

## Jaimie Daum



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### Biography

Jaimie Daum is a 2<sup>nd</sup> year student in the UNLV Radiochemistry PhD Program. She received her Bachelor of Science in Chemistry from Westminster College in 2013.

### Research

#### Determination of Radioisotopes in Complex Saline Matrices Using Extraction Chromatography and Liquid Scintillation Counting

Nuclear operations conducted over the past seventy years have resulted in the contamination of the environment with potentially hazardous radioactive species. Atmospheric testing of nuclear weapons along with accidents such as the ones that occurred in Chernobyl, Ukraine and Fukushima, Japan are some of the major sources of anthropogenic radionuclide contamination in the environment. Sea and ocean water cover more than two-thirds of the Earth's surface and are consequently the major recipients of radionuclide contamination in the environment through either atmospheric or aquatic pathways. Therefore, it is critical to conduct research into the separation and rapid determination of radioactive species from highly saline matrices. A number of radio analytical techniques are commonly used to determine radioisotopes within a variety of matrices. However, the elevated salinity of sea and ocean water imparts a complex matrix that could affect the isolation, characterization, and determination of the radioisotopes of interest. Modern radio analytical separation techniques employ novel extraction chromatographic resins in order to separate radionuclides from sample matrices. Batch experiments are conducted in order to determine the retention capabilities of the extraction chromatographic resins for the radioisotopes of interest, particularly isotopes of plutonium, iodine, and strontium. The research investigates the effect that sodium, magnesium, and calcium constituents have on the retention capabilities of the resins.

### Publications, Presentations and Awards

*2014 Integrated University Program Graduate Fellowship*

Department of Energy Office of Nuclear Energy

*Determination of Radioisotopes in Complex Saline Matrices Using Extraction Chromatography and Liquid Scintillation Counting*

ACS 248<sup>th</sup> National Meeting

August 10–14, 2014  
San Francisco, CA

*Determination of Radioisotopes in Complex Saline Matrices Using Extraction  
Chromatography and Liquid Scintillation Counting*

ANS Student Conference

April 14–17, 2014  
University Park, PA