Andrew S. Voyles, Ph.D., EIT

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Education

University of California, Berkeley — Berkeley, California
Ph.D., Nuclear Engineering — **August, 2018**
Nuclear Regulatory Commission Graduate Fellowship

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
Assistant Research Engineer — **June, 2019 – Present**

- Led fundamental studies of low-energy nuclear physics at the LBNL 88-Inch Cyclotron as a part of the LBNL/UCB Nuclear Data Program, and supervised M.S./Ph.D. students in these efforts.
- Efforts include the measurement of charged-particle and neutron-induced reaction cross sections relevant to the production of radionuclides for medical applications, and the measurement of independent and cumulative fission yields using cyclical neutron activation analysis,
- As Isotope Production Group leader, responsible for developing the technical vision for these research objectives, and facilitating interactions with other research organizations to promote collaboration and enhance the impact of research results, chiefly with LANL and BNL.
- Compiled all nuclear data produced in experiments into the reaction database EXFOR.

Postdoctoral Scholar — **August, 2018 – June, 2019**

- Responsible for overseeing the effort to determine novel production routes for ^{225}Ac, ^{212}Pb, ^{68}Ge, and ^{236}Np, through experiments at the LBNL 88-Inch Cyclotron as a part of the LBNL/UCB Nuclear Data Program.
- Developed in-house capabilities for electrodeposition and pressed-powder target fabrication.
- Assisted other members of the group by supervising M.S./Ph.D. student efforts to determine isotope production routes through cross section measurements at LBNL, LANL, and BNL.

Graduate Student Researcher / NRC Fellow — **August, 2014 – August, 2018**

- 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 — **February – 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

D. Gjestvang, S. Siem, F. Zeiser, J. Randrup, R. Vogt, J.N. Wilson, F. Bello-Garrote, L.A. Bernstein, D.L. Bleuel, M. Guttormsen, A. Görgen, A.C. Larsen, K.L. Malatji, E.F. Matthews, A. Oberstedt, S. Oberstedt, T. Tornyi, G.M. Tveten, and **A.S. Voyles**, *Excitation energy dependence of prompt fission γ-ray emission from $^{241}Pu^*$.* Physical Review C, *Accepted Feb 2021, in press.*

Andrew S. Voyles, Amanda M. Lewis, Jonathan T. Morrell, M. Shamsuzzoha Basunia, Lee A. Bernstein, Jonathan W. Engle, Stephen A. Graves, and Eric F. Matthews, *Proton-induced reactions on Fe, Cu, & Ti from threshold to 55 MeV.* The European Physical Journal A, *Accepted Feb 2021, in press.*

Morgan B. Fox, **Andrew S. Voyles**, Jonathan T. Morrell, Lee A. Bernstein, Amanda M. Lewis, Arjan J. Koning, Jon C. Batchelder, Eva R. Birnbaum, Cathy S. Cutler, Dmitri G. Medvedev, Francois M. Nortier, Ellen M. O'Brien, and Christiaan Vermeulen, *Investigating high-energy proton-induced reactions on spherical nuclei: Implications for the preequilibrium exciton model.* Physical Review C, *Accepted Dec 2020, in press.*

Ryan K. Chapman, **Andrew S. Voyles**, Narek Gharibyan, Lee A. Bernstein, and James E. Bevins, *Measurement of the $^{160}Gd(p,n)^{160}Tb$ excitation function from 4–18 MeV using stacked-target activation.* Applied Radiation and Isotopes, **171** (2021) 109647. `https://doi.org/10.1016/j.apradiso.2021.109647`

D.L. Bleuel, L.A. Bernstein, R.A. Marsh, J.T. Morrell, B. Rusnak, and **A.S. Voyles**, *Precision measurement of relative γ-ray intensities from the decay of ^{61}Cu.* Applied Radiation and Isotopes, **170** (2021) 109625. `https://doi.org/10.1016/j.apradiso.2021.109625`

M. Shuza Uddin, Bernhard Scholten, M. Shamsuzzhoha Basunia, Sandor Sudár, Stefan Spellerberg, **Andrew S. Voyles**, Jonathan T. Morrell, Haleema Zaneb, Jesus A. Rios, Ingo Spahn, Lee A. Bernstein, Bernd Neumaier, and Syed M. Qaim, *Accurate Determination of Production Data of the Non-Standard Positron Emitter ^{86}Y via the $^{86}Sr(p,n)$-Reaction.* Radiochimica Acta, **108** (2020) 747-756. `https://doi.org/10.1515/ract-2020-0021`

M.S. Basunia, J.T. Morrell, M.S. Uddin, **A.S. Voyles**, C.D. Nesaraja, L.A. Bernstein, E. Browne, M.J. Martin, and S.M. Qaim, *Resolution of a discrepancy in the γ-ray emission probability from the β decay of $^{137}Ce^g$.* Physical Review C, **101** (2020) 064619. `https://doi.org/10.1103/PhysRevC.101.064619`

G.B. Kim, S.T.P. Boyd, R.H. Cantor, **A.S. Voyles**, J.T. Morrell, L.A. Bernstein, and S. Friedrich, *A New Measurement of the 60 keV Emission from Am-241 Using Metallic Magnetic Calorimeters.* Journal of Low Temperature Physics, (2020) 1-7. https://doi.org/10.1007/s10909-020-02412-7

Jonathan T. Morrell, **Andrew S. Voyles**, M. S. Basunia, Jon C. Batchelder, Eric F. Matthews, and Lee A. Bernstein, *Measurement of ^{139}La(p,x) cross sections from 35–60 MeV by stacked-target activation.* The European Physical Journal A, **56** (2020) 13. https://doi.org/10.1140/epja/s10050-019-00010-0

Lee A. Bernstein, David A. Brown, Arjan J. Koning, Bradley T. Rearden, Catherine E. Romano, Alejandro A. Sonzogni, **Andrew S. Voyles**, and Walid Younes, *Our Future Nuclear Data Needs.* Annual Review of Nuclear and Particle Science, **69.1** (2019) 109–136. https://doi.org/10.1146/annurev-nucl-101918-023708

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, **429** (2018) 53–74. https://doi.org/10.1016/j.nimb.2018.05.028

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, **903** (2018) 193–203. https://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. https://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

Languages	Java, C/C++, Python
Tools	git, svn, CAD, MATLAB, Mathematica, Maple, LaTeX, Arduino, shell, bash, SQLite, COMSOL Multiphysics, Aspen, ANSYS Fluent
Nuclear Software	TALYS, EMPIRE, GEANT4, MCNP/MCNPX, FLUKA, EXFOR

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

Journal of Radioanalytical and Nuclear Chemistry
- Reviewer – since 2019

Nuclear Instruments and Methods in Physics Research B
- Reviewer – since 2017

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