JULIANA BOERIO-GOATES
CURRICULUM VITA

Department of Chemistry
Brigham Young University
Provo, UT 84602

Education

1975	B.A. (Summa Cum Laude), Seton Hill College (Greensburg, PA)
1977	M.S., The University of Michigan
1979	Ph.D., The University of Michigan

Professional Experience

July 2008 – present	Board of Directors, International Association of Chemical Thermodynamics.
Jan 1999-2006	Editorial Board, Journal of Chemical Thermodynamics, Academic Press.
Sept-Dec. 1997	Senior Academic Visitor, Chemical Crystallography Laboratory, Oxford University, Oxford, England
1996-2001	Associate Director, Center for the Improvement of Teacher Education and Schooling
1995-1998	Karl G. Maeser Professor of General Education
1993-present	Professor of Chemistry
1992-1995	Associate Dean, General and Honors Education
1989-1992	Director, Center for Chemical Thermodynamics, BYU
Jan.-Aug. 1989	Visiting Scientist, Center for Materials Science Research, Massachusetts Institute of Technology
1987-1993	Associate Professor Chemistry, Brigham Young University
1982-1987	Assistant Professor of Chemistry, Brigham Young University
1980-1981	Postdoctoral Research Associate, University of Michigan
Summer 1976	Research Associate, Argonne National Laboratory, Argonne, IL

Honors and Awards

Alcuin Fellowship in General Education, BYU, 2007-2009.

Karl G. Maeser Distinguished Faculty Lecture, BYU 2005-2006

Distinguished Centurion, Distinguished Alumni, Greensburg Central Catholic High School, Greensburg, PA 2004

Outstanding Teacher, BYU College of Physical and Mathematical Sciences, 2004

Phi Kappa Phi Distinguished Faculty Award, BYU, 2002-2003 Academic Year

Distinguished Woman in Science Lecture, BYU College of Physical and Mathematical Sciences, 2002

Y-Chem Professor of the Month (September 2002), BYU Chemistry Student Affiliates

Karl G. Maeser Professor of General Education, 1995-1998

Participant in the Leadership Associates Program of the National Network for Educational Reform, 1995-1996

Outstanding Alumna, Seton Hill College, 1995

Karl G. Maeser Excellence in Teaching Award, 1994

"Cougar Groomer" Excellence in Teaching Award, 1992

Stig Sunner Award Recipient (Outstanding Young Calorimetrist), The Calorimetry Conference, 1990

Rackham Pre-doctoral Fellow, Horace H. Rackham Graduate School, University of Michigan, 1977-1978

Samuel H. Baer Fellow, Chemistry Department, University of Michigan, 1975-1979

Professional Associations/Activities

American Chemical Society	Member, National Exam Committee - Physical Chemistry Exam, 1999-2006.
	Member, National Selection Committee for the Pure and Applied Chemistry Award 1999-2001.
	Chair, Northwest Region Executive Steering

	Committee, 1995-1996.
	General Chair, Joint Meeting of the Northwest & Rocky Mountain Regions, 1995.
	Chairman, Central Utah Section, 1991.
	Executive Committee, Central Utah Section 1990-1992.
The Calorimetry Conference	Chair-Designate 2005
	Counsellor, 2000-2004
	Program Chair and Local Arrangement Chair, Joint Meeting with Japan Society for Thermal Analysis and Calorimetry (2003)
	Symposium Organizer, 2002 Meeting
	Local Arrangements Chair, 2003 Meeting
	Local Arrangements Chairman, 1990 meeting
	Secretary/Treasurer, 1985-1994
Sigma Xi	Awards Committee-BYU Chapter, 1984-1986
Utah Math/Science Network	Charter member of the Utah Valley Section, 1987
	Keynote Speaker at 1991 "Expanding Your Horizons" Workshop, UVSC
	Keynote Speaker at 1994 “Expanding Your Horizons, Logan Utah

RESEARCH AND SCHOLARLY ACCOMPLISHMENTS

Most Recent Peer-Reviewed Professional Publications

88. J.C. Lashley, R. Stevens, M.K. Crawford, J. Boerio-Goates, B.F. Woodfield, Y.Qiu, J.W. Lynn, P.A. Goddard, and R.A. Fisher, "Specific heat and magnetic susceptibility of the spinels $GeNi_2O_4$ and $GeCo_2O_4$." *Phys. Rev B* **78**, 104406 (2008).

87. Bridget E. McCollam, David M. Jenkins, Juliana Boerio-Goates, Riham Michelle Morcos, Alexandra Navrotsky and Krassimir Bozhilov, "Thermochemistry of a synthetic Na-Mg rich triple chain silicate: Determination of thermodynamic variables." *American Mineralogist*, submitted 2008.

86. Stacey J. Smith, Rebecca Stevens, Shengfeng Liu, Guangshe Li, Juliana Boerio-Goates, and Brian F. Woodfield, "Heat capacities and thermodynamic functions of bulk TiO_2 in the anatase and rutile phases: Analysis of phase stability at low temperatures." *American Mineralogist,* In Press, 200.

85. Andrey A. Levchenko, Alexander I. Kolesnikov, Nancy Ross, Juliana Boerio-Goates, Brian F. Woodfield Guangshe Li and Alexandra Navrotsky, "Dynamics of water confined on the TiO_2 (anatase) surface." *Journal of Physical Chemistry A*, **111**, 12584-12588 (2007).

84. Liu, Shengfeng; Liu, Qingyuan; Boerio-Goates, Juliana; Woodfield, Brian F. "Preparation of a wide array of ultra-high purity metals, metal oxides, and mixed metal oxides with uniform particle sizes from 1 nm to bulk." *Journal of Advanced Materials* , 39(2), 18-23 (2007).

83. Smith, Stacey J.; Lang, Brian E.; Liu, Shengfeng; Boerio-Goates, Juliana; Woodfield, Brian F. "Heat capacities and thermodynamic functions of hexagonal ice from T = 0.5 K to T = 38 K." *Journal of Chemical Thermodynamics*, 39(5), 712-716 (2007).

82. Navrotsky, Alexandra; Dorogova, Maria; Hellman, Frances; Cooke, David W.; Zink, Barry L.; Lesher, Charles E.; Boerio-Goates, Juliana; Woodfield, Brian F.; Lang, Brian. "Application of calorimetry on a chip to high-pressure materials." *Proceed. Natl. Acad. Sci.* 104(22), 9187-9191 (2007).

81. B. E. Lang, J. Boerio-Goates, and B.F. Woodfield, "Design and construction of an adiabatic calorimeter for samples of less than $1cm^3$ in the temperature range T = 15 K to T = 350 K." *J.Chem. Thermodynam.***38** 1655-1663 (2006).

80. A.A. Levchenko, G. Li, J. Boerio-Goates, B.F. Woodfield, and A. Navrotsky, "TiO_2 Stability Landscape: Polymorphism, Surface Energy, and Bound Water Energetics," *Chem. Mater.* **18**, 6324-6332 (2006).

79. Juliana Boerio-Goates, Guanghse Li, Liping Li, Trent F. Walker, Thomas Parry, Brian F. Woodfield, "Surface Water and the Origin of the Positive Excess Specific Heat for 7 nm Rutile and Anatase Nanoparticles." *Nano Letters* **6**, 750-754 (2006).

78. B. Mihaila, C.P. Opeil, F.R. Drymiotis, J.L. Smith, J.C. Cooley, M.E Manley, A. Migliori, C. Mielke, T. Lookman, A. Saxena, A.R. Bishop, K.B. Blagoev, D.J. Thoma, J.C. Lashley, B.E. Lang, J. Boerio-Goates, J.; B.F. Woodfield, G.M. Schmiedeshoff, "Pinning frequencies of the collective modes in a-uranium." *Physical Review Letters* **96** 076401/1-076401/4 (2006).

Peer-Reviewed Books

2. Chemical Thermodynamics Principles and Applications, by J.B. Ott and J. Boerio-Goates, Academic Press, San Diego, CA, 2000.

1. Chemical Thermodynamics Advanced Applications, by J.B. Ott and J. Boerio-Goates, Academic Press, San Diego, CA, 2000.

Patent Applications

1. Woodfield, Brian F.; Liu, Shengfeng; Boerio-Goates, Juliana; Liu, Qingyuan. **Preparation of uniform nanoparticles of ultra-high purity metal oxides, mixed metal oxides, metals, and metal alloys.** PCT Int. Appl. (2007), 38pp. CODEN: PIXXD2 WO 2007098111 A2 20070830

Recent External Funding or Research Support Received

22. Cosmas, Inc/BYU NSF SBIR Grant, Phase I.

21. Cosmas, Inc./BYU Utah Center of Excellence Award to commercialize nanoparticles, co-PI with Lynn Astle, CEO of Cosmas, Inc. And Brian Woodfield (BFW).

19. "Portable, Moderate-temperature Solid-oxide Fuel Cells", Co-PI with BFW, Funding Source: Cerametc, Inc. $30,750.

18. "Production of Fe_3O_4 Nanoparticles." Co-PI with BFW, Funding Source: Headwaters, $42,000.

17. "High-Strength Transparent Alumina IR Windows with Nanoscale Sintered Windows." Co_PI with BFW, Funding Source: Cerametc, Inc. $30,000

16. "Synthesis of Metal, Alloy, Metal Oxide, and Mixed Metal Oxide Nanoparticles." co-PI with BFW, Funding Source: Cosmas, Inc.

15. Technology licensing agreement with Cosmas, Inc.

14. “Energetics of Nanomaterials.” Co-PI with BFW, U.S. Department of Energy, renewal.

13. “Development of a Commercial Synthesis of Metal and Metal Oxide Nanoparticles" , Utah Center of Excellence Utah State Office of Economic Development, co-PI with Brian Woodfield, $25,000.

12. Third-Law Entropy Measurements of Studies of Cu_2OCl_2, Funding Source: Argonne National Laboratory, 2006, $3200.

11. $165,000/year for 3 years: U.S. DOE Department of Energy - subcontract “Energetics of Nanoscale Materials 2005-2007.

Selected Recent Presentations at Professional Meetings or Seminars (Underlined name indicates presenter)

85. J. Boerio-Goates, C. Snow, B.F. Woodfield, “Thermodynamic Studies of the Magnetic Core in Ferritin.” 20th International Conference on Chemical Thermodynamics, Warsaw, Poland, August 2008.

84. J. Boerio-Goates, B.F. Woodfield, L. Astle, “Simple, green synthesis of inorganic nanoparticles.” Utah Nanotech 2007 Conference. Salt Lake City, Oct. 2007.

83. J. Boerio-Goates, “Energy and Dynamics of Surface-Adsorbed Water on TiO_2 Nanoparticles.” Dalhousie University, Institute of Research in Materials and Department of Chemistry, Halifax, Nova Scotia. February 2007. Invited lecture.

82. Stacy Smith, J. Boerio-Goates, B.F. Woodfield, “Using Models of TiO_2 Nanoparticles to Study Unusual Surface Phenomena”, Utah Conference in Undergrad Research, Salt Lake City, UT, February 2007 (Invited poster.)

81. Brigid E. McCollam, Juliana Boerio-Goates, and David M. Jenkins, “Calorimetric Studies and Thermodynamic Calculations on the Triple-Chain Silicate Na-Clinojimthompsonite”, Geological Society of America, Philadelphia, PA October 2006.

80. Juliana Boerio-Goates, B. Lang, G. Liu, T.K. Meldrum, T. Parry, T.F. Walker, B.F. Woodfield, A.A. Lefchenko, and A. Navrotsky, “Heat Capacity Studies of Water on Nanoparticle Surfaces vs Crystalline Hydrates”, International Conference on Chemical Thermodynamics, NIST, Boulder, CO, July 2006.