I am currently work as a Technical Professional where I can use my skills and experience to further the cutting-edge radioisotope research and production being done at ORNL. I am very interested in the opportunity to be a part of a highly motivated team working to deliver such a high impact product.

**EDUCATION**

**M.S. in Nuclear Engineering |** University of Tennessee, Knoxville

September 2020 – August 2022

Advisors: Jamie Coble (UTK), Kristian Myhre (ORNL), Hunter Andrews (ORNL)

* Developing methodology to determine fundamental properties of Lanthanides to enable calibration free spectroscopy for radioisotope research and production.
* Executing hands on experiments as a member of the Isotopes Applications and Research Group.
* Programming data analysis scripts using Python.

**B.S. in Chemistry |** Brigham Young University - Idaho

January 2015 – April 2020

Minor in Physics

* Performed various wet chemistry experiments throughout my degree for each lab class involving different analysis techniques and the use of different instruments.
* Predicted cometary spectra using the Franck-Condon principle with Python.

**WORK AND RESEARCH EXPERIENCE**

**Technical Professional** | Oak Ridge National Laboratory

August 2022 – Present

* Working on the Ac-225 program supporting their production and dispensing.
* Managing projects to help validate new methods to improve the production process of Ac-225 and Ac-227.
* Collaborating across divisions to support mission statements and advance current methods.

**Graduate Research Assistant** | UT Nuclear Engineering Department

September 2020 – August 2022

* Investigating Calibration-Free Laser Induced Breakdown Spectroscopy (CF-LIBS) for radioactive workspaces enabling real time analysis of radioactive samples within glove boxes and hoods.
* Developing CF-LIBS methods for producing fundamental data for minimally studied radionuclides. Enabling reduced cost and required material for data production.
* Preparing Python-based spectra analysis software for real time, near autonomous analysis of unknown samples and publication of software for community use.

**Student Research |** BYU - Idaho

September 2018 – February 2020

* Led a small group of students for the conversion of a polarized light microscope to UV light.
* Performed molecular dynamics study using GROMACS software with small proteins.
* Evaluated protein behavior over time when introduced to certain environmental stresses such as temperature, matrix, and ion mixture changes.

**Summer Research Internship |** ORNL

May 2019 – August 2019

* Worked with research chemist Miting Du, Ph.D. in the Radiochemical and Engineering Development Center focusing on separation chemistry for Am and Cm, which required Rad Worker II training, gamma spectrometry, and managing a lab workspace for preparing solutions.
* Participated in morning meetings and fulfilled training requirements for lab access.

**PUBLICATIONS**

1. **S. Irvine**, H. Andrews, K. Myhre, K. Goldstein, and J. Coble,“Radiative Transition Probabilities of Neutral and singly Ionized Europium as Determined by Laser-Induced Breakdown Spectroscopy,” Journal of Quantitative Spectroscopy & Radiative Transfer 2022, DOI: 10.1016/j.jqsrt.2022.108184.
2. **S. Irvine**, H. Andrews, K. Myhre, K. Lawson, and J. Coble, “Measurement of Transition Probabilities of Europium Using Laser Induced Breakdown Spectroscopy,” Transactions of the ANS Winter Meeting 2021, Washington D.C., November 29 – December 2, 2021.

**PRESENTATIONS**

1. **S. Irvine**, H. Andrews, K. Myhre, K. Lawson, and J. Coble, “Measurement of Transition Probabilities of Europium Using Laser Induced Breakdown Spectroscopy,” Presentation at the American Nuclear Society Winter Meeting 2021, Washington D.C., November 29-December 2, 2021.

**SKILLS**

|  |  |  |  |
| --- | --- | --- | --- |
| - Python | - Application of LIBS | - Monte Carlo N-Particle Transport (MCNP) | - Team leadership |
| - Safe handling of radioactive materials in open contamination areas | - Residual Radiation (environmental analysis) (RESRAD) | - Radiological Worker Training - Part II at ORNL |  |
| - Separation chemistry for radiometals | - Gamma Spectroscopy | - Teamwork |  |

**PROFESSIONAL SOCIETIES**

* American Nuclear Society member since 2020

**AWARDS**

* 2020-2021 ANS Robert E. Uhrig Graduate Scholarship
* DOE Isotope Program 2021 Pacifichem Bursary Recipient
* 2014 Eagle Scout

**REFERENCES**

|  |  |  |
| --- | --- | --- |
| Hunter Andrews, PhD *Research Advisor, ORNL**andrewshb@ornl.gov* | Kristian Myhre, PhD*Research Advisor, ORNL**myhrekg@ornl.gov* | Jamie Coble, PhD*Graduate Advisor, UTK**jamie@utk.edu* |