

DR. MARY J. SANSALONE

Education

1981: BS *Summa Cum Laude*, Civil Engineering, University of Cincinnati
 1984: MS Structural Engineering, Cornell University
 1986: PhD Structural Engineering, Cornell University
 1999: Masters in Public Administration, Kennedy School, Harvard University

Professional Experience

1986-87 Research Engineer, Structural Engineering Division, National Bureau of Standards
 1987- School of Civil & Environmental Engineering, Cornell University
 Faculty Appointments:
 1987-88 Visiting Assistant Professor
 1988-91 Assistant Professor (tenure track)
 1992-97 Associate Professor (with tenure)
 1997- Professor
 Administrative Appointments:
 1993-12/94, 96-97 Associate Director of the School
 1998-12/00 Vice-Provost for Academic Programs
 2002-03 Vice President for Planning, New York University (on-leave from Cornell)
 2006-08 Dean, School of Engineering & Applied Science, Washington University in St. Louis

Research and Invention

Through a combination of theory, computer simulation, and laboratory and field experiments, Prof. Sansalone invented and perfected a method and an instrument, called Impact-Echo, for nondestructive evaluation of concrete and masonry structures (highways, buildings, bridges, dams, tunnels, etc.). She laid the theoretical and experimental foundation for this work while a Cornell graduate student (1983-86). After she joined the Cornell faculty in 1987, she and her graduate students developed a wide range of practical applications and invented a portable field instrument, publishing nearly 90 journal articles and research reports. Cornell patented the instrument in the US and over a dozen foreign countries. In the 1990's she worked closely with Cornell's Office of Technology Transfer and with industry to transfer knowledge about use of the method and instrument to engineers working on evaluation and repair of structures. Responding to a need from industry, she was the lead author of a book published in 1997 on Impact-Echo and its applications in the testing of concrete and masonry structures. That book has been sold in 17 countries, and has already been translated into several foreign languages, including Japanese and Chinese. Impact-echo instruments are now manufactured in the U.S., Japan, Canada, France, Germany, Taiwan, Denmark, and other countries and are in use worldwide for nondestructive testing of concrete and masonry structures. With the annual cost of repairs to this nation's concrete infrastructure -- mostly public works structures -- now running into tens of billions of dollars, the impact-echo method benefits society at large by contributing both to the safety and to the cost-effective repair and rehabilitation of this important national asset. In addition to its use on many private and public works structures (highways, buildings, bridges, dams, tunnels, etc), impact-echo has found important use as a tool in the evaluation of historic structures, including the Great Pyramid of Cheops in Egypt, St. Paul's Cathedral in London, the Federal Reserve Building in New York, and the U.S. Capitol Building in Washington.

Impact-Echo has been cited by the American Society of Civil Engineers, the U.S. Federal Highway Administration, the U.S. Department of Transportation, and other professional and government agencies as an important method for the evaluation of concrete and masonry structures. In 1997, ASTM issued a standard for the use of impact-echo. References to impact-echo and its applications can now be found on over 450 websites. Prof. Sansalone's research work is often cited by other researchers (science citation index shows that Prof. Sansalone and her work have been cited by name in over 500 publications by others), and many of her former graduate students -- who are now on faculties in the US

and Asia – continue to make contributions in the field of non-destructive evaluation and health monitoring of structures; seven of them won national awards for their PhD research work.

Her work has also been recognized by a number of government organizations and professional societies.

- In 1986, the National Bureau of Standards awarded her a Special Act Award for “*outstanding contributions to characterizing stress wave propagation in bounded solids containing flaws.*”
- In 1989, she was named a Presidential Young Investigator by the National Science Foundation.
- The American Concrete Institute (ACI) awarded her a Wason Medal for Materials Research in 1991 and in 1999 named her a Fellow for her contributions to ACI and the profession.
- In 1991, she was named Engineer of the Year by both the NY/PA Region of the Society of Professional Engineers and the Upstate New York Region of ASCE.
- In 1993 she was elected to membership in Sigma Xi.
- In 1997, she received the Alan Yorkdale Award from the American Society of Testing and Materials for work on the use of impact-echo for evaluation of masonry structures.
- In 1999, she was named a Littauer Fellow by the Kennedy School at Harvard “*in recognition of outstanding accomplishment, commitment to public service, and potential for leadership.*”
- In 2002, she was named a Fellow of the American Association for the Advancement of Science (AAAS) for the “*development of the impact-echo method and instrument for the evaluation of civil infrastructure world-wide and for extraordinary contributions to undergraduate engineering education*”

Consulting

Since the mid-1990s, Prof. Sansalone has served as a consultant to engineering firms, construction companies, and government agencies in the U.S., Canada, Europe, and Asia. Her work focuses on the evaluation of concrete and masonry structures, including structures damaged by natural disasters, impact or blast, or deterioration, structures with problems arising during construction, and historic structures. In addition, she works with other industries in the adaptation of the impact-echo method to their applications. .

Teaching and Advising

Prof. Sansalone teaches courses in mechanics, dynamics, structural analysis and behavior, and evaluation of structures. The lectures and case studies she developed for her course on evaluation of concrete and masonry structures are now used by faculty all over the country. She is well known – in fact, legendary – for her teaching. In her first year on the faculty at Cornell (1987) Professor Sansalone received an award for innovation in teaching and over the next five years won virtually every teaching award available to her, including the 1992 U.S. Professor of the Year Award from the Council for Advancement and Support of Education (CASE) and the Carnegie foundation. Only one such award was made nationwide at that time. At age 34 she was the youngest person, the first professor of engineering, and the first from a major research university to receive this award. Supporting letters from her students were the key to her selection. The talk she delivered in the Public Lecture Series at the Smithsonian Institution, during the ceremonies surrounding the Professor of the Year Award, received a standing ovation. In 1993 she was appointed a Weiss Presidential Fellow at Cornell for “*effective, inspiring, and distinguished teaching of undergraduate students and for outstanding contributions to undergraduate education at Cornell University.*” She donated more than \$40,000 in prize money from her teaching awards to scholarships and student activities.

During the several years she served as advisor to the student chapter of the American Society of Civil Engineers she obtained gifts and grants in excess of \$60,000, enabling the group to build playgrounds, bridges, walkways, and other structures for the local community. During that time the chapter received an award as the best in the country and she received an award for outstanding service as faculty advisor. She was faculty advisor and chief fundraiser for a highly successful program, “*Expanding Your Horizons*”, designed to stimulate the interest of 6th - 8th grade girls in science and engineering. With her encouragement more than half of her student advisees (25 to 30 per year) chose study abroad as part of their Cornell education. Engineering students she has identified and coached for national scholarship competitions have won one Rhodes and two Marshall Scholarships. She advises undergraduates on

research projects, typically supervising one or two students per year. All of these undergraduates have gone on to pursue graduate degrees and a number of them are now professors in research universities around the country.

Major Teaching and Advising Awards:

2004,1991,1989 Chi Epsilon Award for Excellence in Teaching, Civil & Environmental Eng.
 1997,1993,1989 Named “*most influential professor*” by Cornell Merrill Presidential Scholars
 1993 Named Weiss Presidential Fellow “*for effective, inspiring, and distinguished teaching of undergraduate students and for outstanding contributions to undergraduate education at Cornell University*”
 1993 Chi Epsilon Civil Engineering Professor of the year, Northeast U.S. Region
 1992 National Professor of the Year, Council for Advancement and Support of Education and Carnegie Foundation “*for extraordinary contributions to the lives and careers of undergraduate students and to the intellectual welfare of our society*”
 1992 Dean’s Award for Innovation in Teaching, College of Engineering
 1991 Award for Outstanding Service as Faculty Advisor, ASCE
 1989 Tau Beta Pi Award for Excellence in Teaching, College of Engineering
 1988 Dean’s Award for Excellence in Teaching, College of Engineering

Additional Service to Higher Education

Professor Sansalone’s administrative work has been recognized with the following awards:

- In 1993, Cornell University awarded her its Gold Medal, “*for outstanding service to Cornell University.*”
- In 1998, she earned a Cook Award “*in recognition of efforts on behalf of women at Cornell and beyond.*”
- In 2000, the Cornell Board of Trustees awarded her a Commendation “*for having demonstrated remarkable leadership... and as an expression of our deep appreciation for exceptional service as Vice Provost*”