
SKL ABBREVIATED BIOGRAPHICAL SKETCH

DR. STEVEN K. LOWER**The Ohio State University***Abbreviated Biographical Sketch, December, 2008*

NAME	POSITION TITLE
Lower, Steven K.	Associate Professor (with tenure) The Ohio State University

Education/Training

INSTITUTION AND LOCATION	DEGREE	YEAR	FIELD OF STUDY
Kent State University, Kent, Ohio	B.S. (cum laude)	1994	biology, geology
Kent State University, Kent, Ohio	M.S.	1997	chemistry, geochemistry
Virginia Tech, Blacksburg, Virginia	Ph.D.	2001	biochemistry, geomicrobiology

A. Positions and Honors (in chronological order).**Positions:**

- 2001-2003 Assistant Professor, College of Computer, Mathematical, and Physical Sciences, University of Maryland, College Park, Maryland
- 2003-2008 Assistant Professor, College of Mathematical and Physical Sciences and College of Food, Agricultural, and Environmental Sciences, Ohio State University, Columbus, Ohio
- 2008-present Associate Professor, College of Biological, Mathematical and Physical Sciences and College of Food, Agricultural, and Environmental Sciences, Ohio State University, Columbus, Ohio

Honors:

- 2003 Award for outstanding contribution (Best Research Award) Department of Energy, Division of Chemical Sciences, Geosciences, and Biosciences
- 2004 Outstanding Young Alumnus (Alumnus of the Year), College of Science, Virginia Tech
- 2007 Invited speaker at Gordon Research Conference
- 2008 National Science Foundation CAREER Award

Professional Memberships, Service, and Federal Panels:

- 2000-present Member of American Chemical Society, American Society for Microbiology, American Geophysical Union
- 2001-present National Science Foundation, Grant Review Panelist
- 2001-present Peer-review referee for *Science*, *Proceedings of the National Academy of Sciences*, *Journal of the American Chemical Society*, *Environmental Science & Technology*, *Langmuir*, *Journal of Colloid and Interface Science*, *Microbiology*, *FEMS Microbiology*, *Archives of Microbiology*, *Geomicrobiology Journal*, *Geochimica et Cosmochimica Acta*, *American Mineralogist*, *Soil Science Society of America*, *American Journal of Science*, *Geobiology*, *Journal of Electron Spectroscopy*, *Public Library of Science-Biology*, *Spectroscopy*, *Micron*, *Applied Geochemistry*, *Biointerphases*
- 2001-present Review grant proposals for the United States National Science Foundation, Department of Energy, Department of Defense, and State Department
- 2006-present Oversight committee for the Environmental Molecular Sciences Laboratory at the Pacific Northwest National Laboratory (a DOE lab), Richland, Washington

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B. Selected peer-reviewed publications (in chronological order).

S. K. Lower has authored 47 peer-reviewed articles and abstracts. These articles have been published in leading scientific periodicals such as *Science*, *Nature*, *Journal of Bacteriology*, *Langmuir*, *Applied and Environmental Microbiology*, *Environmental Science & Technology*. Dr. Lower has also given invited lectures at the annual meetings of the American Chemical Society, the American Society for Microbiology, the American Geophysical Union, and a Gordon Research Conference. Below is a partial list.

- Maurice, P. A. and Lower, S. K. (1998) Using atomic force microscopy to study soil mineral reactions. *Advances in Agronomy*, 62: 1-43.
- Lower, S. K., Tadanier, C. J., and Hochella, M. F., Jr. (2000) Measuring interfacial and adhesion forces between bacteria and mineral surfaces with biological force microscopy. *Geochimica et Cosmochimica Acta*, 64: 3133-3139.
- Lower, S. K., Tadanier, C. J., and Hochella, M. F., Jr. (2001) Dynamics of the mineral-microbe interface: Use of biological force microscopy in biogeochemistry and geomicrobiology. *Geomicrobiology Journal*, 18:63-76.
- Lower, S. K., Beveridge, T. J., and Hochella, M. F., Jr. (2001) Bacterial recognition of mineral surfaces: Nanoscale interactions between *Shewanella* and α -FeOOH. *Science* 292: 1360-1363.
- Lower, S. K., Hochella, M. F., Jr., Banfield, J. F., Rosso, K. M. (2002) Nanoscale geoscience: From the movement of electrons to lithosphere plates. *Eos, Transactions of the American Geophysical Union* 83: 53-56.
- Kendall, T.A. and Lower, S. K. (2003) Intermolecular forces between minerals and biological surfaces in solution. *Advances in Agronomy*, 82: 1-54.
- Lower, B. H., Yongsunthon, R., Vellano, F. P., and Lower, S. K. (2005) Simultaneous force and fluorescence measurements of a protein that forms a bond between a bacterium and solid surface. *Journal of Bacteriology*. 187: 2127–2137.
- Lower, S. K., (2005) Directed forces of affinity between a bacterium and mineral. *American Journal of Science*. 305, 752-765.
- Lower, B. H., Hochella, M. F., and Lower, S. K., (2005) Putative mineral specific proteins produced by a metal-reducing bacterium. *American Journal of Science*, 305: 687-710.
- Yongsunthon, R. and Lower, S. K. (2006) Force spectroscopy of bonds that form between a *Staphylococcus* bacterium and silica or polystyrene substrates. *Journal of Electron Spectroscopy and Related Phenomena*, 150: 228-234.
- Yongsunthon, R. and Lower, S. K. (2006) Force measurements between a bacterium and another surface in situ. *Advances in Applied Microbiology*. 58: 97-124.
- Lower, B. H., Shi, L., Yongsunthon, R., Droubay, T.C., McCready, D.E., and Lower, S.K. Specific bonds between an iron oxide surface and outer membrane cytochromes MtrC and OmcA from *Shewanella oneidensis* MR-1. (2007) *Journal of Bacteriology* 189: 4944-4952.
- Yongsunthon, R., Fowler, V., Lower, B.H., Alexander, E., Reller, B., Corey, R., Vellano, F.P., and Lower, S.K. (2007) Correlation between binding forces and clinical prognosis of *Staphylococcus aureus* biofilms on medical implants. *Langmuir*. 23: 2289-2292.
- Lower, S.K. (2007) Treating astrology's claims with all due gravity. *Nature* 447: 528-528.
- Lower, S.K. (2008) The pedagogical genealogy of Terrance J. Beveridge – A legacy of bonds. *Geobiology* 6: 242-244.
- Yongsunthon, R., Fowler, V.G. and Lower, S. K. (2008) Binding forces associated with *Staphylococcus aureus* biofilms on medical implants. IN *Microbial Surfaces: Structure, Interactions and Reactivity* (Eds., Camesano, T.A. and Mello, C.M.). ACS Symposium Series 984, pp. 189-198. American Chemical Society, Washington DC.
- Taylor, E.S. and Lower, S.K. (2008) Thickness and surface density of extracellular polymers on *Acidithiobacillus ferrooxidans*. *Applied and Environmental Microbiology* 74: 309-311.
- Lower, B.H., Lins, R.D., Oestricher, Z., Straatsma, T.P, Hochella, M.F., Shi, L., and Lower, S.K. (2008) In vitro evolution of a peptide with a hematite binding motif that may constitute a natural metal-oxide binding archetype. *Environmental Science & Technology* 42: 3821–3827.
- Hochella, M.F., Lower, S.K., Maurice, P.A., Penn, L., Sahai, N., Sparks, D., Twining, B. (2008) Nanominerals, Mineral Nanoparticles, and Earth Systems. *Science* 319: 1631-1635.

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C. Research Support (in chronological order).

S. K. Lower has been the sole PI or Lead PI on \$2.2M in research grants from agencies such as the National Science Foundation, the National Institutes of Health, and the Department of Energy. Below is a partial list.

Title: Acquisition of an integrated scanning probe, scanning laser, optical microscope
PI: Steven Lower (sole PI)
Agency: National Science Foundation
Period: 2002-2006
Amount: \$350,000

Title: Biological cell lithography
PI: Steven Lower (lead-PI) and Terrance Beveridge (subcontract, University of Guelph)
Agency: National Science Foundation
Period: 2002-2005
Amount: \$100,000

Title: Nanobiochemistry of electron transfer reactions
PI: Steven Lower (PI) and Michael Hochella (co-PI, Virginia Tech)
Agency: Department of Energy
Period: 2002-2005
Amount: \$437,000

Title: Unraveling the bacterium-mineral interface: Nanoscale forces and structures
PI: Steven Lower (lead-PI) and Barry Bickmore (co-PI, BYU)
Agency: National Science Foundation
Period: 2005-2009
Amount: \$505,000

Title: CAREER: The protein-mineral bond
PI: Steven Lower (sole-PI)
Agency: National Science Foundation
Period: 2008-2013
Amount: \$453,000

Title: Forces at the heart of Staphylococcus biofilms on medical implants
PI: Steven Lower (lead-PI) and Vance Fowler (subcontract, Duke University Medical Center)
Agency: National Institutes of Health
Period: 2008-2011
Amount: \$430,000