# Andrew S. Voyles, EIT

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## Education

**University of California, Berkeley** — Berkeley, California
Ph.D. Candidate, Nuclear Engineering — Expected Graduation: **May, 2018**
Nuclear Regulatory Commission Graduate Fellowship

- Dissertation : "Nuclear Excitation Functions for Production of Novel Medical Radionuclides"
- Research Advisor: Lee A. Bernstein

**University of Utah, Honors College** — Salt Lake City, Utah
B.S., *cum laude*, Chemical Engineering — **May, 2013**
Minors: Nuclear Engineering, Chemistry
University of Utah President's Club Scholarship, Dean's List, 2009 - 2013

## Research Experience

**University of California, Berkeley** — Berkeley, California
*Graduate Student Researcher / NRC Fellow* — **August, 2014 – Present**

- Researched "Nuclear Excitation Functions for Production of Novel Medical Radionuclides" — measurement of cross-sections for neutron-induced and charged particle-induced reaction pathways for the production of emerging novel therapeutic and diagnostic medical radionuclides, with high specific activity.
- Developed intense mono-energetic neutron source capabilities for production of novel therapeutic radionuclides.
- Research carried out at the Lawrence Berkeley National Laboratory's 88-Inch Cyclotron and the Los Alamos National Laboratory's Isotope Production Facility at LANSCE.

**University of Oslo** — Oslo, Norway
*Visiting Researcher, Department of Physics* — **April – May, 2018**

- Studied preparation of a chelate-conjugated biomolecule carrying a radionuclide, in the Nuclear and Energy Physics group.
- Focus on the radiolanthanide $^{161}$Tb and a peptidomimetic displaying dual-receptor targeting through the endothelial growth factor receptor and the HER2/neu antigen.

**Institute for Laser Engineering, Osaka University** — Osaka, Japan
*Visiting Researcher* — **February – March, 2015**

- Research and evaluation of solid debris collection diagnostics in search of evidence of nuclear-plasma interactions.

**University of Utah** — Salt Lake City, Utah
*Undergraduate Researcher, Nuclear Engineering* — **August, 2010 – August, 2011**

- Developed simulation of Neutron Activation Analysis, an analytical technique using neutron irradiation of matter to determine highly precise compositions of samples.

*Undergraduate Researcher, Chemistry* — **August, 2009 – May, 2010**

- Synthesis and characterization of metal-doped Cadmium-Selenium quantum dots used to produce photonic crystals structured after iridescent scales of several Brazilian beetles.
- Applications include fully-optical circuitry and tunable, customizable photoluminescent sensors for desired molecules and/or cells.

**University of West Florida** — Pensacola, Florida
*Visiting Researcher, Department of Physics* — **May, 2008 – January, 2009**

- Modeled specific heat capacity anomalies of 4'-octyl-4-biphenyl-carbonitrile liquid crystals, due to the effect of mesophase transitions.

## Teaching Experience

**University of California, Berkeley** — Berkeley, California
*Graduate Student Instructor*

- NE 101 / 210M — Nuclear Reactions and Radiation — **Fall 2015**

**University of Utah** — Salt Lake City, Utah
*National Science Foundation Outreach Mentor* — **May, 2010 – May, 2013**

- Created and presented hands-on demos to local schools, to advocate engineering and science careers, focusing on historically underrepresented demographics.

*Teaching Assistant*

- CH EN 2300 — Thermodynamics I — **Spring 2013**
- NUCL 3000 / 5030 — Nuclear Principles in Engineering — **Fall 2011**

## Selected Publications

**Andrew S. Voyles**, Lee A. Bernstein, Eva R. Birnbaum, Jonathan W. Engle, Stephen A. Graves, Toshihiko Kawano, Amanda M. Lewis, and Francois M. Nortier, *Excitation functions for (p,x) reactions of niobium in the energy range of $E_p = 40$–90 MeV.* Nuclear Instruments and Methods in Physics Research B, (Accepted 2018).

Mauricio Ayllon, Parker A. Adams, Joseph D. Bauer, Jon C. Batchelder, Tim A. Becker, Lee A. Bernstein, Su-Ann Chong, Jay James, Leo E. Kirsch, Ka-Ngo Leung, Eric F. Matthews, Jonathan T. Morrell, Paul R. Renne, Andrew M. Rogers, Daniel Rutte, **Andrew S. Voyles**, Karl Van Bibber, and Cory S. Waltz, *Design, construction, and characterization of a compact DD neutron generator designed for $^{40}Ar/^{39}Ar$ geochronology.* Nuclear Instruments and Methods in Physics Research A, (In Press, Accepted 2018). `http://dx.doi.org/10.1016/j.nima.2018.04.020`

**A.S. Voyles**, M.S. Basunia, J.C. Batchelder, J.D. Bauer, T.A. Becker, L.A. Bernstein, E.F. Matthews, P.R. Renne, D. Rutte, M.A. Unzueta, and K.A. van Bibber, *Measurement of the $^{64}Zn,^{47}Ti(n,p)$ Cross Sections using a DD Neutron Generator for Medical Isotope Studies.* Nuclear Instruments and Methods in Physics Research B **410** (2017) 230–239. `http://dx.doi.org/10.1016/j.nimb.2017.08.021`

## Certifications

- Licensed in Utah as Engineer in Training (EIT, ID# 13-802-04) — **April, 2012**

## Computer Skills

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| **Languages** | Java, C/C++, Python |
| **Tools** | git, MATLAB, Mathematica, Maple, LaTeX, Arduino, shell, bash, SQLite, COMSOL Multiphysics, Aspen, ANSYS Fluent |
| **Nuclear Software** | EXFOR, GEANT4, MCNP/MCNPX radiation simulation codes |

## Lab Skills

- Radionuclide labeling via chelate-conjugated biomolecules.
- Radio-HPLC, radio-TLC, and solid-phase extraction radiochemical purification.
- HPGe Gamma spectroscopy, radiation detection and measurement.
- Design and implementation of PID process control systems.
- Operation of heat exchanger, distillation column, ebulliometer (classroom experience).
- $^{1}H$ and $^{13}C$ NMR , IR characterization and analysis, chromatography.
- Organic laboratory synthesis and purification techniques.

## Professional Service

American Nuclear Society

- Program Chair, Northern California Section — – since 2016
- Executive Committee, Northern California Section — – since 2016
- Webmaster, Utah Student Section — 2011 – 2013