

Susan E. Ziegler

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Education

B.S. 1993 University of Massachusetts at Amherst –
Environmental Science

Ph.D. 1998 University of Texas at Austin - Marine Science

Postdoctoral
-Fellowship 1999 Carnegie Institution of Washington - Geophysical Laboratory
Stable Isotope Biogeochemistry

Professional Experience

2002-present **Co-director**, University of Arkansas Stable Isotope
Laboratory

2000-present **Assistant Professor**, Dept. of Biological Sciences,
University of Arkansas

1998-1999 **Postdoctoral Fellow**, Carnegie Institution of Washington,
Geophysical Laboratory

1997-1998 **Graduate Research Assistant.**, Dept. of Marine Science,
University of Texas

1995-1997 **Lund Fellow**, Dept. of Marine Science, University of Texas

1994-1995 **Graduate Research Assistant.**, Dept. of Marine Science,
University of Texas

1993-1994 **Graduate Teaching Assistant**, Dept. of Chemistry,
University of Texas

1993 **Biological Technician**, Wetlands Inventory, U.S. Fish &
Wildlife Service, Orono, ME

1992-1993 **Research Intern**, Jug Bay Wetland Sanctuary, Lothian,
Maryland

Professional Activities

- Invited Speaker Dept. of Analytical Chemistry, University of Arkansas, April 9, 2004.
- Invited Speaker Arkansas Water Resources Annual Meeting, Fayetteville, AR April 20-21, 2004.
- Invited Speaker Kansas Biological Survey, University of Kansas, Lawrence, KS October 17, 2003.
- Invited Speaker Academy of Natural Sciences, Philadelphia, PA March 19-21, 2003.
- Seminar Speaker Carnegie Institution of Washington, Geophysical Laboratory, March 23, 2003.
- Seminar Speaker Biological Sciences, University of Arkansas, March 27, 2003.
- Invited Speaker Seagrass Ecosystem Carbon Sequestration Workshop, University of Tokyo, Tokyo, Japan, March 2002.
- Invited Speaker Joseph W. Jones Ecological Research Center, Newton, GA, May 2001.
- Invited Speaker Biochemistry Seminar Series, University of Arkansas, Nov. 2000.
- Seminar Speaker Carnegie Institution of Washington, Geophysical Laboratory, Nov. 1999.
- Participant DIALOG III (Dissertations Initiative for the Advancement of Limnology and Oceanography), Bermuda Biological Station for Research, Oct. 16-23, 1999.
- Invited Speaker Dissertations Initiative for the Advancement of Limnology and Oceanography (DIALOG III) Symposium. Bermuda Biological Station for Research, October 16-23, 1999.
- Invited Speaker Biological Sciences, University of Arkansas, March 1999.
- Invited Speaker Avery Point Marine Sciences, University of Connecticut, March 1999.
- Invited Speaker Academy of Natural Sciences, Philadelphia, PA, Feb. 1999.
- Invited Speaker Institute of Marine and Coastal Science, Rutgers University, April 1998.
- Invited Speaker Carnegie Institution of Washington, Geophysical Laboratory, March 1998.

Member of: American Society of Limnology and Oceanography (ASLO)
American Chemical Society (ACS)
American Geophysical Union (AGU)
North American Benthological Society (NABS)

Member of the National Astrobiology Institute and NASA Astrobiology Fellow 1999.

Reviewer of papers submitted to: Limnology and Oceanography, Aquatic Sciences, and Marine Ecology Progress Series.

Reviewer of proposals submitted to National Science Foundation (NSF), U.S. Department of Agriculture (USDA), SeaGrant and American Chemical Society (ACS).

Attended Stable Isotope Mass Spectrometry Course, Thermo-Finnigan Inc., Bremen, Germany. November 12-17, 2000.

Publications

- Ziegler, S.**, White, P. M., and D. C. Wolf (2004) Tracking the fate and recycling of a ^{13}C -labeled substrate in soil: Lessons for stable isotope-labeling and biomarker studies. (in review) *Soil Biology and Biochemistry*.
- Billings, S. and **S. Ziegler** (2004) Linking microbial activity and soil organic matter transformations in forest soils under elevated CO_2 . (in press) *Global Change Biology*.
- Brisco, S. and **S. Ziegler** (2004) Effects of solar radiation on the utilization of dissolved organic matter in Ozark headwater streams. (in press) *Aquatic Microbial Ecology*.
- Ziegler S.**, Kaiser E. and R. Benner (2004) Seasonal and diel dynamics of dissolved organic nitrogen and phosphorus in a subtropic seagrass-dominated lagoon. (in press) *Bulletin of Marine Science*
- Ziegler S.** and S. Brisco (2004) Relationships between the isotopic composition of dissolved organic carbon and its bioavailability in contrasting Ozark streams. *Hydrobiologia* 513: 153-169.
- Ziegler S.** and M. L. Fogel (2003) Seasonal and diel relationships between the isotopic compositions of dissolved and particulate organic matter in a freshwater ecosystem. *Biogeochemistry* 64:25-52.
- Schaeffer, S.M., **S. Ziegler**, J. Belnap, and R.D. Evans (2002) *Bromus tectorum* invasion alters soil microbial carbon and nitrogen cycling in an arid Colorado Plateau grassland. , *Eos. Transactions (suppl.) American Geophysical Union #B27A-0753*.
- Fogel, M. L., Teece, M. A., McCarthy, M., **Ziegler S. E.**, and Keil, R. G. (2000) Compound specific isotope signals in DOM and other geochemical reservoirs. *Eos Transactions (Supp.)*, American Geophysical Union, 80, OS12J-03.
- Ziegler S.** and R. Benner (2000) Effects of solar radiation on microbial production and dissolved organic matter cycling in a shallow, subtropical lagoon. *Limnology and Oceanography* 45: 257-266.
- Benner R. and **S. Ziegler** (2000) Do photochemical transformations of dissolved organic matter produce biorefractory as well as bioreactive substrates? *In Current Perspectives in Microbial Ecology*, C. R. Bell, M. H. Brylinsky, and P. Johnson-Green (eds). Springer-Verlag.
- Ziegler S.** and R. Benner (1999) Dissolved organic carbon cycling in a subtropical seagrass-dominated lagoon. *Marine Ecology Progress Series* 180:149-160.

- Ziegler S.** and R. Benner (1999) Nutrient cycling in the water column of a subtropical seagrass meadow *Marine Ecology Progress Series* 188: 51-62.
- Ziegler S.** and R. Benner (1998) Ecosystem metabolism in a subtropical seagrass dominated lagoon. *Marine Ecology Progress Series* 173: 1-12.
- Strom S., Benner R., **Ziegler S.** and M. Dagg (1997) Planktonic grazers are a potentially important source of marine dissolved organic carbon. *Limnology and Oceanography* 42: 1364-1374.

Reports and Proceedings

- Ziegler, S.E.** (2002) The dynamics of dissolved organic matter in a seagrass ecosystem. Proceedings of the Seagrass Ecosystem Ecoengineering and Carbon Sequestration (SEECs) Workshop, New Energy Development Organization of Japan (NEDO), Tokyo, Japan, March 16-18, 2002. pp. 15.
- Ziegler, S.E.,** Velinsky, D. J., Swarth, C. W., and M.L. Fogel (1999) Sediment-water exchange of dissolved inorganic nitrogen in a freshwater tidal wetland. Technical Report of the Jug Bay Wetlands Sanctuary, Lothian, Maryland. pp. 22.

Papers Presented

- Laincz, J., Winston, B., Hays, P. and **S. Ziegler**, 2004. A coupled biogeochemical/hydrological approach for elucidating the transport and cycling of nitrogen within mantled karst watersheds. Abstract submitted for the Geological Society of America Annual Meeting. 7-10 November, Denver, Co. (abstract submitted)
- Greer, K.M., **S.E. Ziegler**, G.J. Thoma, K.J. Davis, and D.C. Wolf. 2004. Influence of abiotic factors on hexadecane biodegradation in a Captina silt loam. *In* 11th Annual International Petroleum Environmental Conference. 12-15 October 2004. Albuquerque, NM. Integrated Petroleum Environmental Consortium, Tulsa, OK. (abstract submitted)
- Lam, T.B., G. Thoma, D. Wolf, and **S.E. Ziegler**. 2004. Novel approaches to measurement of rhizosphere effects in phytoremediation of oil-contaminated soils. *In* 11th Annual International Petroleum Environmental Conference. 12-15 October 2004. Albuquerque, NM. Integrated Petroleum Environmental Consortium, Tulsa, OK. (abstract submitted)
- Schaeffer, S.M., **Ziegler S.E.**, and R. D. Evans (2004) Linking microbial soil carbon and nitrogen cycling in a Mojave Desert ecosystem under elevated atmospheric carbon dioxide. Ecological Society of America Meeting. Portland, OR. August 1-6, 2004.
- Ziegler, S.E.** and S.L. Brisco (2004) Tracking autochthonous carbon in two contrasting Ozark streams using stable isotopes. North American Benthological Society Meeting. Vancouver, BC, Canada. June 6-10, 2004.

- Brisco, S.L. and **S.E. Ziegler** (2004) Effects of solar radiation on dissolved organic matter utilization in Ozark streams. North American Benthological Society Meeting. Vancouver, BC, Canada. June 6-10, 2004.
- Magoulick, D.D., Piercey, G.L., and **S.E. Ziegler** (2004) Seasonal feeding relationships between an introduced (*Orconetes neglectus*) and native crayfish (*Orconectes eupunctus*) in Ozark streams: a stable isotope analysis. North American Benthological Society Meeting. Vancouver, BC, Canada. June 6-10, 2004.
- Ziegler, S.E.**, Thoma, G. J., and D. C. Wolf (2003) Influence of plants on soil community dynamics in a petroleum contaminated soil. 10th Annual International Petroleum Environmental Conference. Houston, TX. November 11-14, 2003.
- Savin, M.C., **Ziegler, S.E.**, Thoma, G. J., Tomlinson, P. J., Wolf, D. C. and K. J. Davis (2003) Nematode population changes during phytoremediation of a crude oil-contaminated soil. 10th Annual International Petroleum Environmental Conference. Houston, TX. November 11-14, 2003.
- Ziegler, S.E.**, White, P. M. and D. C. Wolf (2003) Tracking the utilization of bioavailable substrates by soil microorganisms using stable isotopes. Soil Science Society of America Annual Meeting. Denver, CO. November 2-6, 2003.
- Schaeffer, S.M., **Ziegler, S.E.**, Belnap, J. and R. D. Evans (2003) Soil microbial carbon and nitrogen cycling in an arid Colorado Plateau grassland and the effects of *Bromus tectorum* invasion. Ecological Society of America Meeting, Savannah, GA. August 3-8, 2003.
- Barr, J. and **S.E. Ziegler** (2003) Factors controlling the use of dissolved organic carbon in a groundwater ecosystem. North American Benthological Society Meeting. Athens, GA. May 27-June 1, 2003.
- Brisco, S.L. and **S.E. Ziegler** (2003) Effects of solar radiation on the use of dissolved organic matter in Ozark streams. North American Benthological Society Meeting. Athens, GA. May 27-June 1, 2003.
- Piercey, G.L., **Ziegler, S.E.**, and D.D. Magoulick (2003) Potential competition for prey between introduced crayfish (*Orconetes neglectus*) and native crayfish (*Orconectes eupunctus*) in Ozark streams: a stable isotope analysis. North American Benthological Society Meeting. Athens, GA. May 27-June 1, 2003.
- Ziegler, S.E.** and S.L. Brisco (2003) Carbon isotopic signatures of biofilm microbes in two contrasting Ozark streams. North American Benthological Society Meeting. Athens, GA. May 27-June 1, 2003.
- Brisco, S.L. and **S.E. Ziegler** (2003) Effects of solar radiation on dissolved organic matter cycling in Ozark streams. Arkansas Water Resource Center Annual Meeting, Fayetteville, AR. April 22-23, 2003.
- Shaeffer, S. M., **Ziegler, S.E.**, Belnap, J. and R.D. Evans (2002) *Bromus tectorum* invasion alters soil microbial C and N cycling in an arid Colorado Plateau grassland. American Geophysical Union Meeting. San Fransisco, CA. December 8-12, 2002.

- Thoma, G.J., **Ziegler, S.E.** and D.C. Wolf (2002) Phytoremediation of crude oil contaminated soils. International Bioremediation Conference. San Diego, CA. October 14-19, 2002.
- Ziegler, S.E.** and S.L. Brisco (2002) Sources and bioavailability of dissolved organic matter (DOM) in two Ozark streams. American Society of Limnology and Oceanography International Aquatic Sciences Summer Meeting, Victoria, BC, Canada. June 10-14, 2002.
- Brisco, S.L. and **S.E. Ziegler** (2002) Sources and bioavailability of dissolved organic carbon in two Ozark streams. Arkansas Water Resource Center Annual Meeting. Fayetteville, AR. April 20-21, 2002.
- Schaeffer, S.M., **Ziegler S.E.**, Belnap, J. and R.D. Evans (2002) *Bromus tectorum* invasion alters soil microbial carbon and nitrogen cycling in an arid Colorado Plateau grassland. , Eos. Transactions (suppl.) American Geophysical Union #B27A-0753.
- Ziegler, S.E.** (2002) The dynamics of dissolved organic matter in a seagrass ecosystem. Seagrass Ecosystem Ecoengineering and Carbon Sequestration (SEECs) Workshop, University of Tokyo, Tokyo, Japan, March 16-18, 2002.
- Thoma, G.J., Lam, T., **Ziegler, S.E.** and D.C. Wolf (2001) A mathematical model of phytoremediation of crude oil contaminated soils. International Bioremediation Conference. San Diego, CA. October 20-25,
- Ziegler, S.E.** and M. L. Fogel (2001) Seasonal and diel determinants of the isotopic composition of organic matter in a freshwater wetland. National Meeting of the American Chemical Society. San Diego, CA. April 1-5, 2001,
- Fogel, M.L. and **S.E. Ziegler** (2000) Transformations in carbon and nitrogen pools during particulate and dissolved organic material cycles in marshes. 6th International Wetlands Symposium, Millennium Wetland Event. Quebec City, QC Canada. August 6-12, 2000.
- Ziegler, S.E.** and M. L. Fogel (2000) Seasonal and diel change in the source of organic matter in a freshwater, tidal wetland. 2nd International Conference on the Applications of Stable Isotope Techniques to Ecological Studies. Braunschweig, Germany. May 7-11, 2000.
- Fogel, M. L., Teece, M. A., McCarthy, M., **Ziegler S. E.**, and Keil, R. G. (2000) Compound specific isotope signals in DOM and other geochemical reservoirs. Eos Transactions (Supp.), American Geophysical Union, 80, OS12J-03.
- Ziegler, S.E.** and M. L. Fogel (2000) Seasonal and diel determinants of the isotopic composition of dissolved organic matter. Ocean Sciences Meeting, American Society of Limnology and Oceanography and the American Geophysical Union, San Antonio, TX. January 24-28, 2000.
- Ziegler, S.E.** and M. L. Fogel (1998) Isotope and protein biosignatures: New ideas. First General Meeting of the NASA Astrobiology Institute, Moffett Field, CA. November 5-7, 1998.
- Ziegler, S.E.** and R. Benner (1998) Microbial versus photochemical processes in the cycling of dissolved organic matter in a seagrass-dominated lagoon.

Eighth International Symposium on Microbial Ecology, Halifax, NS, August 9-14, 1998.

- Ziegler, S.E.** and R. Benner (1997) Dissolved organic matter cycling in a subtropical seagrass-dominated lagoon. Estuarine Research Federation Biennial International Conference, Providence, RI, October 12-16, 1997.
- Ziegler, S.E.** and R. Benner (1997) Carbon cycling in a subtropical seagrass dominated lagoon. American Society of Limnology and Oceanography, Aquatic Sciences Meeting, Santa Fe, NM. February 13-17.
- Strom, S., Benner, R., **Ziegler, S.E.** and M. Dagg (1996) Production of dissolved organic carbon by phyto- and zooplankton. American Society of Limnology and Oceanography and American Geophysical Union Ocean Sciences Meeting, San Diego, CA, February 12-16.
- Ziegler, S.E.**, Velinsky, D., Fogel, M. L. and S. Swarth (1993) A nitrogen flux study in a freshwater tidal wetland. Estuarine Research Federation Biennial International Conference, Hilton Head, SC, November 11-16.
- Ziegler, S.E.**, Velinsky, D., Fogel, M. L. and S. Swarth (1993) A nitrogen flux study in a freshwater tidal wetland. Atlantic Estuarine Research Society Annual Conference, Charlottesville, VA., March 21-22.

Funding

Compound-specific stable isotope technology for major questions in human and environmental health sciences. (PI w/ C. Coon, R. Davis, J. Lay, G. Piercey, G. Thoma, and D. Wolf)

Total funds: \$108,000 for 8/15/04 – 5/31/05

Source: Arkansas Biosciences Institute

Advanced stable isotope technology for major questions in human & environmental health. (PI w/ S. Beaupre, P. Hays, J. Lay).

Total funds: \$232,200 for 1/13/04 – 5/31/05.

Source: Arkansas Biosciences Institute

Linking microbial community structure to its function in stream biofilms using a combined stable isotope labeling - biomarker approach (Co-I with K. Mitchell)

Total Funds: \$2618 for 1/01/04 - 5/07/04

Source: University of Arkansas Honors College Undergraduate Research Grant

Shifts in soil microbial community structure and metabolism in a pine forest with elevated CO₂: a preliminary study. (Co-I with S. Billings, University of Kansas).

Total funds: \$12,000 for 6/01/03 – 5/31/03

Source: Duke University

Effects of global change on soil microbial community composition and organic matter utilization through changes in soil carbon availability. (Co-I with S. Schaeffer and D. Evans).

Total funds: \$10,000 for 5/01/03 – 4/29/04

Source: NSF-Ecosystem Studies (Dissertation Improvement Grant for S. Shaeffer)

A coupled biogeochemical/hydrological approach for elucidating transport and cycling of nitrogen within mantled karst watersheds. (PI)

Total funds: \$74,995 for 9/15/03 – 9/14/04

Source: US Department of Agriculture-NRI Watersheds Program

Using plants to remediate petroleum-contaminated soils. (Co-I with G. Thoma and D. Wolf)

Total funds: \$311,800 for 9/01/2002-8/31/2004

Source: EPA - Integrated Petroleum and Environmental Consortium

Stable isotopic determination of microbial carbon sources in stream ecosystems. (PI)

Total funds: \$87,740 for 6/01/02 - 5/31/04

Source: National Science Foundation - Ecosystems Studies

Impact of nutrient enrichment on organic matter cycling in Ozark streams. (PI)

Total funds: \$65,000 for 6/1/00 – 5/31/01

Source: Arkansas Science and Technology Authority

Awards

Invited participant in Dissertations Initiative for the Advancement of Limnology and Oceanography Program. American Society of Limnology and Oceanography. Bermuda Biological Station, October 12-23, 1999.

Postdoctoral Fellowship, Two year competitive fellowship that depends largely upon a research proposal and interview. Geophysical Laboratory, Carnegie Institution of Washington. October 1998-January 2000.

E. J. Lund Fellowship, University of Texas at Austin. 1995-1997.

Best Student Paper – Biennial International Conference of the Estuarine Research Federation, November 1993, Hilton Head, SC.

Honors Director Award – A \$500 award in recognition of undergraduate honors thesis, “A Nitrogen Flux Study in a Freshwater Tidal Wetland”, defended May 1993.

Commonwealth Scholar & Departmental Honors – (magna cum laude), University of Massachusetts at Amherst, 1993.

Best Student Paper – Spring meeting of the Atlantic Estuarine Research Society, March 1993, Charlottesville, VA.

International Student Exchange – competitive program at University of Massachusetts at Amherst for one year study at University of Wollongong, NSW, Australia, 1991.

Courses Taught

Number	Title	Enrolled	Year
MBIO 2013	General Microbiology	150	Spring 2000
BIOL 1543	Principles of Biology*	890	Fall 2000
MBIO 2013	General Microbiology	120	Spring 2001
BIOL 1543	Principles of Biology*	850	Fall 2001
BIOL 499	Microbial Biogeochemistry	11	Fall 2001
MBIO 2013	General Microbiology	122	Spring 2002
BIOL 3863	General Ecology	57	Fall 2002
BIOL 3861L	General Ecology Lab.	45	Fall 2002
BIOL 591	Global Biogeochemistry	5	Spring 2003
BIOL 3863	General Ecology	74	Fall 2003
BIOL 3861L	General Ecology Lab.	21	Fall 2003
MBIO 2013	General Microbiology	174	Spring 2004
BIOL 3863	General Ecology	54	Fall 2004
BIOL 3861L	General Ecology Lab.	15	Fall 2004

*team taught course

Guest Lectures in Soil Microbiology and Landscape Architecture

Graduate Students

Sherri Brisco Ph.D. candidate Biological Sciences.

Jill Baird M.S., Biological Sciences. (Fulbright Scholar, Germany 2003-2004).

David Lyon Ph.D. student, Environmental Dynamics Program (University of Arkansas -Doctoral Academy Fellow).

Byron Winston Ph.D. student, Cell Molecular Biology Program.

Undergraduate Honors Students

John Barr (2003)

Honors Thesis: Factors controlling microbial activity in a karst groundwater ecosystem.

Jennings Boyette (2003)

Honors Thesis: Spatial and temporal variation in dissolved organic matter bioavailability among wetland macrophyte communities.

Kristin Mitchell (2004)

Honors Thesis: Linking microbial community structure to its function in stream biofilms using a combined stable isotope labeling - biomarker approach.

Undergraduates in the Laboratory

Jill Baird

Tom Millican

John Barr

Julie Hamilton

Jennings Boyette

Trevil Johnson

Lindsey Conaway

John Petty

Erica Findlay

Sam Taylor

Chris Long

Jorge Corzo

Owen Mpedi

Honors Student Committees

Jill Baird

John Barr (as advisor)

Jennings Boyette (as advisor)

Kristin Mitchell (as advisor)

Shondra Pruette

Adam Schaffer

Scott Stafford

Graduate Student Committees

Oriana Alba

Crop, Soil and Environ. Sciences

Jill Baird

Biological Sciences

Chris Bare

Biological Sciences

Sherri Brisco

Biological Sciences

Kristen Greer

Crop, Soil and Environ. Sciences

Brad Jones*

Biological Sciences

Moshen Khormi

Biological Sciences

Jozef Laincz

Geosciences/Environ. Dynamics

Than Lam	Chemical Engineering
David Lyon	Environmental Dynamics
Soo Lee	Chemical Engineering
Lal Manmohan	Chemical Engineering
Adrienne Pilmanis	Biological Sciences
Robin Reese	Biological Sciences
Jeremy Ross	Crop, Soil, and Environmental Sciences
Sean Schaeffer	Biological Sciences
Andrew Swanson	Biological Sciences
Peter Tomlinson	Crop, Soil and Environ. Sciences
Byron Winston	Biological Sciences

University Service

Co-director of UA Stable Isotope Laboratory 2002-present
Curriculum committee (2000, 2001)
Personnel committee (2001 - present)
Graduate studies committee (2002 – present)
Departmental planning committee (2002)
Biology Graduate Student Association faculty advisor (2001 – 2003)
Campus Civitian advisor (2001-2003)
Walton global change chair proposal committee (2003)
Global change ecology faculty position committee (2003)
Stable isotope lab Steering committee (2000 – present)
Stable isotope lab manager position search committee (2003)
National Science Foundation - National Ecological Observatory Network (NEON)
University of Arkansas representative
Science Teacher Research Experience (STRIVE) program mentor (2001)
Ecologist Faculty Position Search Committee (2004)

Collaborators

Dr. Ronald Benner (University of South Carolina, Dept. Biological Sciences)
Dr. Van Brahana (University of Arkansas, Dept. Geosciences)
Dr. Sharon Billings (University of Kansas, Dept. Ecology and Evolution)
Dr. Dave Evans (Washington State University, Dept. Biological Sciences)
Dr. Robert Findlay (University of Alabama, Bishop Prof. of Freshwater Biology)
Dr. Marilyn Fogel (Carnegie Institute of Washington, Geophysical Laboratory)
Dr. Phil Hays (USGS/University of Arkansas, Dept. Geosciences)
Dr. Louis Kaplan (Stroud Water Research Center)
Dr. Edith Kaiser (EAWAG, Swiss Federal Institute of Technology (ETH))
Dr. David Kremetz (USGS/University of Arkansas, Biological Sciences)
Dr. Dan Magoulick (USGS/University of Arkansas, Biological Sciences)
Dr. Greg Thoma (University of Arkansas, Chemical Engineering)
Dr. Duane Wolfe (University of Arkansas, Crop Soil and Environmental Sciences)
Dr. Mathew Wooller (University of Alaska, Stable Isotope Laboratory)