

MICHELSON MEMORIAL LECTURE SERIES

Albert A. Michelson, Naval Academy graduate and instructor, and the first American scientist to receive a Nobel Prize. Each year since 1981, a distinguished scientist has come to the Naval Academy to present the Michelson Lecture. These scientists have represented a variety of scientific disciplines, including chemistry, physics, mathematics, oceanography, and computer science.

1981 Professor Herbert C. Brown, Nobel Laureate, Purdue University
1982 Professor Charles H. Townes, Nobel Laureate, Univ. of California, Berkeley
1983 Professor Arthur L. Schawlow, Nobel Laureate, Stanford University
1984 Honorable James M. Beggs, National Aeronautics and Space Administration
1985 Admiral Grace Hopper, United States Navy
1986 Dr. Ronald L. Graham, Bell Laboratories
1987 Dr. James A. Watson, Nobel Laureate, Cold Spring Harbor Laboratory
1988 Dr. Stirling A. Colgate, Los Alamos Laboratory
1989 Dr. Robert Ballard, Woods Hole Oceanographic Institute
1990 Dr. Richard Hamming, Naval Postgraduate School, Monterey, CA
1991 Dr. John H. Conway, Princeton University
1992 Dr. Michael F. Shlesinger, Director of Physics, ONR
1993 Dr. Richard E. Smalley, Nobel Laureate, Rice University
1994 Dr. Kathryn D. Sullivan, NOAA, Chief Scientist and Astronaut
1995 Dr. Arnold Penzias, Nobel Laureate, Bell Laboratories
1996 Dr. Aaron Hauptman, Nobel Laureate, Hauptman-Woodward Research Foundation
1997 Dr. Dudley R. Herschbach, Nobel Laureate, Harvard University
1998 Dr. Leon N. Cooper, Nobel Laureate, Brown University
1999 Dr. Sylvia Earl, Deep Ocean Explorer, 1998-2002 National Geographic Explorer-in-Residence, and Chairman, DOER Marine Operations, Inc.
2000 Dr. Vinton G. Cerf, Senior Vice President of Internet Technology, WorldCom
2001 Dr. David Donoho, Stanford University
2002 Dr. F. Sherwood Rowland, Nobel Laureate, University of California, Irvine
2003 Dr. William D. Phillips, Nobel Laureate, NIST & University of Maryland
2004 Dr. Howard Bluestein, University of Oklahoma
2005 Dr. Jeffrey Weeks, Freelance Mathematician
2006 Dr. James J. Heckman, Nobel Laureate, University of Chicago
2007 Sir Harold W. Kroto, Nobel Laureate, Florida State University
2008 Dr. James Gates, University of Maryland
2009 Dr. Christos Papadimitriou, University of California, Berkeley
2010 Dr. Eric J. Barron, Florida State University
2011 Dr. Bernd Sturmfels, University of California, Berkeley
2012 Dr. Peter Diamond, Nobel Laureate, Institute Professor Emeritus at MIT
2013 Dr. Ada Yonath, Nobel Laureate, Weizmann Institute, Rehovot, Israel
2014 Dr. Adam Reiss, Krieger School of Arts and Sciences, Johns Hopkins University
2015 Jesse Ausubel, Director and Ocean Explorer, The Rockefeller University, New York
2016 Dr. Jon Kleinberg, Tisch University Professor, Cornell University
2017 Dr. Terence Tao, Fields Medalist, Department of Mathematics, UCLA
2019 Sir Fraser Stoddart, Nobel Laureate, Board of Trustees, Northwestern
2019 Dr. Kip Thorne, Nobel Laureate, California Institute of Technology



MICHELSON LECTURE APPLICATIONS OF SCIENCE AND TECHNOLOGY FOR STRATEGIC ADVANTAGE

Dr. Marcia McNutt

APRIL 28, 2021

Dr. Marcia McNutt

President, National Academy of Sciences

Marcia McNutt is a geophysicist and president of the National Academy of Sciences. From 2013 to 2016, she served as editor-in-chief of the *Science* journals. Prior to joining *Science*, she was director of the U.S. Geological Survey (USGS) from 2009 to 2013. During her tenure, the USGS responded to a number of major disasters, including earthquakes in Haiti, Chile, and Japan, and the Deepwater Horizon oil spill. McNutt led a team of government scientists and engineers at BP headquarters in Houston who helped contain the oil and cap the well. She directed the flow rate technical group that estimated the rate of oil discharge during the spill's active phase. For her contributions, she was awarded the U.S. Coast Guard's Meritorious Service Medal.

Before joining the USGS, McNutt served as president and chief executive officer of the Monterey Bay Aquarium Research Institute (MBARI), in Moss Landing, California. During her time at MBARI, the institution became a leader in developing biological and chemical sensors for remote ocean deployment, installed the first deep-sea cabled observatory in U.S. waters, and advanced the integration of artificial intelligence into autonomous underwater vehicles for complex undersea missions.

From 2000 to 2002, McNutt served as president of the American Geophysical Union (AGU). She was chair of the Board of Governors for Joint Oceanographic Institutions, responsible for operating the International Ocean Drilling Program's vessel JOIDES Resolution and associated research programs.

McNutt began her academic career at the Massachusetts Institute of Technology (MIT), where she was the E.A. Griswold Professor of Geophysics and directed the Joint Program in Oceanography/Applied Ocean Science & Engineering, jointly offered by MIT and the Woods Hole Oceanographic Institution. Her research area is the dynamics of the upper mantle and lithosphere on geologic time scales, work that has taken her to distant continents and oceans for field observations. She is a veteran of more than a dozen deep-sea expeditions, on most of which she was chief or co-chief scientist.

McNutt received a B.A. in physics from Colorado College and her Ph.D. in Earth sciences at the Scripps Institution of Oceanography. She holds honorary doctoral degrees from the Colorado College, the University of Minnesota, Monmouth University, the Colorado School of Mines, University of Miami, Uppsala University, Michigan State University, Worcester Polytechnic Institute, George Washington University, Boston University, and Texas A&M University. McNutt is a member of the National Academy of Engineering, the American Philosophical Society and the American Academy of Arts and Sciences, and a Foreign Member of the Royal Society, UK, the Russian Academy of Sciences, and the Chinese Academy of Sciences. She is a fellow of AGU, the Geological Society of America, the American Association for the Advancement of Science, and the International Association of Geodesy. In 1988, she was awarded AGU's Macelwane Medal for research accomplishments by a young scientist, and she received the Maurice Ewing Medal in 2007 for her contributions to deep-sea exploration.

Program

History of the Michelson Lecture

Dr. Andrew Phillips, Provost

Introduction of the Guest Speaker

Captain Eric Woelper, Dean, School of Mathematics and Science

Lecture: Applications of Science and Technology for Strategic Advantage

Dr. Marcia McNutt, President, National Academy of Sciences

Question and Answer Segment*

Presentation to Speaker

MIDN 1/C Brooke Bogdanovich and Mr. Stephen W. Comiskey, USNA '69

Abstract

Science and technology have always been essential to the warfighting and peace-keeping advantage of the US Navy and Marine Corps. To realize a critical operational edge, officers must know how, where, and when to apply an increasingly large and complex arsenal of innovations. At the same time, a strategic view to identify "just over the horizon" challenges helps Naval officers build mission resilience in the face of an uncertain future. The most successful officers will competently utilize the right blend of credibility, science and technology literacy, devotion to continual learning, courage to know when to take risks, and foresight to mitigate potential bad outcomes. This lecture will illustrate these skill sets and more with examples taken from a long career of working with the Navy and Coast Guard on science and technology in the marine environment.

* Please form a socially-distanced line behind the microphone stand during the Q&A session.