CURRICULUM VITAE

ROBERT K. NELSON
Research Specialist
Department of Marine Chemistry & Geochemistry
Woods Hole Oceanographic Institution
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Education:

B.A., Biology: Central Connecticut State University, New Britain, CT., 1980
*additional course work in Organic Chemistry at the University of Massachusetts-Dartmouth, Dartmouth, Massachusetts, 1992
*additional course work in Physical Chemistry at Northeastern University, Boston, Massachusetts, 1992-1993.

Professional Experience:

Research Specialist, Woods Hole Oceanographic Institution,
Department of Marine Chemistry & Geochemistry 6/06-Present

Research Associate III, Woods Hole Oceanographic Institution,
Department of Marine Chemistry & Geochemistry 4/98-6/06

Research Associate, Woods Hole Oceanographic Institution,
Department of Marine Chemistry & Geochemistry 4/94-4/98

Senior Research Assistant I, Woods Hole Oceanographic Institution,
Department of Marine Chemistry & Geochemistry 1/91-4/94

Research Assistant III, Woods Hole Oceanographic Institution,
Department of Marine Chemistry & Geochemistry 3/87-12/90

Research Assistant III, University of Connecticut Health Center,
Department of Pathology 7/83-9/86

Research Assistant II, University of Connecticut Health Center,
Department of Biochemistry 4/81-6/83

Research Interests:

- Interested in studying the source, transport, and ultimate fate of petroleum hydrocarbons and other man-made contaminants in the environment.
- Petroleum biomarkers as oil spill fingerprinting tools.
- Petroleum biomarkers as indicators of ancient sedimentary depositional environments.
- Biofuels.

Research Specialties:

Very high resolution chromatographic techniques such as comprehensive two-dimensional gas chromatography (GC×GC) coupled with time of flight mass spectrometry (GC×GC-ToF-MS) or flame ionization detection (GC×GC-FID).

United States Patents:

2010 United States Patent #7805979 - High accuracy contamination estimation in hydrocarbon samples using GC×GC. Inventers – Reddy, Christopher M., Mullins, Oliver C., Raghuraman, Bhavani, Nelson, Robert K., Patent application filed October 22, 2007 – accepted October 5, 2010.

Awards & Honors:

2008 Invited Talk. **Gordon Research Conference – Organic Geochemistry**. *Comprehensive two-dimensional gas chromatographic analysis (GC×GC) of bicadiinanes in crude oil – a comparison of oils from the Ardjuna basin, northwest Java; the Seria oil field, Brunei; and two oils from south Texas, USA*. August 7, 2008 Holderness School, Plymouth, New Hampshire, USA.

2007 **John B. Phillips Award**. In honor of the inventor of comprehensive two-dimensional gas chromatography (GC×GC). This award is chosen by an international committee composed of GC×GC specialists and given to the authors of a manuscript judged to have the highest potential impact on the future of GC×GC science.

2005 Comprehensive Two-dimensional Gas Chromatogram featured on the cover of ACS journal **Analytical Chemistry** (November 15, 2005).

2002 **Robert R. Whelan Award**. Award used to travel to the 2002 AGU Ocean Sciences Meeting to present a talk entitled: Characterization of Thiols in Seawater by Electrospray Mass Spectrometry of Monobromobimane Derivatives.

1994 **Robert R. Whelan Award**. Co-recipient of the first Marine Chemistry & Geochemistry Robert R. Whelan Award, to subsidize attendance at a basic concepts and techniques in nuclear magnetic resonance course offered at Bruker Instruments Inc.

Review Experience:

Journals

- Organic Geochemistry

Research Proposals

- The Research Council of Norway

Teaching Experience:

Co-instructor of an internet based course; *"GC×GC Systems, Informatics, and Applications; An Advanced Seminar On Comprehensive Two-dimensional Gas Chromatography."* (Spring semester 2006 & Spring semester 2007). Teaching colleagues included John V. Seeley, Oakland University; John Dimandja, Spelmen College; Stephen E. Reichenbach, University of Nebraska; and Chris M. Reddy, Woods Hole Oceanographic Institution.

Individual GC×GC training and collaborative research

- Dr. Robert Haddad ENTRIX, Inc. 2004

- Dr. J. Sam Arey Post-doctoral investigator 2004-2005
- George Wardlaw Graduate Student - UCSB 2006-2009
- Dr. G. Todd Ventura Post-doctoral investigator 2006-2008
- Florence Schubotz Graduate Student - Universität Bremen MARUM 2007-2009
- Desiree Plata WHOI/MIT joint program student – defended April 2009
- Kristin Pangallo WHOI/MIT joint program student – defended July 2009
- Christiane Eiserbeck Graduate Student – Curtin University of Technology 2009
- Natalie Rosenfelder Graduate Student - Universität Hohenheim 2009
- Molly Redmond Graduate Student - UCSB 2007-present
- Dr. Un Hyuk Yim Korean Ocean Research and Development Institute (KORDI) 2009
- Karin Lemkau WHOI/MIT joint program student 2009-present
- Alexandra Tcaciuc WHOI/MIT joint program student 2009-present
- Dr. Carlos Guitart Guest Investigator 2009-2010

Publications:

Peer-reviewed Manuscripts

Heinemann, F.S., Ozols J., contributor R.K. Nelson (1982). Sequence Analysis of Membrane Protein Fragments Isolated by High Pressure Liquid Chromatography. In: Marshall Elzinga (Eds.), *Methods in Protein Sequence Analysis*, The Humana Press Inc., 435-446.

Frew, N.M., and R.K. Nelson (1992). Isolation of Marine Microlayer Film Surfactants for ex Situ Study of Their Surface Physical and Chemical Properties, Journal of Geophysical Research 97, 5281-5290.

Frew, N.M., and R.K. Nelson (1992). Scaling of Marine Microlayer Film Surface Pressure-Area Isotherms Using Chemical Attributes, Journal of Geophysical Research 97, 5291-5300.

Frysinger, G.S., W.E. Asher, G.M. Korenowski, W.R. Barger, M.A. Klusky, N.M. Frew, and R.K. Nelson (1992). Study of Ocean Slicks by Non-Linear Laser Processes, Part I: Second Harmonic Generation, Journal of Geophysical Research 97, 5253-52

Bock, E.J., J.B. Edson, N.M. Frew, A. Karachintsev, W.R. McGillis, R.K. Nelson, K. Hansen, T. Hara, M.Uz, B. Jähne, J. Dieter, J. Klinke, and H. Haußecker (1995). Description of the science plan for the April 1995 CoOp experiment, 'Gas transfer in coastal waters, performed from the research vessel New Horizon. In: B. Jähne and E.C. Monahan (Eds.), *Air-Water Gas Transfer Selected Papers for the Third International Symposium on Air-Water Gas Transfer*, AEON Verlag and Studio , 801-810.

DeGrandpre, M.D., A. Vodacek, R.K. Nelson, E.J. Bruce, and N.V. Blough (1996). Seasonal Seawater Optical Properties of the US Middle Atlantic Bight. Journal of Geophysical Research Vol. 101, No. C10, 22,727-22,736.

Vodacek, A., Blough, N.V., DeGrandpre, M.D., Peltzer, E.T., Nelson R.K., (1997). Seasonal variation of CDOM and DOC in the middle Atlantic Bight: Terrestrial inputs and photooxidation. Limnology & Oceanography Vol. 42, No. 4, 674-686.

Frew, N.M., and Nelson R.K., (1999). Spatial Mapping Of Sea Surface Microlayer Surfactant Concentration And Composition. IEEE International Geoscience And Remote Sensing Symposium, June 1999, Hamburg, Germany, pp. 1472-1474.

McGillis, W. R., Dacey, J. W. H., Frew, N. M., Bock, E. J., and Nelson R.K., (2000). Water-Air Flux of Dimethylsulfide. Journal of Geophysical Research Letters Vol. 105, No. C1, 1187-1193.

Xu, L., Reddy, C.M., Farrington, J.W., Frysinger, G.S., Gaines, R.B., Johnson, C.G., Nelson, R.K., and Eglinton, T.I., (2001). Identification of a Novel Alkenone in Black Sea Sediments. Organic Geochemistry 32(5) 633-645.

Bock, E.J., Edson, J.B., Frew, N.M., Hara, T., Haussecker, H., Jaehne, B., McGillis, W.R., McKenna, S.P., Nelson, R.K., Schimpf, U., and Uz, M., (2002). Overview of the CoOP experiments: physical and chemical measurements parameterizing air-sea gas exchange. In: *Gas Transfer at Water Surfaces*, M.A. Donelan, E.S. Saltzman, R. Wanninkhof, and W.M. Drennan (eds.), Geophysical Monograph Series, Vol. 127, AGU Press, 39-44.

Frew, N.M., Nelson, R.K., McGillis, W.R., Edson, J.B., Bock, E.J., and Hara, T. (2002). Spatial variations in surface microlayer surfactants and their role in modulating air-sea exchange. In: *Gas Transfer at Water Surfaces*, M.A. Donelan, E.S. Saltzman, R. Wanninkhof, and W.M. Drennan (eds.), Geophysical Monograph Series, Vol. 127, AGU Press, 153-159.

Johnson, C.G., Frysinger, G.S., Nelson, R.K., Gaines, R.B., Ohkouchi, N., Reddy, C.M., and Eglinton, T.I., (2003). Innovative methods for determining alkenone unsaturation ratios. Marine Chemistry 83, 5-22.

Dupont, C.L., Nelson, R.K., Bashir, S., Moffett, J.W., Ahner, B.A., (2004). Novel copper-binding and nitrogen-rich thiols produced and exuded by *Emiliania huxleyi*. Limnology & Oceanography 49(5), 1754-1762.

Reddy, C.M., Xu, L., O'Neil, G.W., Nelson, R.K., Eglinton, T.I., Faulkner, D.J., Norstrom, R., Ross, P.S., Tittlemier, S.A., (2004). Radiocarbon evidence for a naturally-produced, bioaccumulating halogenated organic compound. Environmental Science & Technology 38, 1992-1997.

Peacock, E.E., Nelson, R.K., Solow, A.R., Warren, J.D., Baker, J.L., and Reddy, C.M., (2005). The West Falmouth oil spill: 100 kg of oil persists in marsh sediments. Environmental Forensics 6, 273-281.

Arey, J. S., Nelson, R. K., Xu, L., and Reddy, C. M., (2005). Estimating partitioning properties for a complete set of diesel fuel hydrocarbons using comprehensive two-dimensional gas chromatography retention indices. Analytical Chemistry 77(22), 7172-7182.

Nelson, R.K., Kile, B.S., Plata, D.L., Sylva, S.P., Xu, L., Reddy, C.M. Gaines, R.B., Frysinger, G.S., and Reichenbach, S.E., (2006). Tracking the Weathering of an Oil Spill with Comprehensive Two-Dimensional Gas Chromatography. Environmental Forensics 7, 33-44.

Slater, G.F., Nelson, R.K., Kile, B.K., and Reddy, C.M., (2006). Intrinsic Bacterial Biodegradation of Petroleum Contamination Demonstrated *in situ* Using Natural Abundance, Molecular-level 14C Analysis. Organic Geochemistry 37(9), 981-989.

Hill, T.M., Kennett, J.P., Valentine, D.L., Yang, Z., Reddy, C.M., Nelson, R.K., Behl, R.J., Robert, C., and Beaufort, L., (2006). Climactically Driven Emissions of Hydrocarbons from Marine Sediments During Deglaciation. Proceedings of the National Academy of Science 103(37), 13570-13574.

Peacock, E.E., Hampson, G.R., Nelson, R.K., Xu, L., Frysinger, G.S., Gaines, R.B., Farrington, J.W., Tripp, B.W., and Reddy, C.M., (2007). The 1974 Spill of the Bouchard 65 Oil Barge: Petroleum Hydrocarbons Persist in Winsor Cove Salt Marsh Sediments. Marine Pollution Bulletin 54(2), 214-225.

Reddy, C.M., Nelson, R.K., Sylva, S.P., Xu, L., Peacock, E.E., Raghuraman, B., and Mullins, O.C., (2007). Identification and Quantification of Alkene-based Drilling Fluids in Crude Oils by Comprehensive Two-Dimensional Gas Chromatography with Flame Ionization Detection. Journal of Chromatography A 1148(1), 100-107.

DeMello, J.A., Carmichael, C.A., Peacock, E.E., Nelson, R.K., Arey, J.S., and Reddy, C.M., (2007). Biodegradation and Environmental Behavior of Biodiesel Mixtures in the Sea: An Initial Study. Marine Pollution Bulletin 54(7), 894-904.

Arey, J.S., Nelson, R.K., Reddy, C.M., (2007). Disentangling Oil Weathering Using GC×GC, Part I. Chromatogram Analysis. Environmental Science & Technology 41(16), 5738-5746.

Arey, J.S., Nelson, R.K., Reddy, C.M., (2007). Disentangling Oil Weathering Using GC×GC, Part II. Mass Transfer Calculations. Environmental Science & Technology 41(16), 5738-5746.

Ventura, G.T., Kenig, F., Reddy, C.M., Schieber, J., Frysinger, G.S., Nelson, R.K., Gaines, R.B., and Schaeffer, P., (2007). Molecular Evidence of Late Archean Archea and the Presence of a Subsurface Hydrothermal Biosphere. Proceedings of the National Academy of Science of the United States of America 104(36), 14260-14265.

Sylva, S.P., Ball, L., Nelson, R.K., and Reddy, C.M., (2007). Compound Specific $^{81}Br/^{79}Br$ Analysis by Capillary Gas Chromatography Multi-Collector Inductively Coupled Plasma Mass Spectrometry (GC-MC-ICPMS). Rapid Communications in Mass Spectrometry 21, 3301-3305.

Mullins, O.C., Ventura, G.T., Nelson, R.K., Betancourt, S.S., Raghuraman, B., Reddy, C.M. (2008). Visible-near-infrared spectroscopy by downhole fluid analysis coupled with two-dimensional gas chromatography to address oil reservoir complexity. Energy & Fuels 22, 496-503.

Pagnallo, K., Nelson, R.K., Teuten, E.L., Pedler, B.E., and Reddy, C.M. (2008). Expanding the range of dehalogenated 1'-methyl-1,2'-bipyrroles (MBPs) using GC/ECNI-MS and GC×GC/TOF-MS. Chemosphere 71, 1557-1565.

Ventura, G.T., Kenig, F., Reddy, C.M., Frysinger, G.S., Nelson, R.K., Van Mooy, B., and Gaines, R.B. (2008). Resolving the composition and formation of unresolved complex mixtures extracted from late Archean metasediments by comprehensive two-dimensional gas chromatography (GC×GC). Organic Geochemistry 39, 846-867.

Wardlaw, G., Arey, J.S., Reddy, C.M., Nelson, R.K., Ventura, G.T., and Valentine, D.L. (2008). Disentangling oil weathering at a marine seep using GC×GC: Broad metabolic specificity accompanies subsurface petroleum biodegradation. Environmental Science & Technology 42(19), 7166-7173.

Betancourt, S.S., Ventura, G.T., Pomerantz, A.E., Viloria, O., Dubost, F.X., Zuo, J., Monson, G., Bustamante, D., Purcell, J.M., Nelson, R.K., Rodgers, R.P., Reddy, C.M., Marshall, A.G., and Mullins, O.C. (2009). Nanoaggregates of asphaltenes in a reservoir crude oil and reservoir connectivity. Energy & Fuels 23(3), 1178-1188.

Farwell, C., Reddy, C.M., Peacock, E.E., Nelson R.K., Washburn, L., and Valentine, D.L. (2009). Weathering and the fallout plume of heavy oil from strong petroleum seeps near coal oil point, CA. Environmental Science & Technology 43(10), 3542-3548.

Camilli, R., Bingham, B., Reddy, C.M., Nelson, R.K., and Duryea, N. (2009). Method for rapid localization of seafloor petroleum contamination using concurrent mass spectrometry and acoustic positioning. Marine Pollution Bulletin 58 1505-1513.

Peacock, E.E., Arey, J.S., De Mello, J.A., McNichol, A.P., Nelson, R.K., and Reddy, C.M. (2010). Molecular and isotopic analysis of motor oil from a biodiesel-driven vehicle. Energy & Fuels 24(2), 1037-1042.

Valentine, D.L., Reddy, C.M., Farwell, C., Hill, T.M., Pizarro, O., Yoerger, D.R., Camilli, R., Nelson, R.K., Peacock, E.E., Bagby, S.C., Clarke, B.A., Roman, C.N., and Soloway, M. (2010). Asphalt volcanoes as a potential source of methane to late Pleistocene coastal waters. Nature Geoscience 3(5), 345-348.

Pomerantz, A.E., Ventura, G.T., McKenna, A.M., Canas, J.A., Auman, J., Koerner, K., Curry, D., Nelson R.K., Reddy, C.M., and Rodgers, R.P. (2010). Combining biomarker and bulk compositional gradient analysis to assess reservoir connectivity. Organic Geochemistry 41(8), 812-822.

Ventura, G.T., Raghurman, B., Nelson R.K., Mullins, O.C., and Reddy, C.M. (2010). Compound class oil fingerprinting techniques using comprehensive two-dimensional gas chromatography (GC×GC). Organic Geochemistry 41(9), 1026-1035.

Jensen, B.A., Reddy, C.M., Nelson R.K., and Hahn, M.E. (2010). Developing tools for risk assessment in protected species: Relative potencies inferred from competitive binding of halogenated aromatic hydrocarbons to aryl hydrocarbon receptors from beluga (*Delphinapterus leucas*) and mouse. Aquatic Toxicology 100(3), 238-245.

Lemkau, K.L., Peacock, E.E., Nelson R.K., Ventura, G.T., Kovecses, J.L., and Reddy, C.M., (2010). The M/V Cosco Busan spill: Source Identification and short-term fate. Marine Pollution Bulletin 60(11), 2123-2129.

Juyal, P., McKenna, A.M., Yen, A., Rodgers, R.P., Reddy, C.M., Nelson, R.K., Andrews, A.B., Atolia, E., Allenson, S.J., Mullins, O.C., Marshall, A.G., (2011). Analysis and Identification of Biomarkers and Origin of Color in a Bright Blue Crude Oil. Energy Fuels 25(1), 172-182.

Ventura, G.T., Hall, G.J., Nelson, R.K., Frysinger, G.S., Raghuraman,B., Pomerantz, A.E., Mullins, O.C., Reddy, C.M., (2011). Analysis of petroleum compositional similarity using multiway principal components analysis (MPCA) with comprehensive two-dimensional gas chromatographic data. Journal of Chromatography A 1218(18), 2584-2592.

Wardlaw, G.D., Nelson, R.K., Reddy, C.M., Valentine, D.L., (2011). Biodegradation preference for isomers of alkylated naphthalenes and benzothiophenes in marine sediment contaminated with crude oil. Organic Geochemistry 42(6), 630-639.

Eiserbeck, C., Nelson, R.K., Grice, K., Curiale, J., Reddy, C.M., Raiteri, P., (2011). Separation of 18α(H)-, 18β(H)-oleanane and lupane by comprehensive two-dimensional gas chromatography. Journal of Chromatography, A (2011), 1218(32), 5549-5553.

1. Reddy, C.M., Arey, J., Seewald, J.S., Sylva, S.P., Lemkau, K.L., Nelson, R.K., Carmichael, C.A., McIntyre, C.P., Fenwick, J., Ventura, G. T., Van Mooy, B.A.S.; Camilli, R., (2011). Composition and fate of gas and oil released to the water column during the Deepwater Horizon oil spill. Proceedings of the National Academy of Sciences of the United States of America, *published ahead of print July 18, 2011, doi:10.1073/pnas.1101242108* 1-6.

Book Chapters

Gaines, R.B., Frysinger, G.S., Reddy, C.M., and Nelson, R.K., Oil Spill Environmental Forensics - Fingerprinting and Source Identification Chapter 5. Oil Spill Source Identification by Comprehensive Two-Dimensional Gas Chromatography (GC×GC). Pages 169-206. Zhendi Wang and Scott A. Stout, Editors. Copyright © 2007, Elsevier Inc.

Presentations/Posters: *(presenter is underlined)*

1. Kruetzer, D.L., Nelson, R.K., K. Hou, R. Mandaro, and V. Rai (1985). *Rapid Purification of Immunoglobulin (IgG) by a Novel Ion-Exchange System*. Fed. Proc., 44, (6), 1873. Anahiem, California, USA. (Poster with abstract).

2. Nelson, R.K., and N.M. Frew (1987). *The Langmuir Film Balance as an Analytical Tool in the Fractionation of Surface Active Marine DOC*. Trans., Amer. Geophys. Union, 68, (50), 1751. New Orleans, Louisiana, USA. (Presentation with abstract).

3. Frew, N.W., and R.K. Nelson (1987). *Potential Effects of Physical Dynamics on the Organic Composition of Sea-Surface Microlayer Films*. Trans. Amer. Geophys. Union, 68, (50), 1752. New Orleans, Louisiana, USA. (Presentation with abstract).

4. Frew, N.W., and R.K. Nelson (1988). *Combined Film Balance/Chemical Studies of Surfactants in the Sea-Surface Microlayer.* Trans., Amer. Geophys. Union, 69, 44, 1095.

5. Korenowski, G.M., W.E. Asher, G.S. Frysinger, N.M. Frew, and R.K. Nelson (1988). *The Correlation of In Situ Second Harmonic Intensity with Surface Organics for Near Shore Waters*. Trans., Amer. Geophys. Union, 69, (44), 1102.

6. Frew, N.M., Nelson, R.K., and Boon, J.J. (1991). *Characterization of Surface-Active Organic Matter in the Marine Microlayer.* 201st American Chemical Society National Meeting, Atlanta, Georgia, USA.

7. Frew, N.M., Bock, E.J., McGillis, W.R., Edson, J.B., Nelson, R.K., and Hara, T. (1997). *Surface-Active Organic Matter and Air-Sea Gas Exchange*. American Geophysical Union Meeting Baltimore, Maryland, USA.

8. Johnson, C.G., T. I. Eglinton, T.I., and Nelson, R.K., (1997). *Determination of Unsaturation Ratios for Long Chain Ketones by High Resolution MS*. American Society for Mass Spectrometry, Palm Springs, California, USA.

9. Frew, N. M., Nelson, R.K., and Johnson, C.G., (1998). *Sea Slicks: Variability In Chemical Composition And Surface Elasticity.* Surface Slicks And Remote Sensing Of Air-Sea Interactions, proceedings of EUROMECH 387 conference, April 1998 Warwick University, Coventry, UK,

10. Frew, N. M., E. J. Bock, R. K. Nelson, W. R. McGillis, J. B. Edson, and T. Hara, (1999). *Spatial Variations In Surface Microlayer Surfactants And Their Role In Modulating Air-Sea Exchange*. 13th Conference on Boundary Layers and Turbulence. January 10-15, 1999. Dallas, Texas, USA.

11. Moffett, J.W., Nelson R.K., Ahner, B.A., Wisniewski, R.J., and Frew, N.M., (2002). *Characterization of Thiols in Seawater by Electrospray Mass Spectrometry of Monobromobimane Derivatives*. American Geophysical Union Ocean Sciences Meeting, February 11-15, 2002. Honolulu, Hawaii, USA. (Presentation with abstract).

12. Dupont, C.L., Nelson, R.K., Moffett, J.W., and Ahner, B.A., (2003). *Exudation of Novel Thiols by Copper-Stressed Emiliania Huxleyi*. ASLO Aquatic Sciences Meeting (The Earth's Eyes: Aquatic Sciences Through Space and Time), February 8-14, 2003. Salt Lake City, Utah, USA.

13. Reddy, C.M., Nelson, R.K., Xu, L., Hampson, G.R., Gaines, R.B., and Frysinger, G.S., (2003). *Investigating the Fate of Petroleum Hydrocarbons in Coastal Marsh Sediments with Comprehensive Two-Dimensional Gas Chromatography.* 26th International Symposium on Capillary Chromatography & Electrophoresis. May 18-22, 2003. Las Vegas, Nevada, USA.

14. Kalnejais, L., Martin, W., Moffett, J.W., Nelson, R.K., and Francois, R. (2003). *Hydrophilic Thiols in the Porewaters of Coastal Marine Sediments.* AGU Fall Meeting, December 8-12, 2003. San Francisco, California, USA.

15. Reddy, C.M., Xu, L., Nelson, R.K., Tittlemier, S., and Norstrom, R. (2004). *Radiocarbon Evidence for a Naturally-Produced, Bioaccumulating Halogenated Organic Compound*. American Geophysical Union Ocean Sciences Meeting. January 2004. Portland, Oregon, USA.

16. Frysinger, G.S., Gaines, R.B., Nelson, R.K., and Reddy, C.M. (2004). *Use of GCxGC for High Resolution Separations of Petroleum Products*. March 2004. Pittsburgh Conference, Chicago, Illinois, USA. (Presentation with abstract).

17. Nelson, R.K., Kile, B., Plata, D.L., and Reddy, C.M. (2004). *The Bouchard 120 oil spill: Using comprehensive two-dimensional gas chromatography to monitor degradation of No. 6 fuel on an oil-impacted beach in Buzzards Bay.* June 2004. North Atlantic Chapter of the Society of Environmental Toxicology and Chemistry (SETAC), Bristol Rhode, Island, USA. (Presentation with abstract).

18. Peacock, E.E., Nelson, R.K., and Reddy, C.M., (2004). *The West Falmouth oil spill after 35 years: ~0.0025% of the original product persists in marsh sediments*. June 2004. North Atlantic Chapter of the Society of Environmental Toxicology and Chemistry (SETAC), Bristol, Rhode Island, USA. (Presentation with abstract).

19. Reddy C.M., Nelson, R.K., Xu, L., Peacock, E.E., White, H.K., Eglinton, T.I., Slater, G.F., Warren, J.D., Gaines, R.B., Frysinger, G.S., (2004). *The West Falmouth oil spill: A geochemical update after 35 years*. June 2004. Goldschmidt Conference, Copenhagen, Denmark.

20. Whelan, J.K., Camilli, R., Pizaro, O., Nelson, R.K., Whiticar, M., (2004). *In situ methane and chemical sensing of water column over a seafloor gas hydrate in the Gulf of Mexico – a progress*

report. Gulf of Mexico Gas Hydrates Research Consortium Annual Meeting. Oxford, Mississippi, USA. October 25, 2004. (Presentation with abstract).

21. Nelson, R.K., Eglinton, L.B., Reddy, C.M., Whelan J.K., (2004). *Analyzing complex mixtures of petroleum hydrocarbons with comprehensive two-dimensional gas chromatography (GC×GC)*. Gulf of Mexico Gas Hydrates Research Consortium Annual Meeting. Oxford, Mississippi, USA. October 25, 2004. (Presentation with abstract).

22. Nelson, R.K., Kile, B., Plata, D.L., Arey, J.S., Reddy, C.M., Frysinger, G.S., and Gaines, R.B., (2005). *The Bouchard 120 Oil Spill: Using Comprehensive Two-Dimensional Gas Chromatography to Monitor the Weathering of No. 6 Fuel on a Spill Impacted Beach on Buzzards Bay*. 28th International Symposium on Capillary Chromatography & Electrophoresis. Las Vegas, Nevada. May 22-25, 2005. (Poster with abstract).

23. Nelson, R.K., Frysinger, G.S., Ventura, G.T., Gaines, R.B., Reddy, C.M., Kenig, F., (2005). *Using Comprehensive Two-Dimensional Gas Chromatography to Obtain Direct Evidence of the Presence of Archean Biomarkers from 2.7 Billion Year Old Sediments*. 28th International Symposium on Capillary Chromatography & Electrophoresis. Las Vegas, Nevada. May 22-25, 2005. (Poster with abstract).

24. Reddy, C.M., Gaines, R.B., Frysinger, G.S., Nelson, R.K., Kenig, F., (2005). *Comprehensive Two-Dimensional Gas Chromatographic Evidence of an Extended Suite of Hopanes from Thornton Quarry, a Pinnacle Reef from the Silurian*. 28th International Symposium on Capillary Chromatography & Electrophoresis. Las Vegas, Nevada. May 22-25, 2005. (Poster with abstract).

25. Arey, J.S., Nelson, R.K., Reddy, C.M., (2005). *GC×GC Characterization of Werathering Processes Affecting Coastal Oil Contamination*. 28th International Symposium on Capillary Chromatography & Electrophoresis. Las Vegas, Nevada. May 22-25, 2005. (Poster with abstract).

26. Del Vento, S, Nelson, R, K, Frysinger, G, S, Gaines, R, B, Dachs, J, Reddy, C. M., (2005). *Characterizing atmospheric inputs of organic carbon to the north-east subtropical Atlantic Ocean*. ASLO Summer Meeting, June 2005, Santiago de Compostela, Spain.

27. Slater, G.F., Nelson, R.K., Kile, B., Reddy, C.M., (2005). *Assessing bioavailability and microbial metabolism in situ using natural abundance molecular 14-C analysis*. 230th American Chemical Society National Meeting, August 28-September 1, 2005. Washington, DC, USA.

28. Kenig, F., Ventura, G.T., Reddy, C.M., Nelson, R.K., Frysinger, G.S., and Gaines, R.B., (2005). *Separation of Complex Mixtures of Hydrocarbons for Paleobiological Reconstruction: Comprehensive Two-Dimensional Gas Chromatography (GC×GC) and GC×GC-Mass Spectrometry of ~2.7 Ga Argillites from Timmons (Ontario, Canada)*. 22nd International Meeting on Organic Geochemistry. Seville, Spain. September 12-16, 2005.

29. Kenig, F., Brassell, S.C., Nelson, R.K., Frysinger, G.S., Reddy, C.M., Gaines, R.B., (2005). *A Cornucopia of Hopanoids: Revisiting the Thornton Quarry Bitumen, (Thornton, Illinois, USA)*. 22nd International Meeting on Organic Geochemistry. Seville, Spain. September 12-16, 2005.

30. Hebtingetal, Y., Nelson, R.K., Reddy, C.M., Frysinger, G.S., Grosjean, E., and Summons, R., (2005). *Multidimensional GC-FID and GC-MS Identification of Cycloalkanes in Neoproterozoic Sediments*

and Crude Oils from Oman. 22nd International Meeting on Organic Geochemistry. Seville, Spain. September 12-16, 2005.

31. Ventura, G.T., Kenig, F., Reddy, C.M., Nelson, R.K., (2005). *Biomarker Record from the Upper Tisdale (2707-2705 Ga) and Porcupine Assemblage (2685-2673 Ga) of the Late Archaean Abitibi Subprovince, Timmons, Ontario, Canada.* 22nd International Meeting on Organic Geochemistry. Seville, Spain. September 12-16, 2005.

32. Arey, J.S., Nelson, R.K., Plata, D.L., Xu, L., and Reddy, C.M., (2005). *Modeling the Effects of Water-washing and Evaporation on Petroleum Hydrocarbon Mixture Composition Using Comprehensive Two-dimensional Gas Chromatography*. The Society of Environmental Toxicology and Chemistry (SETAC) North America 26th Annual Meeting. Session WP20 - Contaminated Harbor and River Sediment. Baltimore, Maryland, USA. November 13-17, 2005. (Presentation with abstract).

33. Brownawell, B., Dick, J., Li, X., McElroy, A., Reddy, C.M., and Nelson, R.K., (2005). *Sources of petroleumhydrocarbons in sediments of the NY/NJ harbor complex*. The Society of Environmental Toxicology and Chemistry (SETAC) North America 26th Annual Meeting. Session WP20 - Contaminated Harbor and River Sediment. Baltimore, Maryland, USA. November 13-17, 2005. (Presentation with abstract).

34. Wardlaw, G.D., Reddy, C.M., Nelson, R.K., and Valentine, D.L., (2005). *Petroleum weathering associated with hydrocarbon migration and seepage, a case study from the Santa Barbara Channel, CA*. American Geophysical Union meeting, San Francisco, California, USA. December 6, 2005. (Poster with abstract).

35. Slater, G.F., Nelson, R.K., Kile, B.M., Reddy, C.M., and Eglinton T.I., (2006). *Direct evidence of petroleum biodegradationfrom ^{14}C analysis of microbial lipids*. Ocean Sciences Meeting, Honolulu, Hawaii, USA. February 20, 2006. (Poster with abstract).

36. Frysinger, G.S., Gaines, R.B., Reddy, C.M., and Nelson, R.K., (2006). *Exploring the Cyclic Hydrocarbon Composition of Environmental and Geological Samples*. 57th Pittsburgh Conference and Exposition on Analytical Chemistry and Applied Spectroscopy, Session 1910 - Discovery Though GCxGC Separations. Orlando, Florida, USA. March 12-17, 2006. (Presentation with abstract).

37. Wardlaw, G.D., Reddy, C.M., Nelson, R.K., and Valentine, D.L., (2006). *Petroleum weathering associated with hydrocarbon migration and seepage, a case study from the Santa Barbara Channel, CA*. University of California toxic substance research and teaching program. San Diego, California, USA. April 28, 2006. (Poster with abstract).

38. Ventura, G.T., Kenig, F., Reddy, C.M., Schieber, J., Nelson, R.K., Frysinger, G.S., and Gaines, R.B., (2006). *Molecular fossil eveidence of Archaea and a deep biosphere during the Late Archaean*. American Geophysical Union Meeting, December 11, 2006, San Francisco, California, USA. December 11, 2006. (Presentation with abstract).

39. Wardlaw, G.D., Reddy, C.M., Nelson, R.K., Ehrhardt, C.J., and Valentine, D.L., (2006). *Petroleum oxidation in marine microcosms by natural microbial assemblages*. American Geophysical Union Meeting, December 11, 2006, San Francisco, California, USA. December 11, 2006. (Poster with abstract).

40. Valentine, D.L., Wardlaw, G.D., Franklin, S., Mau, S., Reddy, C.M., Nelson, R.K., and Arey, J.S., (2007). *Biodegradation of hydrocarbons associated with subsurface reservoirs and natural seepage*.

American Association of Petroleum Geologists Annual Meeting, Long Beach, California, USA. April 3, 2007. (Presentation with abstract). Invited.

41. Sylva, S.P., Ball, L., Nelson, R.K., and Reddy, C.M., (2007). *Compound specific $^{81}Br/^{79}Br$ analysis by capillary gas chromatography multicollector inductively coupled plasma mass spectrometry (GC-MC-ICPMS).* 234th American Chemical Society National Meeting, Boston, Massachusetts, USA. August 20, 2007. (Presentation with abstract).

42. Haddad, R., Reddy, C.M., Nelson, R.K., and Xu, L., (2007). *Sources of polar organic matter in petroleum-contaminated groundwater; new insights into biogeochemical processes and fate and transport implications*. 234th American Chemical Society National Meeting, Boston, Massachusetts, USA. August 20, 2007. (Presentation with abstract).

43. Gaines, R.B., Frysinger, G.S., Reddy, C.M., and Nelson, R.K., (2007). *Comprehensive 2-D gas chromatography (GC×GC) in environmental forensics*. 234th American Chemical Society National Meeting, Boston, Massachusetts, USA. August 20, 2007. (Presentation with abstract).

44. Arey, J.S., Nelson, R.K., and Reddy, C.M., (2007). *Disentangling oil weathering in the environment using GC×GC.* 234th American Chemical Society National Meeting, Boston, Massachusetts, USA. August 20, 2007. (Presentation with abstract).

45. Ventura, G.T., Kenig, F., Reddy, C.M., Schieber, J., Nelson, R.K., Dinel, E., Frysinger, G.S., (2007). *Molecular evidence of Late Archean archea and the presence of a subsurface hydrothermal biosphere*. Geological Society of America Meeting, Denver, Colorado, USA. October 30, 2007. (Presentation with abstract). Invited.

46. Valentine, D.L., Reddy, C.M., Nelson, R.K., and Ventura, G.T., (2007). *Discovery and description of extinct asphalt volcanoes along the southern California margin.* American Geophysical Union Meeting, San Francisco, California, USA. December 13, 2007. (Presentation with abstract).

47. Ventura, G.T., Simoneit, B.R.T., Reddy, C.M., and Nelson, R.K., (2007). *Resolving the unresolved complex mixtures of hydrothermal petroleum using comprehensive two-dimensional gas chromatography-time of flight mass spectrometry*. American Geophysical Union Meeting, San Francisco, California, USA. December 14, 2007. (Poster with abstract).

48. Ventura, G.T., Reddy, C.M., Simoneit, B.R.T., and Nelson, R.K., (2008). *Resolving the unresolved complex mixtures of hydrothermal petroleum*. Ocean Sciences Meeting, Orlando, Florida, USA. March 7, 2008. (Presentation with abstract).

49. Reddy, C.M., Nelson, R.K., and Ventura, G.T., (2008). *Advances in petroleum exploration and geochemistry: using comprehensive two-dimensional gas chromatography (GC×GC).* Schlumberger-Doll Research Center, 1 Hampshire Street, Cambridge, Massachusetts, USA. June 24, 2008. (Invited Presentation).

50. Strapoc, D., Picardal, F., Lin, Y., Henrichs, K.U., Schaperdoth, I., Macalady, J., Turich, C., Mastalerz, M., Schimmelmann, A., Wakeham, S., Reddy, C.M., Nelson, R.K., and Holba, A., (2008). *Bugs – biodgradation – gas, a geochemical story behind ongoing CBM Generation in the Illinois basin*. Gordon Research Conference – Organic Geochemistry, Holderness School, Plymouth, New Hampshire, USA. August 5, 2008. (Poster with abstract).

51. Ventura, G.T., Simoneit, B.R.T., Nelson, R.K., and Reddy, C.M., (2008). *Resolving the origin of unresolved complex mixtures in hydrothermal petroleum – novel methods for comprehensive two-dimensional gas chromatography*. Gordon Research Conference – Organic Geochemistry, Holderness School, Plymouth, New Hampshire, USA. August 5, 2008. (Poster with abstract).

52. Schubotz, F., Nelson, R.K., Ventura, G.T., and Reddy, C.M., (2008). *Comparative analysis of asphaltene-rich oils from Campeche Knolls, deciphered by two-dimensional gas chromatography.* Gordon Research Conference – Organic Geochemistry, Holderness School, Plymouth, New Hampshire, USA. August 7, 2008. (Presentation with abstract). Invited.

53. Nelson, R.K., Summons, R., Hürlimann, M.D., Ventura, G.T., and Reddy, C.M., (2008). *Comprehensive two-dimensional gas chromatographic analysis (GC×GC) of bicadiinanes in crude oil – a comparison of oils from the Ardjuna basin, northwest Java; the Seria oil field, Brunei; and two oils from south Texas, USA.* Gordon Research Conference – Organic Geochemistry, Holderness School, Plymouth, New Hampshire, USA. August 7, 2008. (Presentation with abstract). Invited.

54. Reddy, C.M., Ventura, G.T., Nelson, R.K., Betancourt, S., Lambertus, G., Mullins, O., Pomerantz, A., and Raghuraman, B., (2008). *Advances in petroleum analysis via comprehensive two-dimensional gas chromatography*. Federation of Analytical Chemistry and Spectroscopy Society, Reno, Nevada, USA. September 29, 2008 (Presentation with abstract).

55. Reddy, C.M., Nelson, R.K., Ventura, G.T., Arey, J.S., Wardlaw, G., and Valentine, D.L., (2008). *Disentangling oil weathering at a marine seep using GC×GC: applications from environmental forensics*. Society of Environmental Toxicology and Chemistry (SETAC) North American Annual Meeting, Tampa, Florida, USA. November 20, 2008 (Presentation with abstract). Invited.

56. Wardlaw, G.D., Reddy, C.M., Nelson, R.K., and Valentine, D.L., (2008). *Hydrocarbon specificity during aerobic oil biodegradation revealed in marine microcosms with the use of comprehensive two-dimensional gas chromatography*. American Geophysical Union Meeting, San Francisco, California, USA. December 19, 2008. (Poster with abstract).

57. Lemkau, K.L., Peacock, E.E., Nelson, R.K., Ventura, G.T., Kovecses, J., and Reddy, C.M.,(2008). *An initial look at a No. 6 fuel oil spill: M/V Cosco Busan*. American Geophysical Union Meeting, San Francisco, California, USA. December 19, 2008. (Poster with abstract).

58. Harris, K., Bosak, T., Nelson, R.K., Reddy, C.M., Casillas, L., and Lugo, J., (2009). *Biomarker lipid diversity as a function of growth conditions in Rhodospirillum rubrum.* Goldschmidt Conference, Davos, Switzerland. June 24, 2009. (Poster with abstract).

59. Schubotz, F., Ventura, G.T., Nelson, R.K., Knittel, K., Wegener, G., Wilhelm, T., Zabel, M., Kasten, S., Boetius, A., Reddy, C.M., and Henrichs, K.U., (2009). *Structure and function of a cold seep nurtured by seepage of heavy oil.* Goldschmidt Conference, Davos, Switzerland. June 25, 2009. (Presentation with abstract). Invited.

60. Eiserbeck C., Grice, K., Nelson, R.K., and Curiale, J., (2009). *An integrated molecular and isotope approach for estimating the age of crude oils and source rocks from Tertiary deltaic basins*. International Meeting on Organic Geochemistry, Bremen, Germany. September 9, 2009. (Presentation with abstract).

61. Ventura, G.T., Simoneit, B.R.T., Nelson, R.K., and Reddy, C.M., (2009). *Resolving the origin of unresolved complex mixtures in hydrothermal petroleum – novel methods for comprehensive two-dimensional gas chromatography*. International Meeting on Organic Geochemistry, Bremen, Germany. September 9, 2009. (Poster with abstract).

62. Ventura, G.T., Frysinger, G.S., Hall, G., Nelson, R.K., Raghuraman, B., Mullins, O., and Reddy, C.M., (2009). *Analysis of petroleum compositional similarity using multiway principle components analysis (MPCA) of comprehensive two-dimensional gas chromatographic data*. International Meeting on Organic Geochemistry, Bremen, Germany. September 9, 2009. (Poster with abstract).

63. Schubotz, F., Ventura, G.T., Nelson, R.K., Reddy, C.M., and Henrichs, K.U., (2009). *Deciphering mechanistic details of asphalt degradation and weathering at the ocean floor with GC×GC*. International Meeting on Organic Geochemistry, Bremen, Germany. September 10, 2009. (Presentation with abstract).

64. Eiserbeck C., Grice, K., Nelson, R.K., and Curiale, J., and Reddy, C.M., (2009). *An integrated molecular and isotope approach for estimating the age of crude oils and source rocks from the Beaufort-McKenzie basin and the north slope*. American Association of Petroleum Geologists Conference, 3P Arctic (The Polar Petroleum Potential Conference & Exhibition), Gubkin Russian State University of Oil & Gas, Moscow, Russia. September 30, 2009. (Poster with abstract).

65. Atolia, Esha, McKenna, A.M., Rodgers, R.P., Reddy, C.M., Nelson R.K., and Marshall, A.G. (2009). 3D graphical analysis of ultrahigh-resolution FT-ICR mass spectrometry data: Compositional comparison of a crude oil and associated production deposit. 239th ACS National Meeting, San Francisco, CA, United States, March 21-25, 2010. (Poster with abstract).

66. Reddy, C.M., and Nelson R.K. (2010). *Comprehensive Two-dimensional Gas Chromatography (GC×GC): General Background and Application*. Chemical Engineering Department, Massachusetts Institute of Technology, Cambridge, MA April 13, 2010. (Oral Presentation).

67. Nelson R.K. (2010). *Fingerprinting Petroleum using Comprehensive Two-dimensional Gas Chromatography (GC×GC)*. National High Magnetic Field Laboratory, Florida State University, Tallahasse, FL May 10, 2010. (Oral Presentation).

68. Ryan, J.P., Zhang, Y., Thomas, H., Rienecker, E., Nelson, R.K., Cummings, S. (2010) *High-resolution AUV mapping and sampling of a deep hydrocarbon plume in the Gulf of Mexico*. American Geophysical Union Meeting, San Francisco, California, USA. December 16, 2010. (Oral Presentation).

69. Rodgers, R.P., McKenna, A.M., Nelson, R.K., Robbins, W.K., Hsu, C.S., Reddy, C.M., Marshall, A.G. **(2011).** *Molecular level characterization and compositional archive for the Deepwater Horizon oil spill by FT-ICR Mass Spectrometry.* 241st ACS National Meeting & Exposition, Anaheim, CA, United States, March 27-31, 2011. (Oral Presentation).

70. Tcaciuc, A.P., MacFarlane, J., Nelson, R.K., Nipper, M., Carr R.S., Biedenbach, J., Reddy, C.M., Gschwend, P.M. (2011). *A Novel Methodology to Determine the Narcosis Potential of Contaminated Sediments by Using Polyethylene Samplers and Comprehensive Two-dimensional Gas Chromatography.* SETAC Europe 21st Annual Meeting, May 16, 2011 Milan, Italy. (Poster).

71. McKenna, A.M,, Rodgers, R.P., Nelson. R.K., Reddy, C.M., Podgorski, D.C., Savory, J.T., Kaiser, N.K., Marshall, A.G. (2011). *Catastrophe in the Gulf of Mexico: Molecular Characterization of the Deepwater Horizon Oil Spill by FT-ICR MS and Comprehensive GC×GC.* American Society for Mass Spectrometry annual meeting. June 6, 2011. Denver, CO (Poster).

72. Nelson R.K. (2011). *Science in a Time of Crisis: GC×GC Applications and the Deepwater Horizon Oil Spill Disaster.* Leco sponsored session - American Society for Mass Spectrometry annual meeting. June 6, 2011. Denver, CO (oral Presentation – Invited Talk).

Presentations at WHOI:

Nelson, R.K., Science Made Public. *The Bouchard 120 oil spill: what have we learned after two years of investigation?* August 2, 2005.

Nelson, R.K., Marine Chemistry & Geochemistry Seminar. *Searching for terrestrial plant biomarkers in deltaic petroleum (finding a needle in a haystack) – insights into ancient depositional environments.* November 10, 2009.

Shipboard Research Cruise Participation:

-ONR Sponsored Cruise (September 13-27, 1988). *R/V Robert Gordon Sproul.* Marine microlayer and near surface water sample collection cruise from La Jolla Bay to the Channel Islands, California.

-ONR Sponsored Cruise (October 9-13, 1989). *R/V Wecoma.* Marine microlayer and near surface water sample collection cruise from Newport Oregon to the San Diego, California.

-ONR Sponsored Cruise (October, 14-28, 1989). *R/V Robert Gordon Sproul.* Marine microlayer and near surface water sample collection cruise from La Jolla Bay to the Channel Islands, California.

-ONR Sponsored Cruise (September 4-5, 1992). *R/V Point Lobos.* Marine surfactant and chromophoric dissolved organic matter sample collection cruise in Monterey Bay, California.

-ONR Sponsored Cruise (August 24-27, 1993). *R/V Cape Henlopen*. Chromophoric dissolve organic matter in near surface water sample collection cruise from Delaware Bay to the Sargasso Sea.

-ONR Sponsored Cruise (November 9-12, 1993). *R/V Cape Henlopen*. Chromophoric dissolve organic matter in near surface water sample collection cruise from Delaware Bay to the Sargasso Sea.

-ONR Sponsored Cruise (March 15-17, 1994). *R/V Cape Henlopen*. Chromophoric dissolve organic matter in near surface water sample collection cruise from Delaware Bay to the Sargasso Sea.

-ONR Sponsored Cruise (April 25-29, 1994). *R/V Cape Henlopen*. Chromophoric dissolve organic matter in near surface water sample collection cruise from Delaware Bay to the Sargasso Sea.

-ONR Sponsored Cruise (22-September thru 6-October 1994). *R/V Cape Henlopen*. Marine microlayer and near surface water sample collection cruise from Delaware Bay to the Sargasso Sea.

-ONR-NSF Sponsored Co-OP Cruise (27-April thru 16-May 1995). *R/V New Horizon*. Marine Boundary Layer Cooperative Cruise in conjunction with the research platform FLIP which was moored off Monterey Bay, the R/V Point Sur, and the R/V Wecoma.

-ONR Sponsored Cruise (29-May thru 12-June, 1995). *R/V Cape Henlopen*. Marine microlayer and near surface water sample collection cruise from Delaware Bay to the Sargasso Sea.

-ONR-NSF Sponsored Co-OP Cruise (2-July thru 18-July, 1997). *R/V Oceanus.* Marine Boundary Layer Cooperative Cruise to the Sargasso Sea and Georges Bank.

-ONR-NSF Sponsored Cruise (Leg 1B 28-January thru 2-February, 2001 & Leg 1C 2-February thru 8-March 2001). *NOAA Ship Ronald H. Brown.* GasEx II Eastern Equatorial Pacific Gas Exchange Experiment. http://www.pmel.noaa.gov/co2/gasex2/

-ONR-NSF (18-June thru 29-June, 2001). *R/V Oceanus* Chemical Mapping of the Sea-Surface Microlayer. Cruise to the Sargasso Sea and Eastern Atlantic (Delaware to Cape Cod).

-NSF Sponsored Cruise (17-24 April, 2004). *R/V Oceanus* Cruise # 400. Black Carbon In The Gulf Of Maine. Collection of sediment cores and water samples in the Gulf of Maine.

- NSF Sponsored Cruise (28-August thru 3-September, 2004). *R/V Cape Hatteras* Cruise # 1104. Black Carbon In The Gulf Of Maine. Collection of sediment cores and water samples in the Gulf of Maine.

-NOAA Sponsored Cruise (27-May thru 4-June, 2010). *NOAA Ship Gordon Gunter* Deepwater Horizon Oil Spill Damage Assessment. Deep plume water sampling.

-NOAA Sponsored Cruise (September, 2010). *Specialty Diver* Deepwater Horizon Oil Spill Damage Assessment. Deep plume water sampling.

-NOAA Sponsored Cruise (March 23, thru April 25, 2011). *HOS Sweet Water legs 2 & 3* Deepwater Horizon Oil Spill Damage Assessment. Seafloor survey, push core sampling via ROV and water column sampling.

-NOAA Sponsored Cruise (July 14, thru August 7, 2011). *HOS Sweet Water leg 4* Deepwater Horizon Oil Spill Damage Assessment. Seafloor survey, push core sampling via ROV and water column sampling.

Land Based Field Research:

DOE sponsored research. Speciation and Structural Characterization of Plutonium and Actinide-Organic Complexes in Surface and Groundwater (Hanford Nuclear Reservation, Richland, Washington, USA & Savannah River National Laboratory, Aiken, South Carolina, USA).

RKN – updated 08/11/11