Samantha A. Labb

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Accomplished fourth year radiochemistry PhD student, providing a wealth of experience and a passion for learning

EDUCATION

Colorado State University | Fort Collins, CO **Expected Graduation Date: May 2023**
Environmental and Radiological Health Sciences | PhD in Health Physics and Radiochemistry

Salisbury University | Salisbury, MD **August 2014- May 2018**
Richard A. Henson School of Science & Technology | B.S. in Chemistry with Mathematics Minor

HONORS & ORGANIZATIONS

- Health Physics Society Ad-hoc Member **December 2019**
- American Nuclear Society Member **December 2019**
- Health Physics Society Member **December 2019**
- Health Physics Society Student Chapter (Treasurer) **January 2019**
- American Society of Brewing Chemists Member **December 2017**
- American Chemical Society Member **December 2015**
- Salisbury University Club Field Hockey **September 2015**
- Phi Eta Sigma National Freshman Honor Society **September 2015**
- Salisbury University Chemistry Society **September 2014**
- Thomas E. Bellavance Honors Program **September 2014**

SKILLS

Programs
- Microsoft Word, Excel, PowerPoint, ChemDraw, SciFinder, Mathematica, Gaussian, ProSpartan, RStudio

Instruments
- Positive-Pressure Glove Box, NMR Spectroscopy (^{1}H, ^{13}C, ^{57}Fe), IR Spectroscopy, GC-MS, HPLC, GC-FID, AAS, Flash Chromatography, ICP-MS, Powder X-Ray Diffraction, Liquid Scintillation Counting, GM Counter, Alpha Spectrometry, Gamma Spectroscopy

Lab Techniques
- Multi-step Synthesis, Chromatography, Radioanalytical Techniques, Chemical Separations

RESEARCH EXPERIENCE

Los Alamos National Laboratory **June 2021-Present**
Seaborg Fellow
Supervisor: Dr. Evelyn Bond and Dr. Todd Bredeweg

Characterization of a Novel Sodium Bismuthate PAN Resin
To facilitate efficient americium and curium separations for weapons diagnostics, chromatographic experiments were performed while gaining an understanding of the national laboratory protocols and safety considerations.

Colorado State University
Graduate Research Assistant, Health Physics & Radiochemistry Program **August 2018-Present**
Supervisor/Advisor: Dr. Ralf Sudowe

Electron Linear Accelerator Production and Purification of Sc-47 from TiO_2 Targets
Supervisors: Dr. Derek R. McLain, Dr. David Rotsch, Argonne National Laboratory
Developing the radiochemical purification procedures that will be used to process the targets after irradiation and investigating methods to efficiently purify an recycle TiO_2 targets.

Separation of Americium in Higher Oxidation States from Curium
PI: Dr. Ralf Sudowe
To achieve efficient intragroup separation of the trivalent actinides, three oxidizing agents are being compared for their ability to separate americium from curium on DGA extraction chromatographic resin through batch-contact and column studies.

Argonne National Laboratory
Senior Research Aide, Strategic Security Science Division **June 2018 - August 2018**
Supervisors: Dr. Derek R. McLain, Jodi Canaday

Improving the Recovery of Ba from Sr Resin Columns Using Chelating Agents
Investigated the use of several common chelating agents to strip barium from Sr resin columns in an effort to eliminate variation in Ba recovery and overall uncertainty when determining the age of Cs-137 source material.

Evolution Craft Brewery
Quality Control/Assurance Chemist **July 2017 - May 2018**
Supervisor: John Scheckells
Developed and proposed quality measurement strategies and methods in an effort to initiate a quality control program within the brewery.

Salisbury University
Undergraduate Researcher, Chemistry Department. **June 2015 - May 2018**

Synthesis and Study of Phosphorus-Iron Carbonyl Compounds (2018)
Supervisor/Advisor: Dr. David Rieck
Explored the synthesis and mechanisms of reactions between iron carbonyls and phosphines and characterized the resulting products, which would later be studied for their complexation abilities.

Nuclear Energy: Yesterday, Today, and Tomorrow? (2017)
Supervisors/Advisors: Dr. Seth J. Friese, Dr. James Buss
Collaboration between Salisbury University's Chemistry Department and Honors Program for the development of a nuclear chemistry course available to students within the honors program that highlights the history, general chemistry concepts, economics, and politics that contribute to the role nuclear energy plays today and the role it might play in the future.

New Tetra-aza Ligands for An(III)/Ln(III) Separations (2015-2018)
Supervisor/Advisor: Dr. Seth J. Friese
Synthesized and characterized new organic molecules that are selective for the minor actinides over the lanthanides in view of the recycling of nuclear waste and the closure of the nuclear fuel cycle.

EMPLOYMENT HISTORY

Quality Control Chemist | Evolution Craft Brewery, Salisbury, MD **June 2017-May 2018**
- Compiled laboratory test data and performed appropriate analyses
- Became familiar with working in an industrial setting
- Established better understanding of OSHA regulations and good manufacturing practices

Analytical Chemistry Lab Assistant | Salisbury University, Salisbury, MD **January 2017 – May 2018**
- Assisted in the laboratory of Professor Mindy Howard
- Calibrated analytical equipment and performed routine instrument maintenance
- Participated in the full relocation and redesign of the analytical classroom and course

Organic Chemistry Lab Assistant | Salisbury University, Salisbury, MD **August 2015 – May 2018**
- Assisted in the laboratory of Professor Mindy Howard
- Worked with up to 4 other assistants to maintain a safe, high-quality work and learning environment

General Chemistry Teaching Assistant | Salisbury University, Salisbury, MD **August 2015 – June 2017**
- Assistant for Dr. Seth J. Friese
- Implemented general and organic chemistry knowledge when grading labs, quizzes, and exams
- Collaborated with faculty and actively contributed new ideas on teaching

AWARDS & PRESENTATIONS

- Roy G. Post Scholarship for Nuclear Waste Management **February 2021**
- 3rd Place Oral Presentation Award, CSU CVMBS Research Day **January 2021**
- Health Physics Society Dade W. Moeller Scholarship **May 2020**
- Reginald L. Gotchy, Ph.D. and David E. McCurdy, Ph.D. Scholarship **May 2020**
- 2nd Place Oral Presentation Award, CRMCHPS **May 2020**
- American Nuclear Society James R. Vogt Radiochemistry Scholarship **March 2020**
- 2020 G. T. Seaborg Institute Research Fellowship **February 2020**
- Japan Student Services Organization (JASSO) Scholarship **August 2019**
- 3rd Place Oral Presentation Award, CRMCHPS **April 2019**
- Colorado State University Graduate Student Scholarship **September 2018**
- Henson Undergraduate Research Grant **March 2018**
- Salisbury University Green Fund Grant **May 2016**
- 1st Place Poster Presentation Award, UMBC Undergraduate Research Symposium **October 2015**
- National Science Foundation: Bridges for SUCCESS Research Grant **June 2015**

PUBLICATIONS

Labb, S.A.; *et. al.* "Synthesis of a Water-Soluble, Soft Donor BTzBP Ligand for An(III)/Ln(III) Separation for Nuclear Waste Treatment," *Synlett*., 31(14), p. 1384-1388 (2020).

Labb, S.A.; Sorcic, A.; Tsai, Y.; McLain, D.R. "Improving the Recovery of Ba from Sr Resin Columns Using Chelating Agents," *J Radioanal. Nucl. Chem.,* 321(3), p. 867-874 (2019).

PRESENTATIONS

Labb, S.A.; Sudowe, R. "Separation of Americium and Curium for Neutron Capture Cross Section Measurements" oral presentation at the 66th Annual Health Physics Society Conference, July 26, 2021.

Labb, S.A.; Sudowe, R. "Minor Actinide Separations for Nuclear Waste Recycling" poster presentation at the 2021 Waste Management Symposia, March 9, 2020.

Labb, S.A.; Sudowe, R. "Separation of Americium in Higher Oxidation States from Curium for Nuclear Waste Recycling" oral presentation at the 22nd Annual College of Veterinary Medicine and Biomedical Science Research Day, January 30, 2020.

Labb, S.A.; Sudowe, R. "Efficient Am and Cm Separation for Neutron Capture Cross Section Measurements" oral presentation at the 2020 Central Rocky Mountain Chapter Meeting of the Health Physics Society, Fort Collins, CO, May 2020.

Labb, S.A.; Sudowe, R. "Chemical Separations of the Minor Actinides: Towards a Closed Nuclear Fuel Cycle," oral presentation at the 21st Annual College of Veterinary Medicine and Biomedical Science Research Day, January 25, 2020.

Labb, S.A.; McLain, D.R. "Improving the Recovery of Ba from Sr Resin Columns Using Chelating Agents," poster presentation at Radiobioassay and Radiochemical Measurements Conference, Santa Fe, NM, October 2019.

Labb, S.A. "Nuclear Forensics: Age Dating of Radioactive Cs-137 Sources," oral presentation at Salisbury University Physical Science Seminar, Salisbury, MD, October 2019.

Labb, S.A. "Careers and Research in Radiochemistry," guest lecture at Salisbury University Nuclear Chemistry Course, Salisbury, MD, October 2019.

Labb, S.A. "The Current State of Fukushima Prefecture 8 Years Post-Accident," guest lecture at Salisbury University Nuclear Chemistry Course, Salisbury, MD, October 2019.

Labb, S.A.; Witter, P.; Mueller, R.; Brown, M; Kelly, M. "CSU/Fukushima University Ambassador Program" oral presentation at Colorado State University Health Physics Seminar, Fort Collins, CO, October 2019.

Labb, S.A.; Sudowe, R. “Separation of Americium from Curium Using Sodium Bismuthate and Copper(III) Periodate,” oral presentation at Central Rocky Mountain Chapter Meeting of the Health Physics Society, Fort Collins, CO, April 2019.

Labb. S.A.; Sudowe, R. “Separation of Americium from Curium Using Sodium Bismuthate,” poster presentation at Mountains and Plains Education and Research Center Research Day, Broomfield, CO, April 2019.

Labb, S.A.; Rieck, D.F. “Synthesis of $(Fe(CO)_4\mu_2\text{-}PC_6H_6)_3$: A Journey Begins,” poster presentation at Salisbury University Chemistry Department Research Day, Salisbury, MD, May 2018.

Labb, S.A.; Friese, S.J. “Synthesis of a Tetra-aza Ligand for An(III)/Ln(III) Separations,” oral presentation at Salisbury University Student Research Conference, Salisbury, MD, April 2018.

Labb, S.A.; Friese, S.J. “Closing the Nuclear Fuel Cycle: Synthesis of a Tetra-aza Ligand,” oral presentation at National Conference on Undergraduate Research, Oklahoma City, OK, April 2018.

Labb, S.A.; Stadler, R.; Friese, S.J. “Synthesis of a Tetra-aza Ligand for the Separation of Lanthanides from Actinides,” oral presentation at Salisbury University Student Research Conference, Salisbury, MD, April 2017.

Labb, S.A.; Friese, S.J. “Solving Nuclear Waste: A Molecular Approach,” poster presentation at Northeast Regional Honors Conference, Pittsburgh, PA, April 2017.

Labb, S.A.; Cheng, Y.; Friese, S.J. “Tetra-aza Ligands for An(III)/Ln(III) Separations,” poster presentation at University of Maryland Baltimore County Undergraduate Research Symposium in the Chemical and Biological Sciences, Baltimore, MD, October 2015.

References available upon request