SHERI NEELAM WHITE
Senior Engineer, OOI/CGSN

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Woods Hole Oceanographic Institution — Tel: 508-289-3740
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EDUCATION

B.S. AERONAUTICAL AND ASTRONAUTICAL ENGINEERING — *December 1993*
(Emphasis on structures and dynamics)
Purdue University — West Lafayette, IN

Ph.D. MARINE GEOLOGY & GEOPHYSICS — *June 2000*
(Emphasis on light emission mechanisms and ocean optics)
Massachusetts Institute of Technology/Woods Hole Oceanographic Institution Joint Program in Oceanography — Cambridge, MA / Woods Hole, MA

PROFESSIONAL EXPERIENCE

SENIOR ENGINEER — *January 2010–present*
Woods Hole Oceanographic Institution, Dept. of Applied Ocean Physics & Engineering

ASSISTANT SCIENTIST — *January 2005–January 2010*
Woods Hole Oceanographic Institution, Dept. of Applied Ocean Physics & Engineering

POST-DOCTORAL FELLOW — *January 2002–December 2004*
Monterey Bay Aquarium Research Institute, Dept. of Research and Development

POST-DOCTORAL INVESTIGATOR — *January 2001–December 2001*
Woods Hole Oceanographic Institution, Dept. of Applied Ocean Physics & Engineering

GUEST INVESTIGATOR — *August 2000–January 2001*
Woods Hole Oceanographic Institution, Dept. of Applied Ocean Physics & Engineering

POST-DOCTORAL INVESTIGATOR — *May 2000–July 2000*
Woods Hole Oceanographic Institution, Dept. of Geology & Geophysics

GRADUATE RESEARCH ASSISTANT — *June 1994–April 2000*
Woods Hole Oceanographic Institution, Dept. of Geology & Geophysics

ENGINEERING WORK EXPERIENCE

Woods Hole Oceanographic Institution, Woods Hole, MA — *January 2010–present*

Lead Systems Engineer, Coastal and Global Scale Nodes, OOI — *Dec 2010–present*

Assistant Systems Engineer, Coastal and Global Scale Nodes, OOI — *Jan 2010–Dec 2010*

- Assist in directing a team of ~30 engineers (including MEs, EEs, SEs, and external consultants) in developing infrastructure for the OOI Program.
- Lead the effort to manage requirements; including development, tracking, and testing.
- Coordinating the writing of technical specifications for instrument selection.
- Coordinating the development of test-bed infrastructure and modeling tools.
- Lead the effort to procure, test, accept and characterize OOI-selected instruments.
- Manage the Configuration Control Board and submission and approval of Engineering Change Requests.

Assistant Project Scientist, Coastal and Global Scale Nodes, OOI *Jun 2009–Dec 2009*

— Participating in program-wide review and update of OOI requirements.
— Participating in development of an OOI sensor database.

Monterey Bay Aquarium Research Institute, Moss Landing, CA *July 2002–December 2003*

Project Manager for the Precision Underwater Positioner

— Directing a team of eight (including MEs, EEs, SEs, and an external consultant) in developing a precision underwater positioner to be used on ROVs in the deep ocean.

RESEARCH INTERESTS

Development of *in situ* instrumentation for making geochemical measurements in the deep ocean (particularly at hydrothermal vent sites); primarily interested in optical techniques such as Raman spectroscopy and visible reflectance spectroscopy. Development and operations of ocean observing platforms and systems; and integration of sensor suites.

AWARDS/HONORS

MBARI Post-doctoral Fellowship, 2002-2004
Tau Beta Pi – National Engineering Honor Society, 1993

PROFESSIONAL AFFILIATIONS

American Institute of Aeronautics and Astronautics	1990–1996
American Geophysical Union	1994–present
IEEE	2005–present
Society for Applied Spectroscopy	2006–2012

PROFESSIONAL ACTIVITIES

WHOI

In Situ Sensors Group Organizer	2005–2008
WHOI Women's Committee	2005–2007
AOPE Safety Committee	2006–2009
WHOI Diversity Committee	2007–2009
WHOI GLOW chair/co-chair	2007–present

Outside WHOI

ORION SENSORS COMMITTEE 2006–2008

Reviewer for *Talanta* and *Experiments in Fluids*, *Optics Express*, *Marine Chemistry* and NSF-OTIC, NSF-Antarctic Organisms & Ecosyst.

PARTICIPATION IN EDUCATION PROGRAM

Principles of Oceanographic Instrument Systems (MIT 2.688) Spring 2005, 2006, 2007, 2008;
Guest lecture on Chemical Sensors Fall 2009

Environmental Chemistry and Sensors in Cape Cod Bay (MIT 12.097) January 2006
MIT undergraduate IAP course, co-taught with Liz Kujawinski (WHOI), Franz Hover (MIT)

Communicating Ocean Sciences (MIT 12.754) Spring 2008
MIT/WHOI Joint Program course, co-taught with Lauren Mullineaux

Fundamentals of Engineering Design: Explore Space, Sea, Earth (MIT 2.00AJ) April 7th, 2009
Guest lecture on ocean exploration

Oceanography (Lafayette College, GEOL 205) April 16th, 2009
Guest lecture on hydrothermal systems, ocean technology and ocean exploration

Chair of Thesis Committee July 27th, 2007
Anna Michel

SUPERVISION AT WHOI

John Lund January 2013-present
Engineer II, OOI

Svetlana Morozova (Cornell) December 2009–January 2010, June-August 2010
Engineer Assistant II, OOI

Kaitlyn McCartney (MIT) June–August 2008
WHOI Summer Student Fellow

John A. "Chip" Breier October 2006–October 2008
NSF RIDGE 2000 Post-doctoral Fellow

Abitha Murugeshu (LSU) May–August 2006
WHOI Summer Student Fellow

CRUISE PARTICIPATION

Shipboard scientist on six research cruises to investigate mid-ocean ridge hydrothermal systems using manned submersibles and an unmanned tethered vehicle. Deployed instruments to measure ambient light at vents for thesis research; participated as a scientific observer on eight *DSV Alvin* dives.

August/September 1995	*DSVSS Laney Chouest (DSV Sea Cliff)*	Juan de Fuca Ridge
April 1996	*R/V Atlantis II (DSV Alvin)*	9°N East Pacific Rise
November/December 1997	*R/V Atlantis (DSV Alvin)*	9°N East Pacific Rise
June/July 1998	*R/V Atlantis (DSV Alvin)*	Juan de Fuca Ridge
June 2000	*R/V Atlantis (DSV Alvin)*	Juan de Fuca Ridge
July 2001	*R/V Atlantis (DSV Alvin)*	Mid-Atlantic Ridge

Shipboard scientist on multiple ROV research cruises to investigate processes related to CO_2 sequestration and gas hydrates, and to develop a laser Raman spectrometer and precision underwater positioner for making *in situ* measurements in the deep sea.

February 19/20, 2002	*R/V Point Lobos (ROV Ventana)*	Monterey Bay
March 4, 2002	*R/V Point Lobos (ROV Ventana)*	Monterey Bay
April 1-5, 2002	*R/V Western Flyer (ROV Tiburon)*	Monterey Bay
April 16-20, 2002	*R/V Western Flyer (ROV Tiburon)*	Monterey Bay
April 29-May 2, 2002	*R/V Western Flyer (ROV Tiburon)*	Monterey Bay
June 12/13, 2002	*R/V Point Lobos (ROV Ventana)*	Monterey Bay
August 22/23, 2002	*R/V Point Lobos (ROV Ventana)*	Monterey Bay
October 16, 2002	*R/V Point Lobos (ROV Ventana)*	Monterey Bay
December 11-13, 2002	*R/V Western Flyer (ROV Tiburon)*	Monterey Bay
April 21-May 11, 2003	*R/V Western Flyer (ROV Tiburon)*	Gulf of California

August 20-22/25, 2003	*R/V Point Lobos (ROV Ventana)*	Monterey Bay
November 5/7/10, 2003	*R/V Point Lobos (ROV Ventana) – Chief Sci.*	Monterey Bay
December 16-18, 2003	*R/V Western Flyer (ROV Tiburon) – Chief Sci.*	Monterey Bay
July 15-25, 2004	*R/V Western Flyer (ROV Tiburon)*	Gorda, Hydrate Ridges
September 27/28, 2004	*R/V Point Lobos (ROV Ventana) – Chief Sci.*	Monterey Bay
October 5/6, 2005	*R/V Point Lobos (ROV Ventana)*	Monterey Bay
November 17-21, 2005	*R/V Western Flyer (ROV Tiburon)*	Monterey Bay

Shipboard scientist on ROV research cruise to investigate hydrothermal vent processes and biological communities. Deployed and operated instruments/samplers to measure particles and processes in hydrothermal plumes.

May 16-June 8, 2009	*R/V Thompson (ROV Jason)*	Lau Basin

PAPERS IN REFEREED JOURNALS

White, S. N., A. D. Chave, and J. H. Filloux, A look at galvanic distortion in the Tasman Sea and the Juan de Fuca Plate, *J. Geomag. Geoelectr.*, 49:1373-1386, 1997.

White, S. N., S. E. Humphris, and M. C. Kleinrock, New observations on the distribution of past and present hydrothermal activity in the TAG area of the Mid-Atlantic Ridge (26°08' N), *Mar. Geophys. Res.*, 20:41-56 (and Erratum 20;139), 1998.

White, S. N., A. D. Chave, G. T. Reynolds, E. J. Gaidos, J. A. Tyson, and C. L. Van Dover, Variations in ambient light emission from black smokers and flange pools on the Juan de Fuca Ridge, *Geophys. Res. Lett.*, 27: 1151-1154, 2000.

White, S. N., A. D. Chave, G. T. Reynolds, Investigations of ambient light emission at deep-sea hydrothermal vents, *J. Geophys. Res.*, 107 (B1), 10.1029/2000JB000015, 2002.

White, S. N., A. D. Chave, G. T. Reynolds, and C. L. Van Dover, Ambient light emission from hydrothermal vents on the Mid-Atlantic Ridge, *Geophys. Res. Lett.*, 29 (15), 10/1029.2002GL014977, 2002.

Brewer, P. G., G. Malby, J. D. Pasteris, S. N. White, E. T. Peltzer, B. Wopenka, J. Freeman, and M. O. Brown, Development of a laser Raman spectrometer for deep-ocean science, *Deep Sea Res. I*, 51, 10.1016/j.dsr.2003.11.005, 2004.

Pasteris, J. D., B. Wopenka, J. Freeman, P. G. Brewer, S. N. White, E. T. Peltzer, G.E. Malby, Raman spectroscopy in the deep ocean: successes and challenges, *Appl. Spectrosc.*, 58 (7), 195A-208A, 2004.

White, S. N., W. J. Kirkwood, A. D. Sherman, M. O. Brown, R. Henthorn, K. Salamy, P. Walz, E. T. Peltzer, and P. G. Brewer, Development and deployment of a precision underwater positioning system for *in situ* laser Raman spectroscopy in the deep ocean, *Deep Sea Res.*, 52: 2376-2389, 2005.

Hester, K. C., S. N. White, E. T. Peltzer, P. G. Brewer, and E. D. Sloan, Raman spectroscopic measurements of synthetic gas hydrates in the ocean, *Mar. Chem.*, 98, 304-314, 2006.

White, S. N., P. G. Brewer, and E. T. Peltzer, Determination of gas bubble fractionation in the deep ocean by laser Raman spectroscopy, *Mar. Chem.*, 99, 12-23, 2006.

White, S. N., R. M. Dunk, P. G. Brewer, E. T. Peltzer, and J. J. Freeman, *In situ* Raman analyses of deep-sea hydrothermal and cold seep systems (Gorda Ridge & Hydrate Ridge), *Geochem. Geophys. Geosys.*, 7, doi:10.1029/2005GC001204, 2006.

Hester, K. C., R. M. Dunk, S. N. White, P. G. Brewer, E. T. Peltzer, and E. D. Sloan, Gas hydrate measurements at Hydrate Ridge using Raman spectroscopy, *Geochem. Cosmochem. Acta,* 71, 2947-2959, 2007.

White, S. N., Laser Raman spectroscopy as a technique for identification of seafloor hydrothermal and cold seep minerals, *Chem. Geol.*, 259, 240-252, 2009.

Moore, C., A. Barnard, P. Fietzek, M. R. Lewis, H. M. Sosik, S. N. White, O. Zelinski, Optical tools for ocean monitoring and research, *Ocean Sci.*, 5, 661-684, 2009.

Breier, J. A., C. R. German, and S. N. White, Mineral phase analysis of deep-sea hydrothermal particulates by a Raman spectroscopy expert algorithm: towards autonomous *in situ* experimentation and exploration, *Geochemistry, Geophysics, and Geosystems*, 10, Q05T05, doi:10.1029/2008GC002314, 2009.

Breier, J. A., C. R. Rauch, K. McCartney, B. M. Toner, S. Fakra , S. N. White, and C. R. German, A suspended-particle rosette multi-sampler for discrete biogeochemical sampling in low-particle-density waters, *Deep Sea. Res. I*, 56, 1579-1589, 2009.

Breier, J. A., S. N. White, and C. R. German, Mineral-microbe interactions in deep-sea hydrothermal systems: a challenge for Raman spectroscopy, *Phil. Trans. R. Soc. A*, 368, 3067-3086, 2010.

White, S. N., Qualitative and Quantitative analysis of CO_2 and CH_4 dissolved in water and seawater using Laser Raman Spectroscopy, *Appl. Spec.*, 64, 819-827, 2010.

Breier, J. A., B. M. Toner, S. C. Fakra, M. A. Marcus, S. N. White, A. M. Thurnherr, C. R. German, Sulfur, sulfides, oxides and organic matter aggregated in submarine hydrothermal plumes at 9° 50' N East Pacific Rise, *Geochem. Cosmochem. Acta*, 88,216-236, doi:10.1016/J.GCA.2012.04.003, 2012.

Thompson, C. M., E. W. North, S. N. White and S. M. Gallagher, An analysis of bivalve larval shell pigments using micro-Raman spectroscopy, *J. Raman Spectrosc.*, submitted, 2013.

OTHER PUBLICATIONS

White, S. N., J. W. Bailey, C. L. Van Dover, and A. D. Chave, Measurements of Light at Hydrothermal Vents, *RIDGE Events*, vol. 7, no. 2, July 1996.

White, S. N., and A. D. Chave, ALISS in Wonderland, *Oceanus,* 41:14-17, 1998.

White, S. N., NEPTUNE dry test-bed modeling, Internal report (Ref # 10083), Dec. 4, 2001.

Brewer, P. G., J. D. Pasteris, G. E. Malby, E. T. Peltzer, S. N. White, J. Freeman, B. Wopenka, M. Brown, D. Cline, Laser Raman spectroscopy used to study the ocean at 3600 m depth, *EOS*, vol. 83: 469-470, 2002.

White, S. N., R. M. Dunk, P. G. Brewer, E. T. Peltzer, A. D. Sherman, M. O. Brown, and J. J. Freeman, First In Situ Raman Spectroscopic Measurements at Hydrothermal Vents – Sea Cliff Hydrothermal Field, Gorda Ridge, *RIDGE Events*, vol. 3, 31-34, 2005.

White, S. N., P. G. Brewer, and W. J. Kirkwood, Raman instrumentation for deep sea *in-situ* analyses: design and implementation of the Deep Ocean Raman *In Situ* Spectrometer with the Precision Underwater Positioner, *Sea Technology*, vol. 47, no. 2, 17-26, 2006.

PUBLISHED ABSTRACTS

White, S. N., A. D. Chave, and J. H. Filloux, Large scale MT distortion: a comparison of the Tasman Sea and the Juan de Fuca Plate, *Eos Trans. AGU*, 76, F168, 1995.

W. K. Stewart, White, S. N., S. E. Humphris, and M. C. Kleinrock, Geotectonic setting of past and present hydrothermal activity in the TAG area of the Mid-Atlantic Ridge (26° 08' N), *Eos Trans., AGU*, 77, F767-768, 1996.

White, S. N., A. D. Chave, J. W. Bailey, C. L. Van Dover, and G. T. Reynolds, Measurements of light at hydrothermal vents, 9° N East Pacific Rise, *Eos Trans., AGU*, 77, F404, 1996.

White, S. N., A. D. Chave, J. W. Bailey, C. L. Van Dover, G. T. Reynolds, and E. Gaidos, Images of ambient light at deep-sea hydrothermal vents, 9° N East Pacific Rise, *Eos Trans. AGU*, 79, S166, 1998.

White, S. N., A. D. Chave, J. W. Bailey, C. L. Van Dover, G. T. Reynolds, E. Gaidos, and J. A. Tyson, Images of ambient light at high-temperature black smokers and flange pools, Endeavour Segment, Juan de Fuca Ridge, *Eos Trans. AGU*, 79, F858, 1998.

Peltzer, E. T., P. G. Brewer, P. M. Walz, S.N. White, Progress in small-scale studies of direct ocean sequestration of carbon dioxide, *Eos Trans. AGU,* 83(47), Fall Meet. Suppl., Abstract U22A-03, 2002.

White, S. N., P. G. Brewer, E. T. Peltzer III, G. E. Malby, and J. D. Pasteris, Development of a Laser Raman Spectrometer for *In Situ* Measurements in the Deep Ocean, *Eos Trans. AGU,* 83(47), Fall Meet. Suppl., Abstract OS21B-205, 2002.

Pasteris, J. D., P. G. Brewer, S. N. White, E. T. Peltzer, B. Wopenka, J. Freeman, Development of *in situ*, real-time Raman analysis of clathrate hydrates on the seafloor, Geol. Soc. Amer. Abstracts with Programs, 35, 534, 2003.

Kirkwood, W. J., S. N. White, M. O. Brown, S. Jensen, R. Henthorn, K, Salamy, P. G. Brewer, and E. T. Peltzer, Development of a precision underwater positioner for *in situ* spectrographic applications, *Eos Trans. AGU,* Fall Meet. Suppl., Abstract OS32A-0236, 2003.

White, S. N., P. G. Brewer, E. T. Peltzer, W. J. Kirkwood, J. D. Pasteris, and N. Nakayama, First expeditionary deployments of the Deep Ocean Raman In Situ Spectrometer, *Eos Trans. AGU,* Fall Meet. Suppl., Abstract OS32A-0235, 2003.

Peltzer, E. T., S. N. White, R. M. Dunk, P. G. Brewer, A. D. Sherman, K. Schmidt, K. C. Hester, and E. D. Sloan, *In situ* Raman analyses of natural gas and gas hydrates at Hydrate Ridge, Oregon, *Eos Trans. AGU*, Fall Meet. Suppl., Abstract OS34B-01, 2004.

Brewer, P. G., R. M. Dunk, S. N. White, E. T. Peltzer, B. Bowie, and P. Walz, First attempts at direct Raman detection of the oceanic carbonate system, *Eos Trans. AGU*, Fall Meet. Suppl., Abstract OS43B-557, 2004.

White, S. N., R. M. Dunk, P. G. Brewer, E. T. Peltzer, A. D. Sherman, and J. J. Freeman, *In situ* Raman spectra from the Sea Cliff Hydrothermal Field (Gorda Ridge), *Eos Trans. AGU*, Fall Meet. Suppl., Abstract OS43B-558, 2004.

Breier, J. A., C. R. German, and S. N. White, Development of an optically compatible Suspended Particulate Rosette (SuPR) multi-sampler and a Raman Spectroscopy Expert Algorithm (RaSEA) for quantitative point counting and *in situ* analysis of deep-sea hydrothermal minerals, Mantle to Microbe: Integrated Studies at Oceanic Spreading Centers, Portland, OR, March 25-26, 2008.

Gallager, S. M., A. D. York, Y. Longonje, and S. N. White, Larval shell formation: requirement for Sr may be explained by amorphous calcium carbonate as a precursor phase for aragonite, National Shellfisheries Association Meeting, Providence, RI, April 7-10, 2008.

White, S. N., Laser Raman Spectroscopy as a tool for *in situ* bio-geo-chemical analyses in the deep ocean, Goldschmidt Conference 2010, *Geochim. Cosmochim. Acta*, vol. 74, iss. 11, suppl. 1, A1129, June 2010.

PAPERS PRESENTED AT MEETINGS

Maffei, A. R., A. D. Chave, G. Massion, S. N. White, J. Bailey, S. Lerner, A. Bradley, D. Yoerger, H. Frazier, R. Buddenberg, NEPTUNE Gigabit Ethernet Submarine Cable System, Proceedings of Oceans 2001 Conference, Honolulu, HI, November 2001.

Kirkwood, W. J., S. N. White, M. Brown, R. Henthorn, S. Jensen, K. A. Salamy, E. T. Peltzer, P. G. Brewer, Precision underwater positioning for *in situ* laser Raman spectrographic applications, IEEE/MTS Oceans 2003, IEEE Press, San Diego, CA, September 2003.

White, S. N., W. J. Kirkwood, A. D. Sherman, M. O. Brown, R. Henthorn, K. A. Salamy, E. T. Peltzer, P. Walz, and P. G. Brewer, Laser Raman spectroscopic instrumentation for *in situ* geochemical analyses in the deep ocean, IEEE/MTS Oceans 2004, IEEE Press, Kobe, Japan, November 2004.

Farr, N., A. Chave, L. Freitag, J. Preisig, S. White, D. Yoerger, and P. Titterton, Optical modem technology for seafloor observatories, IEEE/MTS Oceans 2005, IEEE Press, Washington, D.C., September 2005.

Farr, N., A. D. Chave, L. Freitag, J. Preisig, S. N. White, et. al., Optical modem technology for seafloor observatories, IEEE 4th International Workshop on Scientific Uses of Submarine Cables & Related Technologies, Dublin, Ireland, 2006.

White, S. N., R. Camilli, A. P. M. Michel, and J. Whelan, Spectroscopic sensor technology for *in situ* seafloor analyses, IEEE 4th International Workshop on Scientific Uses of Submarine Cables & Related Technologies, Dublin, Ireland, 2006.

White, S. N., E. R. Sholkovitz, and N. Farr, Visible reflectance spectroscopy on a buoy-mounted aerosol sampler: development of a sensor for quantifying the deposition of mineral dust to the oceans, IEEE/MTS Oceans 2006, IEEE Press, Boston, MA, September 2006.

White, S. N., Laser Raman spectroscopy as a tool for *in situ* mineralogical analyses on the seafloor, IEEE/MTS Oceans 2006, IEEE Press, Boston, MA, September 2006.

White, S. N., Laser Raman spectroscopic analyses of dissolved gasses, IEEE/MTS Oceans 2007, IEEE Press, Vancouver, BC, September 2007.

PATENTS

U. S. Patent 7,953,326, Systems and methods for underwater optical communication, Farr, N., Freitag, L., Preisig, J., Yoerger, D., White, S., Chave, A., Filed February 6, 2022, Awarded May 31, 2011.

INVITED LECTURES

CARNEGIE INSTITUTION OF WASHINGTON, WASHINGTON, DC — *June 26, 2000*
Light Emission at Deep-Sea Hydrothermal Vents

WOODS HOLE OCEANOGRAPHIC INSTITUTION, WOODS HOLE, MA — *June 12, 2003*
A Laser Raman Spectrometer for the Deep Ocean

UNIVERSITY OF CONNECTICUT, AVERY POINT, CT — *July 17, 2003*
Laser Raman Spectroscopy in the Deep Ocean

SCRIPPS INSTITUTE OF OCEANOGRAPHY, LA JOLLA, CA *January 24, 2008*
Visible Reflectance & Laser Raman Spectroscopy:
Techniques for Monitoring Ocean Processes Top to Bottom

LAFAYETTE COLLEGE, EASTON, PA *April 17, 2009*
Illuminating the Deep: Using Laser Raman Spectroscopy
to Explore Seafloor Environments

WORKSHOPS/SYMPOSIA ATTENDED

JUAN DE FUCA RESULTS SYMPOSIUM *November 7-9, 1999*
RIDGE, Seattle, WA

THE NEXT GENERATION OF IN SITU BIOLOGICAL AND CHEMICAL SENSORS *July 13-16, 2003*
Woods Hole Oceanographic Institution, Woods Hole, MA

FRONTIERS IN RAMAN SPECTROSCOPY *October 28, 2004*
ACS Western Regional Meeting, Sacramento, CA

IEEE 4TH INTERNATIONAL WORKSHOP ON SCIENTIFIC USES OF SUBMARINE CABLES AND RELATED TECHNOLOGIES *February 8-10, 2006*
Dublin, Ireland

ORION DESIGN & IMPLEMENTATION WORKSHOP *March 27-31, 2006*
Salt Lake City, UT

COMMUNICATING OCEAN SCIENCES INSTRUCTORS WORKSHOP *October 19, 2007*
Woods Hole, MA

OCEAN SENSORS 2008 *March 31-April 4, 2008*
Warnemünde, Germany

SHORT COURSES

PROJECT MANAGEMENT PRINCIPLES AND PRACTICE *June 7-10, 2005*
UCLA Extension Short Course, Dr. Arnold Ruskin Woods Hole, MA

PRINCIPLES OF SYSTEMS ENGINEERING *September 1-4, 2009*
Raytheon Corporation Aurora, CO

REFERENCES

Peter Brewer	MBARI, Moss Landing, CA
Paul Matthias	WHOI, Woods Hole, MA
Jill Pasteris	Washington University, St. Louis, MO
Don Peters	WHOI, Woods Hole, MA
Libby Signell	Hydroid, Woods Hole, MA
John Trowbridge	WHOI, Woods Hole, MA