

April M. Sawvel

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Education

University of California - Santa Barbara Ph.D. in Chemistry Anticipated in June 2010

Thesis: "Understanding the Dynamics of Blood Clot Initiation and Propagation at the Surface of Inorganic Materials."

Advisor: Professor Galen D. Stucky

University of California - Santa Cruz B.S. in Chemistry June 2002

Thesis: "Local Structure of Amorphous Dielectric Materials by Multinuclear Solid State Nuclear Magnetic Resonance."

Advisor: Professor A. Russell Flegal

Research Experience

Graduate Researcher, University of California, Santa Barbara CA 2005 - Present

Advisor: Professor Galen D. Stucky

- Investigated the interface interactions between blood and inorganic materials that govern clot initiation and propagation for the development of compatible biomaterials and hemostatic agents.
- Experience with solution and solid state NMR spectroscopy, SEM, XRD, DSC/TGA, Biosafety Level II operations, BET, XPS, thrombelastography, platelet aggregometry, dynamic light scattering and zeta potential measurements, infrared imaging, and inorganic synthesis.

Scientific Technologist, Lawrence Livermore National Laboratory, Livermore CA 2002 - 2005

- Synthesized and tested the ion transport properties of nano-porous polycarbonate membranes for water treatment technologies.
- Developed and characterized anion-specific membranes using surface functionalization chemistry and multinuclear solid state NMR spectroscopy.
- Characterized the binding structure and kinetics of a novel beryllium chelator in solution and attached to the surface of inorganic materials using ^9Be and ^{31}P solution and solid state NMR spectroscopy.
- Identified and characterized the defect sites in polymeric materials using NMR relaxometry and developed Quality Control procedures to screen polymeric materials for defects prior to use.
- Characterized alumina aerogel materials using novel NMR methods to determine how synthesis conditions influence the structure of the aerogel materials.

Technical Scholar, Lawrence Livermore National Laboratory, Livermore, CA 1997 - 2002

- Synthesized and determined the structure of amorphous materials using melt-quench synthesis techniques as well as multinuclear solid state NMR and Raman spectroscopies.
- Analyzed aqueous samples using Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES), Atomic Absorption Spectroscopy (AAS), Ion Chromatography (IC), and Total Inorganic Carbon analysis (TIC).
- Conducted silica scale inhibition experiments and analyzed samples using colorimetric techniques.
- Carried out flow-through experiments to determine the sorption behavior of radionuclides to calcite.
- Created an electronic and physical database of experimental data and presented experimental results at bi-weekly meetings.

Honors and Affiliations

- University of California Santa Barbara Graduate Division Dean's Fellowship (2008 - 2009)
- University of California Santa Barbara Academic Senate Travel Grant (June 2008)
- National Science Foundation Graduate Student Research Fellowship - Honorable Mention (2007)
- University of California Santa Barbara Department of Chemistry Incoming Graduate Student Fellowship (2005)
- University of California Santa Cruz Senior Thesis in the Major Passed with Honors (2002)
- University of California Santa Cruz Chancellor's Award for Outstanding Achievement (2002)
- University of California Santa Cruz Natural Sciences Dean's Award for Excellence in Chemistry (2002)
- Member of the American Chemical Society since 2002
- Member of the Materials Research Society since 2007

Leadership and Outreach

- Presenter at the Family Ultimate Science Exploration (FUSE) nights for Santa Barbara and Goleta Jr. High Schools (2008-2009)
- Mentor for the Cooperative International Science and Engineering Internship program at University of California Santa Barbara (2006)
- Panel Speaker at the Tri-Valley Expanding Your Horizons Conference (2005)
- Panel Speaker at the San Joaquin County Expanding Your Horizons Conference (2004)
- Workshop Leader at the Tri-Valley Expanding Your Horizons Conference (2000 and 2003)
- Workshop Leader at the San Joaquin County Expanding Your Horizons Conference (1999)

Publications

- Baker, S.E., **Sawvel, A.M.**, Fan, J., Shi, Q., Stucky, G.D., "Blood Clot Initiation by Mesocellular Foams: Dependence on Pore Size Variation and Enzyme Immobilization." *Langmuir*, **in press**, 2008.
- Baker, S.E., **Sawvel, A.M.**, Zheng, N., Stucky, G.D., "Controlling Bioprocesses with Inorganic Surfaces: Layered Clay Hemostatic Agents." *Chemistry of Materials*, **19**, 4390, 2007.

- Létant, S.E., Schaldach, C.M., Johnson, M.R., **Sawvel, A.M.**, Bourcier, W.L., Wilson, W.D., "Pore Conductivity Control at the Hundred-Nanometer Scale: An Experimental and Theoretical Study." *Small*, **12**, 1504, 2006.
- Herberg, J.L., Chinn, S.C., **Sawvel, A.M.**, Gjersing, E., Maxwell, R.S., "Characterization of Local Deformation in Filled-Silicone Elastomers Subject to High Strain - NMR MOUSE and Magnetic Resonance Imaging as a Diagnostic Tool for Detection of Inhomogeneities." *Polymer Degradation and Stability*, **91**, 1701, 2006.
- Chinn, S.C., DeTeresa, S., **Sawvel, A.**, Shields, A., Balazs, B., Maxwell, R.S., "Chemical Origins of Permanent Set in a Peroxide Cured Filled Silicone Elastomer-Tensile and ¹H NMR Analysis." *Polymer Degradation and Stability* **91**, 555, 2006.
- **Sawvel, A.M.**, Chinn, S.C., Bourcier, W.L., Maxwell, R.S., "Local Structure of Amorphous (PbO)_x[(B₂O₃)_{1-z}(Al₂O₃)_z]_y(SiO₂)_y Dielectric Materials by Multinuclear Solid State NMR." *Chemistry of Materials* **17**, 1493, 2005.
- Zavarin, M., Roberts, S.K., Hakem, N., **Sawvel, A.M.**, Kersting, A.B., "Eu(III), Sm(III), Np(V), Pu(V), and Pu(IV) Sorption to Calcite." *Radiochimica Acta* **93**, 93, 2005.
- Baumann, T., Gash, A., Chinn, S., **Sawvel, A.**, Maxwell, R., Satcher, J., "Synthesis of High-Surface-Area Alumina Aerogels without the Use of Alkoxide Precursors." *Chemistry of Materials* **17**, 395, 2005.
- Chinn, S.C., Herberg, J.L., **Sawvel, A.M.**, Maxwell, R.S., "Solid State NMR Measurements for Preliminary Lifetime Assessments in γ -Irradiated and Thermally Aged Siloxane Elastomers." *MRS Symposium Proc.* **851**, NN11.61, 2004.

Invention Disclosures

- "Hemostatic Compositions and Methods of Use." Baker, S.E., **Sawvel, A.M.**, Stucky, G.D., 2007. Patent pending.
- "Mesocellular Oxide Foams as Hemostatic Compositions and Methods of Use." Baker, S.E., **Sawvel, A.M.**, Stucky, G.D., 2007. Patent pending.

Presentations

- Invited Seminar Speaker at Lawrence Livermore National Laboratory (July 2008 oral)
- Gordon Research Conference on Hemostasis (June 2008 poster)
- Materials Research Society National Meeting (Spring 2007 oral, Fall 2007 oral)
- Advanced Technologies for Combat Casualty Care (2006 and 2007 poster)
- American Chemical Society National Meeting (2005 oral, 2003 and 2002 poster)
- National Conference on Experimental Nuclear Magnetic Resonance (2006 poster, 2004 poster)
- DP Foams Workshop at Sandia National Laboratory (2005 oral)