

CIRRICULUM VITAE Sept 2011

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EDUCATION

B.S. Zoology, University of Mass.-Amherst, 1977, with Chemistry conc.
1983: Introduction to Computer based systems @ C.C.C.C.
1984: Basic Programming I @ C.C.C.C.
1985: Basic Programming II @ Fisher Jr. College
1999: XRD training with Phillips Analytical personnel
March 2000: XRD Software course @ Phillips Training Facility
June 2005: Fund. of Gas Chromatography @ Shimadzu HDQ
June 2007: Slocum Glider course @ Webb Research
Oct 2007: "Techniques of Furnace AA Spectroscopy", Varian Inst.

EMPLOYMENT

Chemistry Dept., Woods Hole Oceanographic Institution, 1971-present
Since Aug. 1996, Senior Research Assistant II

CAREER OBJECTIVES

I have worked at WHOI for 40 years and I've hit every rung on my way up the graded ladder, having started as a Lab Assistant washing dishes afternoons during High School. Working for Dr. Vaughan T. Bowen and Dr. Fred L. Sayles and most recently Dr. William Martin, and Dr. Richard Camilli, has provided me the opportunity to learn an extensive variety of skills; chemical and radiochemical techniques, ever-changing computer skills and mechanical skills. I've enjoyed the challenge of researching new techniques as well the satisfaction of completing a data set that will be a part of a paper or proposal. As we all work to remain competitive in this climate of uncertainty, my ability to be accomplished in a wide variety of skills can only contribute to the continuity of the lab and its future success.

LABORATORY RESEARCH ACTIVITIES: 1977-1982

In Dr. Bowen's lab, collected sediment, water column samples and biological specimens from deep ocean to coastal estuaries were analyzed by ion exchange chromatography for Pu, Am, Cs and Sr

LABORATORY RESEARCH ACTIVITIES: 1982-1988

Hired by Dr. Fred Sayles in 1982, I was responsible for widely varying projects, ranging from studies of Russian nuclear waste to CaCO₃ dissolution on the seafloor.

1. Difference chromatographic analysis of porewater for Ca, Mg, Na, K, and SO₄
2. Radiochemical analysis of spiked sediments for studies of the diffusion of Pu, Am, Cs and Sr .
3. Radiochemical analysis of spiked sediments for studies of the diffusion of Ni, Co, Mn and Fe: by ion exchange separation, Beta particle scintillation counting, Atomic absorption, and Beta counting of filtered precipitations.

4. Radiochemical analysis of spiked hydrothermal sediments to determine spatial distribution and hence migration of Sr^{85} , Am^{243} and Co^{57} using a Gamma LEGe detector.

LABORATORY RESEARCH ACTIVITIES: 1988-1993

Bermuda- ROLAI²D Lander

Twenty two deployments of the ROLAI²D Lander, to this day widely acknowledged as the most versatile and complex instrument of its kind yet built. Launched at the Bermuda OFP site, it produced porewater, flux chamber and sediment samples for laboratory analysis back at WHOI, as well as on site at the Bermuda Biological Station's 'SAYLES LAB VAN'.

1. On site analysis for alkalinity using a micro computer operated, auto-titrating analyzer.
2. On site analysis of the samples for NH_4 , PO_4 , SiO_2 and Nitrates using a Technicon AAIL macro-flow autoanalyzer system.
3. On site assistance with the Gas Chromatograph for TCO_2 analysis.
4. On site analysis of the samples for NH_4 , PO_4 , SiO_2 and Nitrates using a Technicon AAIL macro-flow autoanalyzer system.
5. At WHOI, low level SiO_2 /Opal analysis of sediments.
6. At WHOI, Chloride analysis by Buchler Chloridometer to determine sample dilution. Bromide analysis by sodium thiosulfate titration of the spiked flux chamber to define transport processes in the flux chambers and enclosed sediment.
7. Fabrication of the O_2 mini-electrodes used on the ROLAI²D Lander

LABORATORY RESEARCH ACTIVITIES: 1994-2000

Ob River: Two expeditions up Russia's Ob River network provided over twenty stations of core samples.

1. Sample preparation, Gamma counting and data reduction of these sediment samples for Pb^{210} , Pb^{214} , Bi^{214} and Cs^{137} as well as the calibration and maintenance of our LEGe detectors and Alpha counters.
2. Analyst for $\text{Pu}^{240,239}$ as previously performed in Dr. Bowen's lab.

The OSPRE: (Oxygen Sediment Profiler + Resistivity Evaluator) as a tethered profiler from the ALVIN and SeaLink and un-tethered in Boston Harbor in conjunction with U.S.G.S. moorings and seasonal coring programs.

1. The testing, maintenance and routine operation of the OSPRE, oxygen profiler as well as the fabrication and maintenance of the Micro O_2 electrodes.
2. Operation of the OSPRE from the submersibles Alvin and SeaLink to obtain multiple in situ profiles as well as sediment cores.
3. From 1995-2008 I was responsible for all aspects of the Boston Harbor project with three one day cruises per year off Boston Harbor for multiple deployments of the OSPRE in conjunction with the USGS project with MWRA.

LABORATORY RESEARCH ACTIVITIES: 2000-2006

In 2001, Dr. William Martin became my primary PI. Continuing projects with MWRA in Boston Harbor and Hingham Harbor included Oxygen profiling with benthic studies using small free-vehicle samplers (SQUIRTS) to obtain encapsulated overlying waters for later analysis. As the mechanic/analyst, I deployed, sampled, analyzed and redeployed. I learned new

techniques for trace metal sampling and analysis, trace metal studies of the sediments and pore waters in this area and in Buzzards Bay. Samples were analyzed by ICPMS in collaboration with Dr. Jennifer Morford, a post-doc at WHOI from 2001-2003.

Dr. Martin's project to analyse Thorium and Uranium series in sediments previously analyzed for carbonate brought back my old techniques sediment digestion and radio isotope ion exchange with the new addition of learning the ICPMS.

In 2004, I joined the cooperative team of Dr. Jean Whelan (MC&G) and Dr. Rich Camilli (AOPE). As principal analyst, I attended classes to learn the operations of a new gas chromatograph and analyzed, on board, niskin seawater samples taken from a submarine in conjunction with an in-situ Mass Spectrophotometer designed by Dr. Camilli. Our first cruise was in June of '06 in the Columbo volcano off the island of Santorini, Greece followed in the Sept. of '06 by a hydrocarbon cruise, off Gulfport, Mississippi.

LABORATORY RESEARCH ACTIVITIES: 2006-2011

Continuing with Dr. Martin, I continued trace metal analyses of porewater as well as filtered seawaters as part of a 2-year erosion experiment with USGS. The acquisition of a Varian Furnace and Flame AA provided the opportunity to analyze trace metals on a larger scale and less expensive than the ICPMS. Projects with Dr. Carl Lamborg included deployment of our "SQUIRTS" in Waquoit Bay for Mercury monitoring.

The study of Foram dissolution in acidified seawater has been the major focus of the past 3 years with on going experiments from collected samples and CO₂ analyses.

In 2009 I joined the Uranium-series facility as a half-time analyst. Once again turning to my previous experience of sediment digestions, ion exchange and finally the ICPMS. Mostly working for Adjunct Scientist Dr. Jerry McManus at LEDO as well as Dr. Laura Robinson, I am now involved in the production of stock solutions of Pa-233 from activated Thorium nitrate as part of the on-going sample analysis.

SEA-GOING RESEARCH ACTIVITIES

Cruise Preparation

1. Pre-cruise bureaucracy: visa applications, inoculations, travel arrangements and shipboard personnel records. Contacting Ship's agents, safety officers, marine technicians, and/or marine personnel necessary to obtain the required laboratory or ship's equipment for our needs.
2. The organization, packing, shipping, set-up and breakdown of laboratory equipment, mechanical hardware, tools, and supplies. Acquiring all analytical supplies, analyzer spare parts, and computer supplies necessary for up to six weeks at sea. The typical shipment was in excess of five tons of equipment and supplies.
3. Testing and maintenance of the Benthic Samplers SQUIRTS, assisting with the preparation and maintenance of the 'WHIMP' porewater sampler, or 'ROLAI²D' Lander, and obtaining the necessary spares for their operation and maintenance.

Cruise Participation

1. As one of a two-person deployment team for the ROLAI²D in Bermuda, I alternated with Engineer, Steve Smith, in the position of Chief Scientist aboard the R/V Weatherbird.
2. Participation in 28 extended cruises and over 85 one day cruises
3. Often the sole representative of the Martin lab, I was responsible for the deployment and recovery of the SQUIRTS and OSPRE in Mass Bay

4. Supervisor of the crew of the R/V Weatherbird for the deployment and recovery of the two ton ROLAI²D and its tethered floats.
5. Ship-board analysis of collected porewaters for nutrients and Alkalinity by autoanalyzer, and assistance with the total CO₂ analysis by Gas Chromatograph.
6. Porewater systems sample extraction and distribution.
7. Analytical grade and trace metal cleaning and turn-around of the sampling systems.
8. Trouble-shooting and maintenance of the sampling and mechanical systems for possible malfunctions and the subsequent repairs.
9. On board set-up and operation of a Gas Chromatograph on the Greek research vessel *Aegaeo* and the RV Seward Johnson.

OTHER ACTIVITIES

Lab Manager:

1. Editing and proofing of manuscripts, proposals and papers. Maintenance of a comprehensive electronic bibliography.
2. Data reduction: calculations, standardizations, spectral interpretation, spreadsheets and graphics.
3. Detailed budget development and justifications for proposals.
4. Library research for proposals, papers, and procedural methods.
5. Chemical and Isotope Inventory for our files and the Safety Officer's.
6. Reports, training and inspections as dictated by the Safety Officer and the Radioisotope Committee.
7. Maintenance of laboratory procedural records, property files, and cruise files.
8. Over the years, supervising and training five summer students, five Research Assistants and four joint program students.
9. Coordinator for activities at the Bermuda Biological Station including ship's scheduling, billing, use of the facilities and equipment.

SPECIALIZED EQUIPMENT/MACHINES REQUIRED

THE "WHIMP"

THE ROLAI²D Lander

THE "OSPRE"

THE "SQUIRTS"

ICPMS

Varian Furnace and flame AA

Phillips Automated X-Ray Diffraction Instrument

Ortec Multichannel analyzers

SHIMADZU Extended Natural Gas Analyzer

LiCor CO₂ analyzer

Canberra LEGe detectors

Perkin Elmer 403 Atomic Absorption Spectrophotometer

Bausch & Lomb Spectronic 21 Spectrophotometer

Technicon Proportioning Pumps & Autosamplers

Buchler Chloridometer

Orion and Fisher pH meters

Macs, PCs, Tattletale computers,

AWARDS

Linda Morse-Porteous Award 2005

PUBLICATIONS AND REPORTS

Sayles, F.L., S.P. Smith and J.E. Goudreau (1996) Deep ocean sludge disposal, sediment oxygen consumption and sediment redox profiles at Deep Water Municipal Dump Site 106, *Journal of Marine Environmental Engineering*. Vol. 3, pp. 99-130.

Sayles, F.L., W.G. Deuser, J.E. Goudreau, W.H. Dickinson, T.D. Jickells, and P. King, (1996) The Benthic Cycle of Biogenic Opal at the Bermuda Time Series Site. *Deep-Sea Research. I*, Vol. 43, No. 4 pp. 383-409.

Sayles, F.L., W.R. Martin, S. Honjo, J.E. Goudreau and J. Dymond (1999) Benthic Remineralization of Calcium Carbonate, Biogenic Opal and Organic Carbon along the USJGOFS Southern Ocean Study Transect abst. ALSO Aquatic Sciences Meeting. Feb 1999.

Richard Camilli, Jean Whelan, Christopher Martens, Oscar Pizarro, Norman Farr, Howard Mendlovitz, and Joanne Goudreau (2005) Coordinated mapping and quantification of ocean floor methane sources with manned submersibles, AUVs, and moored event-driven sensor arrays. (Abst) IEEE OCEANS conference in Washington, DC.

F. L. Sayles and Joanne Goudreau (2005) Sediment Oxygen Profiles and Fluxes as a Constraint on the Delivery of Organic Matter to the Sediments In: Processes Influencing the Transport and Fate of Contaminated Sediments in the Coastal Ocean - - Boston Harbor and Massachusetts Bay, U.S. Geological Survey Open-File Report 2005-1250. Michael H. Bothner and Bradford Butman, editors. <http://pubs.usgs.gov/of/2005/1250/>

R. Camilli, D. Sakellariou, B. Foley, C. Anagnostou, A. Mallios, B. Bingham, R. Eustice, J. Goudreau, and K. Katsaros. "Investigation of Hydrothermal Vents in the Aegean Sea using an Integrated Mass Spectrometer and Acoustic Navigation System onboard a Human Occupied Submersible." In /Rapport du 38^e Congrès de la Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée./ Vol. 38 page 79, 2007