 64:3965-3974.

- 102.2000 Hemming, S.R., Gwiazda, R.H., Andrews, J.T., Broecker, W.S., Jennings, A.E. and Onstott, T.C. $^{40}\text{Ar}/^{39}\text{Ar}$ and Pb-Pb study of individual hornblende and feldspar grains from southeastern Baffin Island glacial sediments: Implications for the provenance of the Heinrich layers. *Can. Jour. Earth Sci.* 37:879-890.
- 103.2000 Fuller, M.E., Streger, S.H., Rothmel, R.K., Mailloux, B.J., Hall, J.A., Onstott, T.C., Fredrickson, J.K., Balkwill, D.L. and DeFlaun, M.F. Development of a vital fluorescent staining method for monitoring bacterial transport, *Applied Environmental Microbiology* 66:4486-4496.
- 104.1999 Kieft, T.L., Fredrickson, J.K., Onstott, T.C., Gorby, Y.A., Kostandarithes, H.M., Bailey, T.J., Kennedy, D.W., Li, S-M, Plymale, A.E., Spadoni, C.M. and Gray, M.S., Dissimilatory Reduction of Fe(III) and other electron acceptors by a *Thermus* Isolate. *Applied and Environmental Microbiology* 65:1214-1221.
- 105.1999 Fredrickson, J.K., Zachara, J.M., Kennedy, D.W., Dong, H., Onstott, T.C., Hinman, N.W. and Shu-mei Li Biogenic Iron Mineralization accompanying the dissimilatory reduction of hydrous ferric oxide by a groundwater bacterium. *Geochim. Cosmochim. Acta* 62:3239-3257.
- 106.1999 Tobin, K., Onstott, T.C., DeFlaun, M.F., Colwell, F.S., and Fredrickson, J.K. *In situ* visualization of microorganisms in geological material. *Jour. of Microbial Methods* 37:201-213.
- 107.1999 Dong, H., Onstott, T.C., DeFlaun, M.F., Fuller, M.E., Gillespie, K., and Fredrickson, J.K. Development of radiographic and microscopic techniques for the characterization of bacterial transport in intact sediment cores from Oyster. *Virginia. Jour. of Microbial Methods* 37:139-154.
- 108.1999 Lo, C-H, Lee, J.K.W. and Onstott, T.C. Argon release mechanisms of biotite in vacuo and the role of short-circuit diffusion and recoil. *Chem. Geology* 165:135-166.
- 109.1998 Tseng, H-Y, and Onstott, T.C., A tectogenetic origin for the deep subsurface microorganisms of Taylorsville Basin: thermal and fluid flow model constraints. *FEMS Microbiology Reviews* 20:391-397.
- 110.1998 Sletten, V.W. and Onstott, T.C., The thermal instability of muscovite during in vacuo heating: Implications for Ar loss systematics in the laboratory. *Geochim. Cosmochim. Acta*, 62:123-141.
- 111.1998 Onstott, T.C., Phelps, T.J., Kieft, T., Colwell, F.S., Balkwill, D.L., Fredrickson, J.K. and F.J. Brockman A global perspective on the microbial abundance and activity in the deep subsurface. in *Enigmatic Microorganisms and Life in Extreme Environments* (ed. J. Seckbach), Kluwer Publ., 489-499.
- 112.1998 Tseng, H-Y, M. Person, and T.C. Onstott, Hydrogeologic constraints on the origin of deep subsurface microorganisms within a Triassic basin. *Water Resources Research* 34:937-948.
- 113.1998 Tseng, H-Y, Onstott, T.C., Burruss, R.C., and G. Omar, Paleofluid circulation within a Triassic rift basin: evidence from thermal histories and oil inclusions. *Geol. Soc. Amer. Bulletin*. 111:275-290.
- 114.1998 Onstott, T.C., Phelps, T.J., Colwell, F.S., Ringelberg, D., White, D.C., Boone, D.R., McKinley, J.P., Stevens, T.O., Balkwill, D.L., Griffin, T. and Kieft, T. Observations pertaining to the origin and ecology of microorganisms recovered from the deep subsurface of Taylorsville Basin, Virginia. *Geomicrobiology Journal* 15:353-385.
- 115.1997 Teixeira, W., Onstott, T.C. Makenya, M. and Szabo, G.A.J. Proterozoic Thermo-chronologic Implications from $^{40}\text{Ar}/^{39}\text{Ar}$ and K-Ar Dating of the Campo Belo Metamorphic Complex, Southern São Francisco Craton, Brazil. *An. Acad. bras. Ci.* 69:59-75.
- 116.1997 Fredrickson, J.K., McKinley, J.P., Bjornstad, B.N., Long, P.E., Ringelberg, D.B., White, D.C., Krumholz, L.R., Sufliata, J.M., Colwell, F.S., Lehman, R.M., Phelps, T.J. and Onstott, T.C. Pore-size constraints on the

activity and survival of subsurface bacteria in a Late Cretaceous shale-sandstone sequence, Northwestern New Mexico. *Geomicrobiology Journal* 14:183-202.

117. 1997 Menard, T., Leshner, C.M., Stowell, H.H., Price, D.P., Pickell, J.R., Onstott, T.C. and Hulbert, L. *Geology, Genesis, and Metamorphic History of the Nameow Lake Ni-Cu Deposit, Manitoba, Economic Geology* 91:1394-1413.
118. 1997 Onstott, T.C., Mueller, C.M., Pevear, D.R., and Vrolijk, P.J. *Laser $^{40}\text{Ar}/^{39}\text{Ar}$ microprobe analyses of fine-grained illite, Geochim. Cosmochim. Acta* 61:3851-3861.
119. 1997 Colwell, F.S., Onstott, T.C., Dilwiche, M.E., Chandler, D., Fredrickson, J.K., Yao, Q-J, McKinley, J.P., Boone, D.R., Griffiths, R., Phelps, T.J., Ringelberg, D., White, D.C., LaFreniere, L., Balkwill, D.L., Lehman, R.M., Konisky, J. and Long, P.E. *Microorganisms from deep, high temperature, sandstones: constraints on microbial colonization. FEMS Microbiology Review* 20:425-435.
120. 1996 Gwiazda, R.H., Hemming, S.R., Broecker, W.S., Onstott, T., and Mueller, C., Evidence from $^{40}\text{Ar}/^{39}\text{Ar}$ ages for a Churchill province source of ice-rafted amphiboles in Heinrich layer 2. *Jour. Glaciology* 42:1440-1446.
121. 1995 Onstott, T.C., Miller, M., Ewing, R.C., G.W. Arnold, and D.S. Walsh Recoil Refinements: Implications for the $^{40}\text{Ar}/^{39}\text{Ar}$ dating technique. *Geochim. Cosmochim. Acta.* 59:1821-1834.
122. 1995 Lo, C.H., and Onstott, T.C. Rejuvenation of Argon Isotope Systematics in Minerals: A Case Study of the Taiwan Mountain Belt. *Earth Planet. Sci. Lett.* 131:71-98.
123. 1995 Harlan, S.S., Geissman, J.W., Henry, C.D., and Onstott, T.C., Paleomagnetism and $^{40}\text{Ar}/^{39}\text{Ar}$ Geochronology of Gabbro Sills at Mariscal Mountain Anticline, Southern Big Bend National Park, Texas; Implications for the Timing of Laramide Tectonism and Vertical Axis Rotations in the Southern Cordilleran Orogenic Belt. *Tectonics* 14:307-321.
124. 1995 Tseng, H-Y, Onstott, T.C., Burruss, R.C., and Miller, D.S., Constraints on the thermal history of Taylorsville Basin, Virginia, U.S.A., from fluid-inclusion and fission-track analyses: implications for subsurface geomicrobiology experiments. *Chem. Geol.* 127:269-294.
125. 1995 Tseng, H-Y, Heaney, P.E., and Onstott, T.C., Characterization of Defects Induced by Neutron Irradiation using Powder X-ray Diffraction. *Physics and Chemistry of Minerals* 22:399-405.
126. 1994 Cumbest, R.J., Johnson, E.L., and Onstott, T.C., Argon composition of metamorphic fluids: Implications for $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology. *Geol. Soc. Amer. Bull.* 106:942-951.
127. 1994 Barnett, D., Bowman, J., Pavlis, T., Rubenstone, J., Onstott, T.C., and Snee L., Metamorphism and near trench plutonism during incipient subduction in southern Alaska. *Jour. Geophys. Res.* 99:24007-24024.
128. 1994 Fiske, P.S., Hargraves, R.B., Onstott, T.C., Koeberl, C., and Hougen, S.B., Pseudotachylites of the Beaverhead Impact Structure: Geochemical, Geochronological, Petrographic and Field Investigations. *Geol. Soc. Amer. Spec. Paper* 293:163-176.
129. 1994 Ledru, P., Cocherie, A., Barbosa, J., Johan, V., and Onstott T.C., Ages du metamorphisme granulitique dans le craton du São Francisco (Brésil). Implications sur la nature de l'orogène transamazonien. *C.R. Acad. Sci. Paris, serie II* 318:251-257.
130. 1994 Farley, K.A., Poreda, R.J., and Onstott, T.C. Noble gases in deformed xenoliths from an Ocean Island: Characterization of a Metasomatic Fluid. in *Noble Gas Geochemistry and Cosmochemistry*, ed. J. Matsuda, TERRAPUB, Tokyo, p. 159-178.

131. 1994 Roberts, D. and Onstott, T.C. $^{40}\text{Ar}/^{39}\text{Ar}$ laser microprobe analyses and geochemistry of dolerite dykes from the Rybachi and Sredni Peninsulas, NW Kola, Russia. *Nor. geol. unders. Special Publ.* 7:307-314.
132. 1994 Hargraves, R.B., Hattingh, P. J., and Onstott, T.C. Paleomagnetic results from the Timbavati Gabbros in the Kruger National Park, South Africa. *S. Afr. J. Geol.* 97:1-5.
133. 1994 Lo, C.H., and Onstott, T.C. An assessment of $^{40}\text{Ar}/^{39}\text{Ar}$ dating for the whole-rock volcanic samples from the Luzon Arc near Taiwan. *Chem. Geology (Isotope Geoscience Section)* 114:157-178.
134. 1993 Hamidullah, S. and Onstott, T.C. $^{40}\text{Ar}/^{39}\text{Ar}$ evidence for Late Cretaceous formation of the Kohistan Island Arc, NW Pakistan, *Kashmir Journal of Geology* 10:105-122.
135. 1993 Lo, C-H, Onstott, T.C., and Lee, C.W. $^{40}\text{Ar}/^{39}\text{Ar}$ dating of plutonic/metamorphic rocks from Chinmen Island off southeast China and its tectonic implications. *Jour. Geol. Soc. China* 36:35-55.
136. 1993 Cohen, H.A., Cumbest, R.J., and Onstott, T.C. Alumina ceramic as a mounting medium for electron Microprobe Analysis and $^{40}\text{Ar}/^{39}\text{Ar}$ laser microprobe dating of mineral grains. *Chem. Geol. Isot. Geosci. Sec.* 106:443-452.
137. 1992 Haeussler, P.J., Coe, R.S., and Onstott, T.C. The paleomagnetism and geochronology of the Hound Island volcanics and implication for the Mesozoic tectonics of the Alexander terrane. *Jour. Geophys. Res.* B13: 19617-19641.
138. 1991 Onstott, T.C., Phillips, D., and Pringle-Goodell, L. Laser microprobe measurement of chlorine and argon zonation in hydrous silicates. *Chem. Geol.* 90:145-168.
139. 1991 D'Agrella, M.S., Pacca, I.G., Teixeira, W. Onstott, T.C., and Renne, P.R. Paleomagnetism evidence for the evolution of Meso to Neo-Proterozoic glaciogenic rocks in Central-Eastern Brazil. *Paleoecol. Paleoclim. Paleobot.* 80:255-265.
140. 1991 D'Agrella, M.S., Pacca, I.G., Renne, P.R., T.C. Onstott, and Teixeira, W. Paleomagnetism of Middle Proterozoic (1.01 to 1.08 Ga) mafic dikes in South-eastern Bahia State - Sao Francisco Craton, Brazil. *Earth Planet. Sci. Lett.* 101:332-348.
141. 1991 Renne, P.R., Onstott, T.C., D'Agrella, M.S., Pacca, I.G., and Teixeira, W. $^{40}\text{Ar}/^{39}\text{Ar}$ dating of 1.0-1.1 Ga magnetizations from the Sao Francisco and Kaapvaal Cratons: Tectonic implications for Pan-African and Brasiliano Mobile Belts. *Earth Planet. Sci. Lett.* 101:349-359.
142. 1991 Wood, D.J., Stowell, H.H., Onstott, T.C., and Hollister, L.S. $^{40}\text{Ar}/^{39}\text{Ar}$ constraints on the emplacement, uplift and cooling of the coast plutonic complex sill, SE Alaska. *Geol. Soc. Amer. Bull.* 103:849-860.
143. 1991 Girard, J-P, and Onstott, T.C. $^{40}\text{Ar}/^{39}\text{Ar}$ laser-probe and step-heating dating of diagenetic K-feldspar overgrowths. *Geochim. Cosmochim. Acta.* 55:3777-3793.
144. 1991 Lee, J.W.K., Onstott, T.C., Cashman, K.V., Cumbest, R.J., and Johnson, D. A critical evaluation of the $^{40}\text{Ar}/^{39}\text{Ar}$ Incremental Heating of Hornblende, *Geology* 19:872-876
145. 1991 Reid, D.L., Ransome, I.G.D., Onstott, T.C., and Adams, C.J. Late Precambrian mafic dykes in the lower Orange River region, southern Africa. Possible constraints on the age of the Precambrian-Cambrian boundary. *Jour. African Earth Sci.* 13:531-541.

146. 1990 Kent, J.T., Watson, G.S., and Onstott, T.C. Fitting Straight Lines and Planes with an application to radiometric dating. *Earth Planet. Sci. Lett.* 97:1-17.
147. 1990 Lee, J.K.W., Onstott, T.C., and Hanes, J.A. An $^{40}\text{Ar}/^{39}\text{Ar}$ investigation of the contact effects of a dyke intrusion, Kapuskasing Structural zone, Ontario: A comparison of laser microprobe and furnace extraction techniques. *Contrib. Mineral. Petrol.* 105:87-105.
148. 1989 Onstott, T.C., Sisson, V.B. and Turner, D.L., Initial argon in amphiboles from the Chugach Mountains, Alaska. *Jour. Geophys. Res.* 94:4361-4373.
149. 1989 Sisson, V.B., Hollister, L.S. and Onstott, T.C. Petrological and age constraints on the origin of a low pressure/high temperature metamorphic complex, southern Alaska. *Jour. Geophys. Res.* 94:4392-4410.
150. 1989 Onstott, T.C., York, D. and Hall, C.M. $^{40}\text{Ar}/^{39}\text{Ar}$ thermochronometry of the Imataca Complex, Venezuela. *Precambrian Res.* 42:255-292.
151. 1989 Swapp, S.M. and Onstott, T.C. P-T-time characterization of the Trans-Amazonian Orogeny in the Imataca Complex, Venezuela, *Precamb. Res.* 42:293-314.
152. 1989 Renne, P.R., Mattinson, J.M., Hatten C.W., Somin, M., Onstott, T.C., Guillermo, M., and Linares, E. $^{40}\text{Ar}/^{39}\text{Ar}$ and U-Pb evidence for Late Proterozoic (Grenville-age) continental crust in north-central Cuba and regional tectonic implications. *Precamb. Res.* 42:325-342.
153. 1989 Phillips, D., Onstott, T.C., and Harris, J.W. $^{40}\text{Ar}/^{39}\text{Ar}$ dating of eclogite inclusions from Premier diamonds. *Nature*, 340, 460-462. (Cover photo).
154. 1989 Lo, C.H. and Onstott, T.C. ^{39}Ar recoil artifacts in chloritized biotite. *Geochim. Cosmochim. Acta*, 53, 2697-2711.
155. 1988 Phillips, D. and Onstott, T.C. Argon isotopic zoning in mantle phlogopite. *Geology* 16:542-546.
156. 1988 Onstott, T.C., Pringle-Goodell, L. The influence of microstructures on the relationship between argon retentivity and chemical composition of hornblende. *Geochim. Cosmochim. Acta.* 52:2167-2168.
157. 1988 Renne, P. R. and Onstott, T.C. Laser selective demagnetization (LSD): Application of a new technique in paleomagnetism and rock magnetism. *Science* 242:1152-1155.
158. 1988 Hanson, R.E., Wilson, T.J., Brueckner, H.K., Onstott, T.C., Wardlaw, M.S., Johns, C.C. and Hardcastle, K.C. Reconnaissance geochronology, tectonothermal evolution, and regional significance of the middle Proterozoic Choma-Kalomo Block, southern Zambia. *Precambrian Res.* 42:39-62.
159. 1987 Onstott, T.C. and Dorbor, J. $^{40}\text{Ar}/^{39}\text{Ar}$ calibration of paleomagnetic poles from the West African Shield. *Jour. Afr. Earth Sci.* 6:537-552.
160. 1987 Onstott, T.C. and Peacock, M. Argon retentivity of hornblende: a field experiment in a slowly-cooled metamorphic terrane. *Geochim. Cosmochim. Acta.* 51:2891-2903.
161. 1987 Diehl, J.F., Onstott, T.C., Chesner, C.A. and Knight, M.D. No short reversals of Brunhes age recorded in the Toba Tuffs, North Sumatra, Indonesia. *Geophys. Res. Lett.* 14:753-756.
162. 1986 Phillips, D. and Onstott, T.C. Application of $^{40}\text{Ar}/^{39}\text{Ar}$ versus $^{40}\text{Ar}/^{39}\text{Ar}$ correlation diagrams to the $^{40}\text{Ar}/^{39}\text{Ar}$ spectra of phlogopites from southern African kimberlites. *Geophys. Res. Lett.* 13:689-692.

163. 1986 Sisson, V.B. and Onstott, T.C. Dating blueschist metamorphism: a combined $^{40}\text{Ar}/^{39}\text{Ar}$ and electron microprobe approach. *Geochim. Cosmochim. Acta* 55:2111-2117.
164. 1986 Onstott, T.C., Hargraves, R.B., Joubert, P. and Reid, D., Constraints on the tectonic evolution of the Namaqualand mobile belt I: Paleomagnetic and $^{40}\text{Ar}/^{39}\text{Ar}$ results from the Haib-Vioolsdrif Igneous Province. *Bull. Geol. Soc. S. Afr.* 89:117-142.
165. 1986 Onstott, T.C., Hargraves, R.B. and Joubert, P. Constraints on the tectonic evolution of the Namaqualand mobile belt II: Reconnaissance paleomagnetic and $^{40}\text{Ar}/^{39}\text{Ar}$ results from the Namaqua, Kheis, and Natal provinces. *Bull. Geol. Soc. S. Afr.* 89:143-170.
166. 1986 Onstott, T.C., Hargraves, R.B. and Reid, D. Constraints on the tectonic evolution of the Namaqualand mobile belt III: Paleomagnetic and $^{40}\text{Ar}/^{39}\text{Ar}$ results from the Gannakouriep Dike Swarm. *Bull. Geol. Soc. S. Afr.* 89:171-183.
167. 1984 Onstott, T.C., Hargraves, R.B., York, D. and Hall, C.M. Constraints on the Proterozoic motions of the South American and African cratons -- I: $^{40}\text{Ar}/^{39}\text{Ar}$ and paleomagnetic correlations between Venezuela and Liberia. *Geol. Soc. Amer. Bull.* 95:1045-1054.
168. 1981 Onstott, T.C. and Hargraves, R.B., Proterozoic transcurrent-tectonics: Evidence from comparison of paleomagnetic data from Venezuela and Africa. *Nature* 289:131-136.
169. 1980 Hargraves, R.B. and Onstott, T.C., Paleomagnetic results from some southern African kimberlites, and their tectonic significance. *Jour. Geophys. Res.* 85:3587-3596.
170. 1980 Onstott, T.C. Application of the Bingham distribution function to paleomagnetic studies. *Jour. of Geophys. Res.* 85:1500-1510.

Other Publications

1. 2015 Onstott, T.C. *Deep Life*, Princeton University Press, *in production*.
2. 2011 Onstott, T.C. Deep-Subsurface Microbiology in *Encyclopedia of Astrobiology*, Muriel Gargaud (ed.), DOI 10.1007/978-3-642-11274-4, Springer-Verlag Berlin, Heidelberg.
3. 2010 Onstott, T.C. Focus On: Subsurface Microbiology Publications. *DUSEL Newsletter* May.
4. 2010 Onstott, T.C. Focus On: Microbes. *DUSEL Newsletter* May.
5. 2010 Onstott, T.C., van Heerden, E. and Murdoch, L., Microbial Life in the Depths of the Earth, *Géosciences, la revue du BRGM pour une Terre Durable* 11:52-59.
6. 2010 Elsworth, D., Elliott, S., Fairhurst, C., Leitner, D., Murdoch, L., Onstott, T., Sobel, H., Sonnenthal, E., Lesko, K., Roggenthen, W. 2009. *Underground Science at DUSEL: A window into the Heavens and the Earth. Newsletter, Int. Soc. R. Mechs.* No. 10, June.
7. 2009 Elsworth, D., Elliott, S., Leitner, D., Murdoch, L., Onstott, T.C., Sobel, H., Lesko, K., Roggenthen, W. 2009. *Underground Science at DUSEL: A window into the Heavens and the Earth. GeoStrata.* 24-27.
8. 2009 Onstott, T.C., F. S. Colwell, T. L. Kieft, L. Murdoch, and T. J. Phelps, *New Horizons for Deep Subsurface Microbiology. Microbe* 4:499-505.
9. 2003 Brian McPherson, Herb Wang, Steve Kesler, Tullis Onstott and William Roggenthen, *Physics and Earth Science Go Underground, Geotimes* Feature Article.

10. 2002 Onstott, T.C., Biogeochemical and geological significance of subsurface microbiology, In (G. Bitton. ed.), Encyclopedia of Environmental Microbiology, John Wiley Press, New York, New York, 1453-1468.
11. 2002 Colwell, F.S., Yao, Q-J, Onstott, T.C. and Murphy, E., Microbiology of deep high-temperature sedimentary environments, In (G. Bitton. ed.), Encyclopedia of Environmental Microbiology, John Wiley Press, New York, New York, 2047-2057.
12. 2001 Balkwill, D., Chen, J., DeFlaun, M.F., Dobbs, F., Dong, H., Fredrickson, J.K., Fuller, M.E., Green, M., Ginn, T., Griffin, T., Holben, W.E., Hubbard, S.S., Johnson, W.P., Long, P.E., Mailloux B.J., Majer, E., McInerney, M., Murray, C.J., Onstott, T.C., Phelps, T.J., Scheibe, T., Swift, D.P., White, D.C. and Wobber, F.J. (2001) Breakthroughs In Field-Scale Bacterial Transport. EOS, 82, 417-425.
13. 2000 Fredrickson, J.K. and Onstott, T.C., Biogeochemical and geological significance of subsurface microbiology, in Subsurface Microbial Ecology and Biogeochemistry (eds. Fredrickson, J.K. and Fletcher, M.) John Wiley & Sons: Ecological and Applied Microbiology Series. Chap. 1, p. 3-38.
14. 1998 White, D.C., Phelps, T.J., and Onstott, T.C., What's up down there? Current Opinion in Microbiology 1: 286-290.
15. 1997 Fredrickson, J.K., Chandler, D.P. and Onstott, T.C., Potential for preservation of Halobacteria and their macromolecular constituents in brine inclusions from bedded salt deposits, SPIE 42nd Annual Mtg. Proceedings, 3111:318-329.
16. 1997 Onstott, T.C., Tobin, K., Dong, H., DeFlaun, M.F., Fredrickson, J.K., Bailey, T., Brockman, F., Kieft, T., Peacock, A., White, D.C., and Balkwill, D., The deep gold mines of South Africa: Window into the subsurface biosphere. SPIE 42nd Annual Mtg. Proceedings, 3111:344-357.
17. 1996 Fredrickson, J.K. and Onstott, T.C., Microbes Deep inside the Earth, Scientific American, v. 275, No. 4, p. 68-73.
18. 1994 Onstott, T.C., Balkwill, D.B., Boone, D.R., Colwell, F.S., Griffin, T., Kieft, T.L., Lehman, R.M., McKinley, J.P., Nierzwicki-bauer, S., Tseng, H-Y, Gao, G., Phelps, T.J., Ringelberg, D., Russell, B., Stevens, T., White, D.C., and Wobber, F.J., DOE seeks origin of deep subsurface bacteria. EOS, 75, 385-395.
19. 1989 Onstott, T.C., Eulogy to Gibbs, Alan K., Precambrian Research.