Prosper Kojo Zigah

Postdoctoral scholar
NOSAMS & Marine Chemistry & Geochemistry, Woods Hole Oceanographic Institution
266 Woods Hole Rd, Mail Stop # 8, Woods Hole, MA 02543
Phone: 508-289-2862 *Fax*: 508-457-2183 *Email*: pzigah@whoi.edu

Research experience

2012-2014: Postdoctoral investigator, Dept. of Surface Waters- Research and Management, Swiss Federal Institute of Aquatic Science and Technology (EAWAG), Switzerland.

2007-2011: Graduate research and teaching assistant, Large Lakes Observatory, University of Minnesota.

Education

2012: Ph.D. Limnology and Oceanography, University of Minnesota, USA.
2006: M.S. Environmental Science, University of Nottingham, England.
2005: M.S. Environmental and Natural Resource Economics, Wageningen University, The Netherlands.
2002: B.S (Hons). Agricultural Science (Soil Sci.), **First Class**, University of Cape Coast, Ghana.

Additional education

2009: Radiocarbon in Ecology and Earth System Science short course, Keck Carbon Cycle Accelerator Mass Spectrometer (KCCAMS) facility, Department of Earth System Science, University of California, Irvine. Instructors: Dr. Sue Trumbore, Dr. Ellen Druffel, Dr. Ted Schuur, Dr. John Southon, Dr. Jim Randerson.

2009: Visiting student, Marine Chemistry and Geochemistry, Woods Hole Oceanographic Institution (WHOI). Supervisor: Dr. Daniel Repeta

2009: Graduate intern, National Ocean Sciences Mass Spectrometry (NOSAMS), Geology and Geophysics Department, WHOI. Supervisor: Dr. Ann McNichol

Analytical expertise/experience

a) Isoprime 100 Isotope ratio mass spectrometer (IRMS) coupled to Thermquest NC 2500 elemental analyser for analysis of elemental carbon and nitrogen compositions and their stable isotopes ($\delta^{13}C$ and $\delta^{15}N$) in soil, sediment, POM, DOM, fish muscles, zooplankton samples etc.
b) Isoprime 100 Isotope ratio mass spectrometer (IRMS) interfaced with Isoprime trace gas preconcentrator for measurement of Methane (CH_4) and carbon dioxide (CO_2) stable carbon isotopes
c) Isoprime 100 Isotope ratio mass spectrometer (IRMS) coupled to combustion Gas chromatograph for compound specific carbon isotopes analysis of n-alkanes, fatty acids, sterols etc. from sediments, particulate materials filtered from aquatic systems (e.g. lakes).
d) Shimadzu Gas Chromatograph (2010 plus) with flame ionization detector for quantifying organic compounds
e) Shimadzu Gas Chromatograph Mass Spectrometer (GC MS; QP 2010 series) for identifying organic compounds
f) Shimadzu TOC analyser (TOC-L CPH) with TN unit for measuring total organic carbon (TOC), dissolved organic carbon (DOC), dissolved inorganic carbon (DIC), total nitrogen (TN) and total dissolved nitrogen (TDN).
g) Sample prep for radiocarbon (^{14}C) analysis via accelerator mass spectrometry (AMS)
h) UV-Visible spectrophotometer for characterizing chromophoric dissolved organic matter

i) Solid-state ^{13}C Nuclear Magnetic Resonance (NMR) and ^{1}H NMR for identifying and characterizing chemical and organic compound classes (carbohydrates, acetates, carboxylic-rich alicyclic molecules, heteropolysaccharides) in dissolved organic matter
j) Cross-flow Ultrafiltration for isolating large amount of dissolved organic matter from aquatic systems for further chemical and isotopic characterization
k) McLane in situ Water Transfer System (WTS) pump for isolating large amount of suspended particulate matter for further chemical and isotopic characterization

Honors and awards

2012: Nominee for top four Ph.D dissertation award, University of Minnesota, Twin Cities.
2012: Best Ph.D dissertation for 2011/2012, Water Resources Science, University of Minnesota, Twin Cities.
2009: National Ocean Sciences Mass Spectrometry (NOSAMS) graduate internship program, Woods Hole Oceanographic Institution, Woods Hole, MA. (Awards are given each year to two graduate students in the US. The award provides support that covers all analytical costs, travel allowance, accommodation and subsistence at Woods Hole).
2009: Kerry Kelts Memorial travel award, Department of Geology and Geophysics, Newton Horace Winchell School of Earth Sciences, University of Minnesota, Twin Cities (awarded each year to one graduate student at the Large Lakes Observatory).
2009: Water Resources Science (WRS) travel grant, University of Minnesota, Twin Cities
2009: Great Lakes regional biogeochemical symposium (GLRBS) travel grant, Michigan State University
2007: Research & Teaching Assistantships, Large Lakes Observatory & Dept. Chemistry and Biochemistry, University of Minnesota, Duluth USA.
2005: Joint Chevening Scholarship, University of Nottingham, England.(Competitive merit-based full Scholarship covering full tuition fees, monthly maintenance allowance, major assignment allowance, project work allowance and return flight).
2003: Dutch Government Fellowship (2003 to 2005), Wageningen University (Competitive merit-based fellowship providing for full tuition fees, monthly subsistence, field data collection, course-related conferences, and return flight).
2002: Best graduating student (2002), School of Agriculture, University of Cape Coast.

Publications (*peer-reviewed*)

2014: **Zigah, P.K**., E.C. Minor, H. Abdulla, J. Werne, and P. Hatcher. An investigation of size-fractionated organic matter from Lake Superior and a tributary stream using radiocarbon, stable isotopes, and NMR. Geochim. Cosmochim. Acta 127: 264-284.

2014: Naeher, S., F. Peterse , R. H. Smittenberg, , H. Niemann, **P. K. Zigah**, and C.J. Schubert. Sources of glycerol dialkyl glycerol tetraethers (GDGTs) in catchment soils, water column and sediments of Lake Rotsee (Switzerland) – Implications for the application of GDGT-based proxies for lakes. Organic Geochemistry 66: 164-173.

2014: Naeher, S., R. H. Niemann , F. Peterse, H. Smittenberg, **P. K. Zigah**, and C.J. Schubert. Tracing the methane cycle with lipid biomarkers in Lake Rotsee (Switzerland). Organic Geochemistry 66: 174-181.

2013: Hongyu, L., E.C. Minor, **P.K. Zigah**. Diagenetic changes in Lake Superior sediments as seen from FTIR and 2D correlation spectroscopy. Organic Geochemistry 58: 125-136.

2012: **Zigah, P.K**., E.C. Minor, J.P. Werne, and S.L. McCallister. An isotopic ($\Delta^{14}C$, $\delta^{13}C$, and $\delta^{15}N$) investigation of the composition of particulate organic matter and zooplankton food sources in Lake Superior and across a size-gradient of aquatic systems, Biogeosciences 9: 3663-3678.

2012: **Zigah, P.K**., E.C. Minor, and J.P. Werne. Radiocarbon and stable-isotope geochemistry of organic and inorganic carbon in Lake Superior. Global Biogeochemical Cycles 26, GB1023, doi:10.1029/2011GB004132.

2011: **Zigah, P.K**., E.C. Minor, J.P. Werne, and S.L. McCallister. Radiocarbon and stable carbon isotopic insights into provenance and cycling of carbon in Lake Superior. Limnology and Oceanography 56(3): 867-886.

Manuscripts in preparation/submitted

Zigah, P.K., K. Oswald, A. Brand, C. Dinkel, B. Werhli, and C. Schubert. Methane oxidation pathways and associated methanotrophic communities in the water column of a tropical lake (In review).

Zigah, P.K., D. Repeta, E.C. Minor, A. McNichol, L. Xu, and J. Werne. Sources and cycling of organic compound fractions in high molecular weight dissolved organic matter in Lake Superior: Insights from $\Delta^{14}C$ and $\delta^{13}C$ (In prep).

Zigah, P.K., B. Werhli, C. Dinkel, A. Brand, K. Oswald and C. Schubert. Molecular isotopic insights into methanotrophy in Sub-alpine Lake Zugersee (Switzerland) (In prep).

Zigah, P.K., B. Werhli, Xiaomei Xu, S. Lang, F. Peterse, C. Schubert. Carbon cycling in the water column and anaerobic sediments of contrasting peri-alpine lakes (In prep).

Published conference papers/abstracts

2014: **Zigah, P.K.** Schubert, C.J. Wehrli, B. Methane oxidation in tropical Lake Kivu and sub-alpine Lake Zug: Insights from molecular and isotopic compositions. Ocean Sciences Meeting abstracts.

2013: **Zigah, P.K.,** B. Werhli, C.J. Schubert. Molecular and isotopic insights into methane oxidation in Lake Kivu. 2013 American Geophysical Union (AGU) Fall meeting abstracts.

2012: **Zigah, P.K.,** D. Repeta, E.C. Minor, A. McNichol, L. Xu and J. Werne. Sources and cycling of organic compound fractions in high molecular weight dissolved organic matter in Lake Superior: Insights from $\Delta^{14}C$ and $\delta^{13}C$. 21st International radiocarbon conference.

2011: **Zigah, P.K**., Elizabeth C. Minor, Josef P. Werne. Radiocarbon distributions in Lake Superior, the World's largest freshwater by surface area. The 25th International Meeting on Organic Geochemistry (IMOG) abstracts.

2011: **Zigah, P.K.,** D. Repeta, E.C. Minor, A. McNichol, and L. Xu. $\Delta^{14}C$ of biochemical compound classes in high molecular DOC isolated from Lake Superior. International Association for Great Lakes Research Conference. International Association for Great Lakes Research (IAGLR).

2010: Minor, E C; **Zigah, P K**; Werne, J P. Sources and Cycling of Carbon in Lake Superior: Insights from $\Delta^{14}C$. American Geophysical Union, Ocean Sciences Meeting. American Geophysical Union (AGU).

2010: **Zigah, P K**; Minor, E C; Werne, J P. Radiocarbon insights into the role of 'old' carbon in Lake Superior biogeochemistry. Ecology of Lake Superior: Integrated Approaches & Challenges of the 21st Century. Aquatic Ecosystem Health and Management Society (AEHMS).

2010: **Zigah, P K**; Minor, E C; Werne, J P. Radiocarbon insights into provenance and transformation of carbon in Lake Superior: A lake-wide survey. International Association for Great Lakes Research Conference. International Association for Great Lakes Research (IAGLR).

2009: Minor, E.C; **Zigah, P.K.**; McCallister S L. Insights into the Lake Superior Carbon Cycle from Preliminary Radiocarbon Analyses of Water Column Carbon Pools. European Geosciences Union, General Assembly. European Geosciences Union (EGU).

2009: Minor, E C; **Zigah, P.K**; McCallister S L. How important is old carbon in Lake Superior? Preliminary results from radiocarbon analysis. Chemical Oceanography in a Changing World. Skidaway Institute of Oceanography.

2009: **Zigah, P K**; Minor, E C; Werne, J P. 2009. The Sources and Cycling of Carbon in Lake Superior: Insights from $\Delta^{14}C$. Australasian Environmental Isotope Conference.

2009: **Zigah, P K**; Minor, E C; Werne, J P; McCallister S L. Sources and cyling of carbon in Lake Superior: Insights from $\Delta^{14}C$. International Association for Great Lakes Research Conference. International Association for Great Lakes Research (IAGLR).

2008: Minor, E C; **Zigah, P.K**. How important is old carbon in Lake Superior? Preliminary results from radiocarbon analysis. Lake Superior Carbon Workshop, University of Wisconsin. Dept. of Atmospheric and Oceanic Sciences.

Theses

2012: **Zigah, P. K**. Sources, biogeochemical cycling, and fate of organic matter in Lake Superior: An investigation using natural abundance radiocarbon and stable isotopes. Ph.D Thesis, University of Minnesota.

2006: **Zigah, P.K**. Dissolution kinetics of scolecite in pH 2.47 - 9.88 at 4ºC, 15ºC and 60ºC. MS Thesis, University of Nottingham.

2005: **Zigah, P.K.** The economics of urban agriculture: A case of wastewater irrigated vegetable farming in Accra, Ghana. MS Thesis, Wageningen University and Research Center.

2002: **Zigah, P.K.** Phosphorus sorption of selected soil series from Ghana. BS Thesis, University of Cape Coast.

Presentations (meetings)

2014: Minor, E.C., M.J. Macdonald, **P.K. Zigah**. A multiyear study of the variability in organic matter concentration and composition in a flashy temperate stream. American Geophysical Union, AGU 47th annual Fall Meeting, San Francisco, California, USA, December 15-19, 2014 (upcoming Oral-Minor)

2014: **Zigah, P.K.**, Schubert, C.J., Wehrli, B. Methane oxidation in tropical Lake Kivu and sub-alpine Lake Zug: Insights from molecular and isotopic compositions. 2014 Ocean Sciences Meeting, Honolulu, Hawaii, USA, February 22-28, 2014 (Oral-Zigah).

2013: **Zigah, P.K.,** Werhli, B., Schubert, C.J. Molecular and isotopic insights into methane oxidation in Lake Kivu. American Geophysical Union, AGU 46th annual Fall Meeting, San Francisco, California, USA, December 9-13, 2013 (Poster-Zigah).

2013: Sebastian Naeher, Rienk H. Smittenberg, Francien Peterse, Helge Niemann**, P.K. Zigah**, and Carsten J. Schubert . Sources of glycerol dialkyl glycerol tetraethers (GDGTs) and the methane cycle in lake Rotsee, Switzerland. The 26th International meeting on organic geochemistry (IMOG), Costa Adeje, Tenerife, Canary Islands (Spain), during September 16-20, 2013 (Oral-Naeher).

2012: **Zigah, P.K**., D. Repeta, E.C. Minor, A. McNichol, L. Xu and J. Werne. Sources and cycling of organic compound fractions in high molecular weight dissolved organic matter in Lake Superior: Insights from $\Delta^{14}C$ and $\delta^{13}C$. 21st International radiocarbon conference, UNESCO headquarters, Paris, France, July 9-13, 2012. (Oral-Zigah)

2011: **Zigah, P.K**., Elizabeth C. Minor, Josef P. Werne. Radiocarbon distributions in Lake Superior, the World's largest freshwater by surface area, The 25th International Meeting on Organic Geochemistry (IMOG), Interlaken, Switzerland, September 18-23, 2011. (Poster-Minor)

2011: **Zigah, P.K**., D. Repeta, E.C. Minor, A. McNichol, and L. Xu. $\Delta^{14}C$ of biochemical compound classes in high molecular DOC isolated from Lake Superior. The 54th International Conference on Great Lakes Research, Duluth, MN, May 30-June 3, 2011. (Oral-Zigah)

2010: **Zigah, P.K.,** Elizabeth C. Minor, Josef P. Werne. Are the sediments a source of ancient organic carbon in Lake Superior? Insights from radiocarbon analyses of sedimentary POC and porewater DOC. Minnesota Water Resources Conference. Audubon center of the North Woods, Sandstone, MN, USA. November 13-14, 2010. (Oral-Zigah)

2010: **Zigah, P.K.** and Elizabeth Minor. Stable- and radiocarbon insights into the provenance and cycling of carbon in Lake Superior. The 53rd International Conference on Great Lakes Research, Toronto, Canada, May 17-21, 2010. (Oral-Zigah)

2010: **Zigah, P.K**. and Elizabeth Minor. Stable- and radiocarbon insights into the role of 'old' carbon in Lake Superior biogeochemistry. An international conference on 'Ecology of Lake Superior: Integrated approaches and challenges in the 21st century', Duluth, MN, USA, May 3-5, 2010. (Oral-Zigah)

2010: Elizabeth C. Minor, **P.K. Zigah**, and Josef Werne. Sources and Cycling of Carbon in Lake Superior: Insights from $\Delta^{14}C$. Ocean Sciences Meeting, Portland, Oregon, USA, February 22-26, 2010. (Oral-Minor).

2009: **Zigah, P.K**, Elizabeth C. Minor, Josef P. Werne. The Sources and Cycling of Carbon in Lake Superior: Insights from $\Delta^{14}C$. 10th Australasian Environmental Isotope Conference, Curtin University of Technology, Perth, Australia, December 1-3, 2009. (Invited talk, Oral-Werne)

2009: **Zigah, P.K.,** E.C. Minor, J.P. Werne, S.L. McCallister. Sources and Cycling of Carbon in Lake Superior: Insights from $\Delta^{14}C$. The 52nd Annual Conference on Great Lakes Research, Toledo, Ohio, USA, May 18 – 22, 2009. (Oral-Zigah)

2009: **Zigah, P.K**., E.C. Minor, J.P. Werne, S.L. McCallister. The $\Delta^{14}C$ distributions of carbon pools in the Lake Superior water column: Understanding the role of 'old' carbon in Lake Biogeochemistry. Great Lakes Regional Biogeochemical Symposium, W.K. Kellogg Biological Station, Michigan State University, MI, USA, May 28 – 29, 2009. (Oral-Zigah)

2009: Minor, E.C. and **Zigah, P.K**. How important is old carbon in Lake Superior? Conference on Chemical Oceanography in a Changing World. Skidaway Institute of Oceanography, Savannah, Georgia, USA, February 22 – 24, 2009. (Poster-Minor)

2009: Minor, E., **P.K. Zigah**, S.L. McCallister. 2009. Insights into the Lake Superior Carbon Cycle from Preliminary Radiocarbon Analyses of Water Column Carbon Pools. *Geophysical Research Abstracts* 11, EGU2009-2257. (Poster-Minor)

2009: Minor, E.C., S.L. McCallister, **P.K. Zigah**. How important is old carbon in Lake Superior? Third international ASLO Aquatic sciences meeting, Nice, France, January 25-30, 2009. (Oral-McCallister)

Other presentations

2013: **Zigah, Prosper**. Molecular and isotopic insights into methane oxidation in tropical Lake Kivu, Swiss Federal Institute of Aquatic Science and Technology (EAWAG), Switzerland, Nov. 4, 2013.

2013: **Zigah, Prosper**. Molecular and isotopic insights into methane oxidation in tropical Lake Kivu, Large Lakes Observatory, University of Minnesota, USA, Sept. 19, 2013 (Invited talk).

2012: **Zigah, Prosper**. What are the sources of POC in Lake Superior? What happens to all the old carbon in the water column of Lake Superior? Insights from Radiocarbon investigation. Biogeochemistry group, Department of Earth Sciences, Swiss Federal Institute of Technology (ETH), Zürich, March 20, 2012.

2012: **Zigah, Prosper**. Focusing the sharp lens of radiocarbon 'camera' on an inland ocean: Carbon biogeochemistry insights. Department of Surface Waters, Swiss Federal Institute of Aquatic Science and Technology (EAWAG), Switzerland, March 19, 2012.

2009: **Zigah, Prosper** and Elizabeth Minor. Radiocarbon insights into provenance and cycling of carbon in Lake Superior. Water Resources Science seminar series, University of Minnesota Duluth, USA, September 25, 2009 (Dept seminar-Zigah).

2009: **Zigah, Prosper**. Provenance and cycling of carbon in Lake Superior: Insights from $\Delta^{14}C$. National Ocean Sciences Accelerated Mass Spectrometry Facility (NOSAMS), Geology and Geophysics Department, Woods Hole Oceanographic Institution (WHOI), MA, USA, November 9, 2009 (NOSAMS Dept seminar-Zigah)

2008: Minor, E.C. and **P. Zigah**. How important is 'old' carbon in Lake Superior? Preliminary results from radiocarbon analysis. Environmental Protection Agency (EPA), Duluth, MN, USA, 2008. (Oral-Minor)

Guest and invited lectures

2011: Radiocarbon insight into sources and biogeochemical cycling of organic matter in Lake Superior' as part of Isotope and organic biogeochemistry Class (Graduate level), University of Minnesota Duluth (Spring 2011), invited by Dr. Josef Werne.

2011: Environmental Chemistry Class (Undergraduate level), Chemisrty and Biochemistry Department, University of Minnesota Duluth (Fall 2011), invited by Dr. Josef Werne.

2011: Utility of Radiocarbon, and stable carbon and nitrogen isotopes in assessing organic matter sources and fates in aquatic ecosystems' as part of Chemical limnology Class (Graduate level), University of Minnesota Duluth (Fall 2011), invited by Dr. E. Minor.

Reviewing

Manuscripts reviewer for *Aquatic Geochemistry; Geochimica et Cosmochimica Acta; Environmental Science and Technology; Journal of Hydrology*

Grant proposal reviewer for *Wisconsin Sea Grant*

Professional affiliations

International Association for Great Lakes Research (IAGLR); American Association of Limnology and Oceanography (ASLO); American Geophysical Union (AGU); European Geophysical Union (EGU)

Research expeditions

2013: Lake Kivu (Rwanda) - Water column sampling using Niskin bottles, In-situ large volume POM sampling with McLean WTS pump (Jan 14-30).
2012: Lake Rotsee, Lake Zug, Lake Luzern (all in Switzerland) - Water column sampling using Niskin bottles, In-situ large volume POM sampling with McLean WTS pump, sediment sampling with gravity corer (Aug, 2013).
2012: Lake Rotsee (Switzerland) - Water column sampling using Niskin bottles, In-situ large volume POM sampling with McLean WTS pump, sediment sampling with gravity corer (April 2013).
2010: Lake Superior (Chief scientist) - Researchers onboard included graduate students and professor from University of Minnesota and Virginia Commonwealth University. *R/V Blue Heron* (Aug. 24-Sep.1).
2010: Lake Superior - Water column sampling using CTD mounted with Niskin bottles, In- situ large volume POM sampling with McLean WTS pump, Large volume ultrafiltration with Amicon spiral-wound cellulose cartridge filter (Amicon S10N1), sediment sampling with the multi-corer, piston corer and grab sampler, zooplankton sampling with vertical net tow, *R/V Blue Heron* (May 27-Jun. 3).

2009: Lake Superior: Lakewide cruise with similar activities as above, *R/V Blue Heron* (Aug. 13-24).
2009: Lake Superior- Lakewide cruise with similar activities as above, *R/V Blue Heron* (Jun. 12-21).
2008: Pike Lake, MN - Water column sampling using Niskin bottles deployed manually (by hand), zooplankton sampling with vertical net tow, small fishing boat (Nov. 4).
2008: Pike Lake, MN - Water column sampling using Niskin bottles deployed manually (by hand), zooplankton sampling with vertical net tow, small fishing boat (Oct. 14).
2008: Pike Lake, MN - Water column sampling using Niskin bottles deployed manually (by hand), zooplankton sampling with vertical net tow, small fishing boat (Oct. 7).
2008: Lake Superior: Western mooring cruise with similar activities as above, *R/V Blue Heron* (Sep. 23-26).
2008: Lake Superior -Western mooring cruise with water column sampling using CTD mounted with Niskin bottles, and sediment sampling with the multi-corer, piston corer and grab sampler, *R/V Blue Heron* (Sep. 13).
2008: Lake Superior- Western mooring cruise, water column sampling using CTD mounted with Niskin bottles, In-situ large volume POM sampling with McLean WTS pump, sediment sampling with the multi-corer, piston corer and grab sampler, *R/V Blue Heron* (May 20-24)

Synergistic activities

2014: Co-chair of special session (sess 076) 'Insights into freshwater ecosystems and biogeochemistry from radiocarbon and stable isotopes' at ASLO Ocean Sciences Meeting, Feb. 23-28, 2014, Honolulu, Hawaii, USA. (upcoming)
2011: Co-organizer, Water Resources Sciences Duluth Seminar Series, Large Lakes Observatory, University of Minnesota (Fall 2011).
2011: Chair, Nominations Committee of International Association for Great Lakes Research- IAGLR (2011-2012).
2011: IAGLR Website committee (member), IAGLR Membership committee (member).
2011: Co-chair of special session (sess7) 'Molecular and isotopic insights into biogeochemical cycling of organic matter in aquatic systems' at the IAGLR meeting May 30-June 3, 2011, MN, USA (2011-2012).
2011: Member of Local Organizing Committee of 54th International Conference on Great Lakes Research, May 30-June 3, 2011, Duluth, MN, USA.
2010: IAGLR Website committee (member), IAGLR Conference committee (member), IAGLR Awards committee (member), IAGLR Membership committee (member), IAGLR Nominations Committee (member) (2010-2011).
2010: Member of board of directors, International Association for Great Lakes Research (IAGLR), USA (2010-2012).
2005: Course leader of MSc Environmental Science, University of Nottingham, England (2005-2006).
2005: Member of postgraduate student-staff consultative committee, University of Nottingham, England (2005-2006).
2001: Member of student-staff consultative committee, School of Agriculture, University of Cape Coast, Ghana (2001-2002).

Academic advisors

Doctoral committee
Dr. Elizabeth C. Minor, Large Lakes Observatory, University of Minnesota, USA (Advisor)
Dr. Josef P. Werne, now at Dept. of Geology and Planetary Science, University of Pittsburg, USA (Advisor)
Dr. Steven Colman, Large Lakes Observatory, University of Minnesota, USA (Chair)
Dr. James Cotner, Dept. of Ecology, Evolution and Behaviour, University of Minnesota, USA (Member)
Dr. Erik Brown, Large Lakes Observatory, University of Minnesota, USA (Chair, PhD Defense)
Dr. Richard Axler, Natural Resources Research Institute, University of Minnesota, USA (Member)

Postdoctoral advisors
Dr. Carsten Schubert, Swiss Federal Institute of Aquatic Science and Technology (Eawag), Switzerland
Dr. Bernhard Werhli, Swiss Federal Institute of Science and Technology (ETH), Zurich, Switzerland

Undergraduate student advised (co-advised with Dr. E. Minor)

J. Dekan : Department of Chemistry, University of Minnesota Duluth, USA (2011)
J. Strange : Department of Chemistry, University of Minnesota Duluth, USA (2011)

Other collaborators

S. Leigh McCallister (VCU), Dan Repeta (WHOI), Ann McNichol (WHOI), X. Xu (UC Irvine), S. Lang (ETH Zurich)