The Society of Women Engineers

October 2006

Achievement Award

50+ Years of
Achievement & Inspiration

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Achievement Award Recipients

Dr. Elaine S. Oran 2006
Dr. Bonnie J. Dunbar 2005
Dr. Kristina M. Johnson 2004
Dr. Mitra Dutta 2003
Dr. Umit Ozkan 2002
Judith A. Clapp 2001
F. Suzanne Jenniches 2000
Shirley E. Schwartz 1999
Lisa C. Klein 1998
Ilene J. Busch-Vishniac 1997
Barbara Liskov 1996
Manijeh Razeghi 1995
Elsa Garmire 1994
Elsa Reichmanis 1993
Evangelia Micheli-Tzanakou 1992
Julia Weertman 1991
Lynn Conway 1990
Doris Kuhlmann-Wilsdorf 1989
Roberta Nichols 1988
Nance K. Dicciani 1987
Yvonne C. Brill 1986
Y.C.L. Susan Wu 1985
Geraldine V. Cox 1984
Joan B. Berkowitz 1983
Harriett B. Rigas 1982
Thelma Estrin 1981
Carolyn M. Preece 1980
Jessie G. Cambra 1979

Achievement Award Recipients

Giuliana Cavaglieri Tesoro 1978
Mildred Spiewak Dresselhaus 1977
Ada I. Pressman 1976
Sheila E. Widnall 1975
Barbara Crawford Johnson 1974
Irene Carswell Peden 1973
Nancy D. Fitzroy 1972
Alva T. Matthews 1971
Irmgard Flügge-Lotz 1970
Alice Stoll 1969
Isabella L. Karle 1968
Marguerite M. Rogers 1967
Dorothy Martin Simon 1966
Martha J. B. Thomas 1965
Grace Murray Hopper 1964
Beatrice Hicks 1963
Laurence Delisle Pellier 1962
Laurel van der Wal 1961
Esther M. Conwell 1960
Désirée le Beau 1959
Mabel M. Rockwell 1958
Rebecca H. Sparling 1957
Elise F. Harmon 1956
Margaret H. Hutchinson 1955
Edith Clarke 1954
Elsie Gregory MacGill 1953
Maria Telkes 1952

Foreword

In 1952, the Society of Women Engineers conferred its highest tribute—the Achievement Award—to Dr. Maria Telkes for her significant contributions in the field of solar energy. More than five decades ago, a prominent researcher and educator, who just happened to be a woman, had already made great advances in harnessing the energy source that today powers many of our satellites in space and our homes on earth.

This booklet describes the outstanding women who have received the Achievement Award each year since 1952. They are practitioners, researchers, educators, and managers selected in consultation with nationally-prominent engineers, business executives and educators from outside the Society. They are the women whose achievements wrote our technological history and formed the foundation for our technological future.

Within these pages you'll find descriptions of many different kinds of achievements. Award recipients have trekked to the Antarctic to measure ice formations, patented gold-plating processes for surgical needles, enabled the synthesis of a rare natural product that formerly required extracts of 8,000 frogs for each very precious crystal. They've helped engineer the space race, designed weapon systems for the Cold War and defense, invented fire-proof fabrics and engineered automotive firsts. They've worked to improve our environment, our water, and our daily lives. Collectively, they hold patents.

Many have transferred their specialized knowledge to others as invited speakers, as members of advisory committees, on boards of technical and engineering societies, and as revered educators at universities throughout the nation. They have served as role models and mentors for generations of engineers…and generations yet to come.

Envision also the community service and the juggling of career with family responsibilities. Many of the women featured here have made homes for their husbands, daughters, and sons. All have contributed to their communities in such unheralded positions as scout leader, PTA president, 4-H Club founder, airport commissioner, or business women's club president.

In summary, the women who receive the prestigious Achievement Award have accomplished much more than can be covered in a booklet. Each recipient has, of course, added to her list of achievements and honors; but these have not been included so that each sketch would present a true picture of the achievement which warranted this honor each year.

2006

Dr. Elaine S. Oran

In recognition for pioneering a computation technology that unifies engineering, scientific, and mathematical disciplines into a methodology for solving reactive flow problems.

Achievements: Dr. Elaine Oran's contribution to the advancement of the engineering profession stems from her pioneering work in computational methods for solving complex reactive flow problems. As senior scientist at the U.S. Naval Research Laboratory, she invented and implemented algorithms and computational methods for accurate numerical simulations of reactive flows. Her work on the deflagration-to-detonation process answered one of the major unsolved problems in combustion theory.

Contributions: Knowledge of reactive flow behavior helps with the prediction of atmospheric conditions for naval communications and weather forecasts. Dr. Oran's work allowed other investigators to study a broad range of previously unexplained reactive flow phenomena.

Honors: Dr. Oran's work has been published extensively. She has received the Dryden Distinguished Lectureship in Aerospace Research of the American Institute of Aeronautics and Astronautics, the Oppenheim Prize of the Institute of Dynamics of Energetic and Reactive Systems, the Zeldovich Gold Medal of the Combustion Institute, and many others. She was also elected to the National Academy of Engineering, and is a Fellow of both the American Institute of Aeronautics and Astronautics and the American Physical Society.

Education: Dr. Oran received a B.A. in physics and chemistry from Bryn Mawr College, an M.Ph. from the dept. of physics and a doctorate from the dept. of engineering and applied sciences at Yale University.

2005

Dr. Bonnie J. Dunbar

In recognition of her visionary contributions ranging from ceramic shuttle-tile design to biomedical research, Dr. Dunbar's efforts benefit astronautics, humankind, and the future scientists and engineers she inspires.

Achievements: Throughout her career, Dr. Dunbar has made earth-shattering contributions. While at Rockwell's Palmdale, Calif., production facility in the 1970s, she was key in the development of the original ceramic tiles for the space shuttle, helping establish the equipment, process, and standards to manufacture them.

Contributions: While at NASA's Johnson Space Center, Dr. Dunbar served as a mission control guidance and navigation officer. She was a crucial member of the team that skillfully positioned the Skylab Space Station for a controlled, safe re-entry into earth's atmosphere. Dr. Dunbar served as a mission specialist on three STS missions including STS-71, the first to dock with Russian space station MIR, in 1995. She was payload commander, managing all experiments, on STS-50/Columbia in 1992, and STS-89/Endeavour in 1998. She worked with the thermal tile repair team to analyze the tile problem on Columbia and explore possibilities for in-orbit tile repair.

Honors: She has received several honorary degrees from institutions around the world. Her work has been published extensively, and she holds one patent.Dr. Dunbar is a 1993 SWE Resnik Challenger medal recipient and a member of the National Academy of Engineering.

Education: Dr. Dunbar holds bachelor's and master's degrees in ceramic engineering from the University of Washington, Seattle, and a doctorate in mechanical/biomedical engineering from the University of Houston.

2004

Dr. Kristina M. Johnson

In recognition of her significant contributions to optoelectronic processing systems and liquid crystal devices.

Achievements: Research and teaching include holography, which is the creation of three-dimensional images with light wave interference patterns, along with optical and signal processing, liquid crystal electro-optics and affixing a novel variety of liquid crystals to silicon to create new types of miniature displays and computer monitors.

Contributions: Dr. Johnson holds 43 patents and over 140 refereed journal publications. Her research and projects provided the University of Colorado approximately $42 million in grants and contracts. In 1992 she won a regional Emmy nomination for a 10-part television series, "Physics of Light."

Honors: Presidential Young Investigator, named one of the nation's top 100 engineers under 40 by the National Academy of Engineering, a Fellow of the Optical Society of America and the Institute of Electrical and Electronics Engineers, winner of the 1993 International Denis Gabor Medal for Outstanding Achievement in Modern Optics, recipient of the Photonics Spectra Circle of Excellence award and the Colorado Technology Transfer Award.

Education: Dr. Johnson holds her B.S., M.S. and Ph.D. degrees in electrical engineering from Stanford University.

2003

Dr. Mitra Dutta

For her pioneering research in novel heterostructure optoelectronic and electronic devices, characterization of compound semiconductor materials and executive level administrative leadership of engineering projects.

Achievements: Conducted forefront research on the design and innovative optical characterization of novel semiconductor heterostructures for super performance optoelectronic and electronic devices. Recognized as one of the US Government's foremost technical leaders for establishing major portions of the Army's current research programs in electronics and optoelectronics.

Contributions: Established world-class optical characterization techniques and facilities now a central part of the Army's research capability in optoelectronic and electronics and used in other research endeavors. Authored 150+ journal papers, 8 book chapters and one book. Holds 24 patents.

Honors: Fellow, AAAS. Fellow, IEEE. Fellow, OSA. Fellow of the Army Research Laboratory. IEEE Harry Diamond Award. National Research Council's Committee on Army Science and Technology for Homeland Defense.

Firsts: First woman elected to Fellow of the Army Research Laboratory.

2002

Dr. Umit Ozkan

In recognition of her outstanding accomplishments as an internationally recognized and highly-respected researcher in heterogeneous catalysis, as an engineering educator, as a dedicated leader in higher education and in professional societies, and as a true trailblazer in every aspect of her professional life.

Achievements: Research in heterogeneous catalysis is recognized nationally and internationally as cutting edge. Focuses on fundamental questions regarding surface chemistry and heterogeneous kinetics. Addresses many crucial problems facing our nation in energy and environmental protection areas.

Contributions: Chair, petroleum chemistry division, American Chemical Society. Secretary, North American Catalysis Society.

Honors: National Coal Council, advisory body to the US Secretary of Energy. Senior Research Scientist, Centre National de la Recherche Scientifique, Catalysis Research Institute in Lyon.

Firsts: First female faculty member of the chemical engineering department, Iowa State University. First female appointed Associate Dean of Research, Iowa State University.

2001

Judith A. Clapp

For significant contributions to technologies for managing the development and acquisition of large-scale command and control systems and establishing software engineering as a discipline.

Achievements: Developed first automated aids for writing and testing software for large-scale, real-time command and control computer system. Lead development for one of the first generalized computer database management systems, the first use of microprogramming to create a multi-user environment, the use of natural language processing for patent searches, and the application of artificial intelligence techniques for space shuttle launch preparation.

Contributions: Member of IEEE, ACM, Association of Women in Computing, National Defense Industrial Association. Founder of MITRE Professional Women's Group. Member of Department of Defense High Order Language Working Group that developed the programming language Ada.

Honors: Honored as a pioneering woman in computing by the Grace Hopper Celebration of Women in Computing and the Association for Computing Machinery.

Education: M.S., Applied Science, Concentration in Computer Science, Radcliffe College.

2000

F. Suzanne Jenniches

In recognition of outstanding leadership in manufacturing innovation and for setting the highest standards of excellence in producibility engineering

Achievements: Leader in manufacturing innovation and producibility engineering for over 25 years. In 1981, she led the operations of the offensive radar for the B-1B bomber. She produced the first electronically scanned antenna for production aircraft in the world and established a new core business for Northrop Grumman, where she was chosen from a corporation of more than 50,000 engineers to lead this strategic, high technology thrust.

Contributions: American Association of Engineering Societies Board of Governors, Maryland State Governor's Commission on Technology in Higher Education, the Maryland State Governor's Task Force on High Speed Networking, and the Greater Baltimore Technology Council, where she is a founding member.

Honors: Honored as a pioneering woman in computing by the Grace Hopper Celebration of Women in Computing and the Association for Computing Machinery.

Education: M.S., Johns Hopkins University in Environmental Engineering.

1999

Shirley E. Schwartz

In recognition of outstanding contributions to lubrication technology, development of environmentally friendly products, conservation of non-renewable natural resources, and significant achievements in promoting awareness of technical professions.

Achievements: Developed a patented device that notifies a car's driver when the engine oil should be changed. Her area of expertise is the conservation of engine oils for engines fueled with gasoline and alternative fuels.

Contributions: Active in the Society of Tribologists and Lubrication Engineers and in the Society of Automotive Engineers. As the leader of the Coordinating Research Council Group on Lubricants of Methanol-fueled Vehicles, she chaired several international conferences. She published "Love Letters to Lubrication Engineers," and "Love Letters to Japanese Lubrication Engineers" for the Japanese Society of Tribologists.

Honors: Fellow of the Society of Tribologists and Lubrication Engineers and the Society of Automotive Engineers. Awards include Arch T. Colwell Award (Society of Automotive Engineers), the Wilbur Deutsch Memorial Award (Society of Tribologists and Lubrication Engineers), and the Kettering and McCuen Awards from General Motors. She has been inducted into the Michigan Women's Hall of Fame.

Education: Ph.D. Physical Chemistry from Wayne State University.

1998

Lisa C. Klein

For breakthrough contributions in sol-gel science and engineering, particularly sol-gel applications in electrolytes, electrochromics, membranes and nanocomposites.

Achievements: Researched synthesis and processing of ceramics and glasses using the sol-gel process. Studied the conditions for forming crack-free monolithic gels, characterizing and designing microporous gels, and preparing lightweight composites using monolithic gels and polymer hybrids. Holds three patents on electrochromic coatings. Edited the first volume on the applications of this process, thus establishing the technological basis for further developments. Edited a second book on Sol-Gel Optics.

Contributions: Member and New Jersey Section President, Society of Women Engineers. Faculty advisor, Rutgers SWE Student Section. Co-editor, Journal of Sol-Gel Science and Technology, Editor, Journal of the American Ceramic Society.

Honors: Schwartzwalder-PACE Awardee. Fellow, Glass and Optical Materials Division, American Ceramic Society. SWE Distinguished New Engineer Award. Women of Achievement, Douglass College and the New Jersey Federation of Women's Clubs.

Education: B.S. in Metallurgy and a Ph.D. in Ceramics, Massachusetts Institute of Technology.

Firsts: First woman hired and tenured by the College of Engineering at Rutgers.

1997

Ilene J. Busch-Vishniac

For outstanding achievements in acoustics, transducers, and microautomation, and for significant contributions to engineering education.

Achievements: Developed novel approaches for transducer modeling and analysis to permit logical design of sensor and actuators. Led efforts on nine US patents on sensors for teleconferencing, automated blood pressure monitoring, miniaturized microphones, and optical position detection.

Contributions: Research leading to three companies' developing new products. Member and National Officer, Acoustical Society of America. Member of Faculty, University of Texas at Austin. Member, American Society of Mechanical Engineers. Member, Society of Women Engineers.

Honors: Curtis McGraw Research Award of the American Society for Engineering Education. National Science Foundation Faculty Award for Women in Science and Engineering. Lindsay Award of the Acoustical Society of America. Fellow, Acoustical Society of America. National Science Foundation Presidential Young Investigator Award. Golden Key National Honor Award for Outstanding Research at the University of Texas.

Education: Ph.D. in Mechanical Engineering from Massachusetts Institute of Technology.

1996

Barbara Liskov

In recognition of her significant contributions to the field of computer system design, in particular, the development of data abstraction, often known as "object oriented" or "modular" programming.

Achievements: Conducted research on the Venus operating system. Developed the concept of data abstraction and the CLU programming language. Conducted research on the Argus distributed programming language and operating system. Invented numerous practical distributed algorithms. Developed highly-available storage systems for use in distributed networks.

Contributions: Member, IEEE and ACM. Associate editor for the ACM Transactions on Programming Languages and Systems. Computer Science and Telecommunications Board of the National Research Council. Computer and Information Science and Engineering Advisory Committee for the National Science Foundation. Authored two books and hundreds of publications, reports, public lectures and contributions to conferences.

Honors: National Academy of Engineering, Fellow. American Academy of Arts and Sciences. Fellow, Association for Computing Machinery.

Education: Ph.D. in Computer Science, Stanford University.

1995

Manijeh Razeghi

For leadership and contributions to optoelectronic devices research and education.

Achievements: Initiated the design and implementation of epitaxial growth techniques such as metalorganic chemical vapor deposition (MOCVD) and metalorganic molecular beam epitaxy (MOMBE). Developed a number of semiconductor structures for advanced photonic and electronic devices. Pioneered the growth of (Ga,In)(As,P) based heterostructures overcoming numerous material problems. Holds 32 patents.

Contributions: Coeditor, Journal of Applied Physics A. Chair, SPIE Symposium on "Physical Concepts of Materials for Novel Optoelectronic Device Applications." Editorial board member, Semiconductor Science and Technology, The Journal of Optoelectronics, and SPIE Press.

Honors: IBM Europe Science and Technology Prize.

Education: Ph.D. in Physics, University of Paris, Ph.D. in Materials Science, University of Paris.

1994

Elsa Garmire

For breakthrough contributions in optical science and engineering, particularly in non-linear optics.

Achievements: Discovered and explained key features of stimulated light scattering and self-focusing. Provided first demonstration of many of the key components of integrated optics in semiconductors. Introduced, demonstrated and analyzed the generic class of hybrid-electrical optical bistable devices, a technology pivotal in digital optical computing. Holds nine patents.

Contributions: President of Optical Society of America. Chair, National Science Foundation Advisory Committee on Emerging Technology. Member, Air Force Science Advisory Board. Nominating Committee member and Academic Advisory Board member, National Academy of Engineering. Governing Board member, American Institute of Physics. Board member, American Physical Society.

1993

Elsa Reichmanis

For the design, synthesis, scale-up, and process engineering of new polymer resist systems useful for manufacturing integrated circuits.

Achievements: Creation, scale-up and commercialization of photoresist polymers for deep UV-resist applications, design and synthesis of radiation sensitive organosilicon polymers.

Contributions: 10 U.S. patents. NSF Panel to Survey Japanese Technology in Advanced Materials. National Research Council Committee to Survey Materials Research Opportunities and Needs for the Electronic Industry. ACS Book Advisory Committee. Plenary Lecturer, 1989 International Symposium of Polymers for Microelectronics. Active in American Chemical Society. Member, American Association for the Advancement of Science. Member,
Society of Photographic Instrumentation Engineering.

Honors: RD-100 Award for one of top 100 significant inventions. American Men and Women in Science. Who's Who in Frontiers of Science and Technology.

Education: Ph.D. in Organic Chemistry, Syracuse University.

1992

Evangelia Micheli-Tzanakou

For outstanding contributions to the understanding and modeling of visual systems with neural networks.

Achievements: Developed a set of algorithms for modeling the visual system. Extended the application of this technique to other time-complex, nervous system functions and into a variety of engineering problems in other areas such as digital signal processing, pattern recognition, and multimodality imaging.

Contributions: Editorial Board and Associate Editor, IEEE Transactions on Neural Networks. Numerous IEEE committees and offices. Science Advisory Group, Douglass Project for Rutgers Women in Math, Science and Engineering.

Honors: Fellow, IEEE. Fellow, The Academy of Medicine of New Jersey, Sigma Xi. Who's Who of American Men and Women in Science. IEEE Outstanding Advisor Award.

Education: Ph.D. in Physics, Syracuse University.

1991

Julia Weertman

For pioneering research on the failure of materials at elevated temperatures.

Achievements: Developed and experimentally confirmed the theory of grain boundary cavitation, a major high-temperature materials failure mode. Clarified the principles for tailoring composite interfaces. Pioneered materials characterization by small angle neutron scattering.

Contributions: Advisor to the National Science Foundation, U.S. Department of Energy. National Bureau of Standards and Technology, and Argonne and Oak Ridge National Laboratories. Member, The Mining, Metals and Materials Society. Member, ASM International. Member, Materials Research Society. Member, American Society for Testing and Materials.

Honors: National Academy of Engineering, Sigma Xi. Guggenheim Fellowship. Fellow, ASM International. Two Special Creativity Awards for Research, U.S. National Science Foundation. Distinguished Engineering Educator, Society of Women Engineers.

Education: D.Sc. in Physics, Carnegie Institute of Technology.

1990

Lynn Conway

For essential contributions to very large-scale integrated (VLSI) circuit and system design methodology, and for rapid propagation of innovations throughout the engineering community.

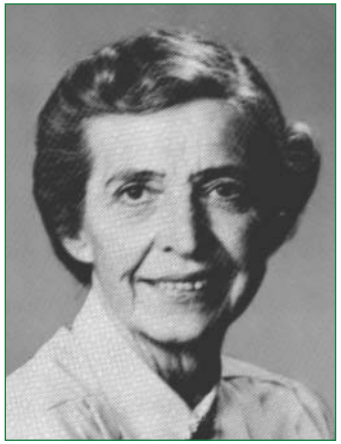
Achievements: Lynn Conway pioneered development and propagation of simplified methods for very large-scale integrated (VLSI) silicon chip design, methods that fueled Silicon Valley's chip design revolution in the 80's. She is also widely known for her invention of 'dynamic instruction scheduling', a fundamental technique in modern computer architecture.

Contributions: Co-author of the classic textbook Introduction to VLSI Systems, which revolutionized chip design education around the world. Holder of 5 U.S. patents. Editorial Board, IEEE Spectrum. U.S. Air Force Scientific Advisory Board. Board of Visitors, U.S. Air Force Academy (Pres. Appt). Air Force Science and Technology Board of the National Academies.

Honors: Election to the National Academy of Engineering. John Price Wetherill Medal, Franklin Institute. Defense Meritorious Civilian Service Award. Pender Award, University of Pennsylvania. Xerox Research Fellow. Fellow, IEEE. Electronics Magazine Achievement Award. Election to the Electronic Design Hall of Fame. Honorary Doctorate, Trinity College.

Education: M.S. in Electrical Engineering from Columbia University.

1989



Doris Kuhlmann-Wilsdorf

For pioneering and pre-eminent contributions to our understanding of the mechanical behavior of solids.

Achievements: Unraveled the principles of plastic deformation of solids using the concepts of crystalline defects. Explained the work hardening behavior of metals. Developed a model for surface deformation, as related to erosion, friction and wear, and sliding electrical contacts. Developed an innovative design of metal-fiber electrical brushes.

Honors: Fellow, American Physical Society. J. Shelton Horsley Award, Virginia Academy of Science. Two-time recipient of the Medal for Excellence in Research, Southeastern Section, American Society of Engineering Education. Heyn Medal, German Metallurgical Society.

Education: Ph.D. in Metallurgy, University of Gottingen, West Germany.

1988

Roberta Nichols

For worldwide leadership in promoting the use of alternative fuels in transportation vehicles.

Achievements: Supervised the research, design and development of engines using alternative fuels. Directed studies of material components suitable for use with alcohol fuels. Developed systems to evaluate the effectiveness of alternative fuel vehicles. Recognized internationally as an expert in the design and use of alternative fuels in transportation vehicles.

Contributions: International Organizing Committee, Alcohol Fuels Technology Symposia. Senior Member, Society of Women Engineers. Member, Society of Automotive Engineers. Member, The Combustion Institute. Co-founder of National Drag Boat Association.

Honors: Sigma Xi. Award of Excellence, Automotive Warehouse Distributors Association. Woman of the Year Award, Aerospace Corporation. Outstanding Engineer Merit Award, Institute for the Advancement of Engineering. World Who's Who of Women. American Men and Women of Science.

1987

Nance K. Dicciani

For outstanding research management leading to the creation of important new industrial products.

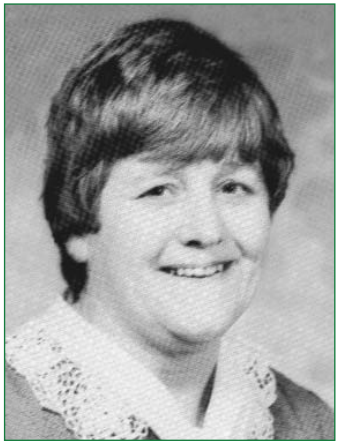
Achievements: Influenced and directed the development of technology including: new catalyst for production of benzene from coke, Air Products' first non-cryogenic product for the separation of air into nitrogen and oxygen, a new product for the recovery and purification of landfill gas.

Contributions: Chemical Engineering Advisory Board at University of Virginia. SWE Advisory Board. Women's Health Center Advisory Board.

Honors: Professional Achievement Award, Villanova University. Women of Influence in the Lehigh Valley.

Education: Ph.D. in Chemical Engineering, University of Pennsylvania. M.B.A., Business Management, Wharton School, University of Pennsylvania.

1986



Yvonne C. Brill

For important contributions in advanced auxiliary propulsion of spacecraft, and devoted service to the growing professionalism of women in engineering.

Achievements: Derived first industry standard to assess rocket propellant performance. Enabled new propulsive capabilities through innovative integration of R&D concepts. Implemented first operational electric propulsion system to keep satellites on station.

Contributions: Recognized leader in establishing women as contributors to space engineering. Executive Committee, Society of Women Engineers. Scientific Advisory Board, U.S. Air Force.

Honors: Fellow, AIAA. Fellow, Society of Women Engineers. Diamond Superwoman Award, Harper's Bazaar/DeBeers Corporation.

Education: M.S. in Chemistry from University of Southern California.

1985

Y.C.L. Susan Wu

For fundamental research in electrofluid dynamics of MHD and outstanding service as educator and administrator.

Achievements: Administered Energy Conversion R&D Programs at University of Tennessee Space Institute. Developed analytical models for MHD generator loading and performance.

Contributions: Associate Editor, AIAA Journal of Propulsion and Power. Steering Committee, Symposia on Engineering Aspects of MHD. Member, Argonne Universities Association. Review Committee on MHD.

Honors: Sigma Xi. Outstanding Educators of America Award. Who's Who of American Women.

Education: Ph.D. in Aeronautics, California Institute of Technology.

Firsts: First three-time recipient of Amelia Earhart Fellowship.

1984

Geraldine V. Cox

For significant contributions in the field of environmental management, in particular water pollution.

Achievements: Developed policy for the chemical industry in energy, toxic substances, health and safety, environmental programs, and safe transport of hazardous materials. Served as spokesperson for the chemical industry.

Contributions: Chair, Water Resources Subcommittee, American Chemical Society. President, Federation of Organizations for Professional Women. Chair and Founder, Marine Quality Committee, Water Pollution Control Federation.

Honors: White House Fellow. One of 10 Outstanding Young Women of America. American Men and Women of Science. Author of the Year, Raytheon Company.

Education: Ph.D. in Environmental Science, Drexel University.

1983

Joan B. Berkowitz

For significant contributions in the field of hazardous waste management.

Achievements: Authored handbook on alternatives to landfill in hazardous waste management. Devised plan for hazardous waste management facilities in New England. Simulated contaminant effects from transport and land disposal of hazardous waste.

Contributions: Editor, Journal of the Electrochemical Society. Committee on Environmental Improvement, American Chemical Society. Board of Directors, Bioenergy Council. Board of Directors, Children's Center of Brookline and Greater Boston.

Education: Ph.D. in Physical Chemistry from University of Illinois.

Firsts: First woman President of Electrochemical Society.

1982

Harriett B. Rigas

For significant contributions in the field of electrical engineering and computer technology.

Achievements: Enabled the automatic patching system for an analog/hybrid computer. Originated and implemented the computer engineering program at Washington State University including curriculum development and fund-raising. Served as Chair of the Electrical & Computer Engineering Department at Washington State University.

Contributions: Board Member, IEEE Educational Activities. IEEE Representative, Accreditation Board for Engineering and Technology.

Honors: Sigma Xi. Tau Beta Pi.

Education: Ph.D. in Electrical Engineering from University of Kansas.

Deceased 1989.

1981

Thelma Estrin

In recognition of her outstanding contributions to the field of biomedical engineering, in particular neurophysiological research through application of computer science.

Achievements: Pioneered the application of engineering to medicine. Established first integrated electronics and computer laboratory for neuroscientists. Built the first computer in the Middle East in 1954, as part of an engineering team.

Contributions: President, Biomedical Engineering Society. Executive Vice President, IEEE.

Honors: Fellow, IEEE and AAAS for contributions to computer science and neuroscience.

Education: Ph.D. in Electrical Engineering from University of Wisconsin.

Firsts: First woman to serve on Aerospace Corporation's Board of Trustees. First woman to be certified as Clinical Engineer.

1980

Carolyn M. Preece

For significant contributions to research and education in materials science and metallurgy.

Achievements: Initiated research programs on cavitation erosion of metals and alloys for National Science Foundation and Office of Naval Research. Studied surface modification of materials by ion implantation and laser processing for Bell Labs.

Honors: Churchill Overseas Fellow, Cambridge University. Guggenheim Fellow, Cambridge University. Robert Lansing Hardy Gold Medal, American Institute of Metallurgical Engineers.

Education: Ph.D. in Metallurgy from Imperial College, London University.

1979

Jessie G. Cambra

For outstanding contributions to the planning, design and construction of major public works.

Achievements: Managed Alameda County's Road Department with a $12 million budget, 200 employees, and 547 miles of county roads serving a population of 7,000,000 people spread over 821 square miles.

Honors: Samuel A. Greeley Award for sustained public service, American Public Works Association.

Education: B.S. in Civil Engineering from University of California, Berkeley.

Firsts: First woman graduate in engineering at University of California, Berkeley. First woman licensed by examination in California. First woman Director of American Public Works Association. First woman member of County Engineers Association of California.

1978

Giuliana Cavaglieri Tesoro

For significant contributions to the science and technology of polymers, fibers, and fabrics in textile and chemical engineering.

Achievements: Developed anti-static chemical for synthetic fibers. Pioneered improved permanent press properties for textiles. Developed flame-resistant fibers. Scaled pilot plant results to full commercial operation. Holds over 100 patents related to organic compounds and textile processing.

Contributions: Editorial Board, Textile Research Journal. Committee on Fire Safety of Polymeric Materials, National Academy of Sciences.

Honors: American Dyestuff Reporter Award. Olney Medal, Association of Textile Chemists and Colorists.

Education: Ph.D. in Organic Chemistry from Yale University.

1977

Mildred Spiewak Dresselhaus

For significant contributions in teaching and research in solid state electronics and materials engineering.

Achievements: Established high field magneto-optic spectroscopy as a tool for study of electronic structure of semi-metals. Served as Director of the Center for Materials Science and Engineering at MIT.

Contributions: Solid State Sciences Committee, National Research Council. Executive Committee, Assembly of Mathematical and Physical Sciences, National Research Council.

Honors: Hunter College Hall of Fame. Radcliffe Alumnae Medal. National Academy of Engineering. American Academy of Arts and Sciences. Fellow, American Physical Society. Fellow, IEEE.

Education: Ph.D. in Physics from University of Chicago.

1976

Ada I. Pressman

In recognition of her significant contributions in the field of power control systems engineering.

Achievements: Pioneered in combustion controls and burner management for supercritical power plants. Directed the design of control systems for 900 MW nuclear plants. Managed 18 design teams for over 20 power-generating plants throughout the world.

Contributions: Executive Committee, Society of Women Engineers. Vice President, Instrument Society of America.

Honors: Distinguished Alumnae Award, Ohio State University. College of Fellows, Institute for Advancement of Engineering. Outstanding Engineer Merit Award. YWCA TWIN Award.

Education: M.B.A. from Golden State University, with a B.S. in Mechanical Engineering from Ohio State University.

Deceased 2003.

1975

Sheila E. Widnall

In recognition of her significant contributions to the fluid mechanics of low-speed aircraft and hydrofoils.

Achievements: Studied noise of VSTOL aircraft in forward flight. Researched aircraft wake turbulence to expand runway capacity. Conceived and implemented MIT's wind tunnel facility.

Contributions: Advisory Committees, National Research Council and National Science Foundation. Commission on MIT Education. Technical Committee on Aeroacoustics, AIAA.

Honors: Tau Beta Pi. Lawrence Sperry Award, AIAA.

Education: Sc.D. in Aeronautics from Massachusetts Institute of Technology.

Firsts: First woman Ford Post-doctoral Fellow at MIT.

1974

Barbara Crawford Johnson

In recognition of her significant engineering contributions in support of manned spaceflight programs.

Achievements: Supervised design and performance analysis for re-entry phase of Apollo space missions assuring pinpoint landings at optimum rates of deceleration. Managed Systems Engineering for mission-related activities on lunar landings, Skylab, Apollo-Soyuz, and Shuttle/Orbiter design and development.

Honors: Medallion awarded by Christopher Craft of NASA. Distinguished Alumni Merit Award, University of Illinois. Dick Brower Award, American Astronautical Society.

Education: B.S. in Engineering from University of Illinois at Champaign-Urbana.

Firsts: First woman to earn BSE from University of Illinois Champaign-Urbana.

1973

Irene Carswell Peden

In recognition of her significant contributions in the fields of radio wave propagation research and electrical engineering education.

Achievements: Determined bulk electromagnetic properties of Antarctic ice 7,000 feet thick using surface data (3-30kHz). Developed analytical model for interpreting data from a probe lowered into deep ice, yielding first direct measurements of VLF dielectric and loss properties.

Contributions: Advisory Committee, Stanford School of Engineering. National Drug Advisory Committee, Federal Drug Administration. Education Committee, Governor's Commission on the Status of Women

Honors: National Award of Achievement, Alpha Chi Omega. Women of Achievement, Theta Sigma Phi.

Education: Ph.D. in Electrical Engineering from Stanford University.

1972

Nancy D. Fitzroy

In recognition of her significant contributions to the fields of heat transfer, fluid flow, properties of materials and thermal engineering.

Achievements: Invented a thermal chip to measure temperature in integrated circuits. Invented an advanced thermal protection system for hardened radar antennas used in U.S. early warning system. Authored General Electric's Heat Transfer and Fluid Flow Data Book.

Contributions: Advisory Committee for Engineering, National Science Foundation. Committee on Manpower, National Academy of Engineering. Charter Member, Rensselaer Polytechnic Institute Council.

Honors: Engineers of Distinction. American Men and Women of Science. Who's Who of American Women.

Education: B.S. in Chemical Engineering from Rensselaer Polytechnic Institute.

1971

Alva T. Matthews

In recognition of her significant contributions in the fields of engineering mechanics and applied mathematics in the area of shock analysis, elasticity and structural design.

Achievements: Influenced the development of models for wave propagation in soil and rocks. Advanced the solutions of acoustic fluid-structure interaction problems. Pioneered pressure wave propagation in certain inelastic media.

Contributions: Executive Committee, Society of Women Engineers. Board of Directors, Engineers Joint Council.

Honors: Sigma Xi. Tau Beta Pi.

Education: Ph.D. in Engineering Mechanics from Columbia University.

1970

Irmgard Flügge-Lotz

For her significant contributions to the field of fluid mechanics, in particular, wing theory and boundary layer theory.

Achievements: Accelerated modern aircraft design with her computation of wing lift distributions. Researched wing and boundary layer theories, discontinuous automatic control, optimal control, and satellite control. Served as scientific advisor to French and German research institutes.

Contributions: Senator, DVL (German counterpart of NASA). Associate Fellow, AIAA. Advisory Board, International Journal on Non-Linear Mechanics.

Education: Ph.D. in Engineering from Technical University of Hanover.

Firsts: First woman to hold full professional rank in the engineering college at Stanford University.

Deceased 1974.

1969

Alice Stoll

In recognition of her significant contributions in the development of fire-resistant fibers and fabrics, based on her pioneering studies of heat transfer by flame contact.

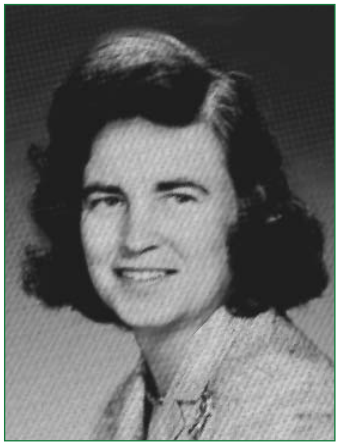
Achievements: Revolutionized approach to protection against skin burns from flame contact and thermal radiation. Invented an apparatus to analyze heat transfer by flame contact. Demonstrated the superiority of fire-resistant fabrics, leading to the acceptance of Nomex for military clothing.

Contributions: Committee on Heat Transfer in Biotechnology, ASME. Fellow, American Society for the Advancement of Science. Charter Member and Associate Fellow, Biophysical Society.

Honors: Civil Servant of the Year.

Education: M.S. in Physiology and Biophysics from Cornell University.

1968



Isabella L. Karle

In recognition of her significant contributions to the development of unique procedures for crystal structure analysis.

Achievements: Developed the electron diffraction apparatus used worldwide. Enabled the synthesis of rare natural products through her methods to characterize complex molecular formulas. Developed new techniques to analyze equal-atom structures.

Honors: Superior Civilian Award, Navy. Applied Science Award, Research Society of America. Featured at the Center for History of Physics. Fellow, Washington Academy of Sciences.

Education: Ph.D. in Physical Chemistry from University of Michigan

Firsts: First woman faculty member, Chemistry Department at University of Michigan.

1967

Marguerite M. Rogers

For her outstanding contributions to the field of air-delivered tactical weapons.

Achievements: Participated on the team that spearheaded the change of emphasis within the Navy from nuclear weapons to improved conventional ordinance. Managed the Air-Surface Weapons Division, in charge of 150 civil servants and a budget of $100 million. Provided leadership and technical guidance for the famous Eye Series of weapons used in Viet Nam.

Honors: Superior Civilian Service Award, Naval Air Systems Command. L.T.E. Thompson Award for technical leadership and effectiveness in management. American Men of Science. Leaders in American Science. Who's Who of American Women.

Education: Ph.D. in physics from Rice University.

Deceased 1989.

1966

Dorothy Martin Simon

In recognition of her significant contributions to space engineering, especially in the fields of combustion and ablative coatings.

Achievements: Isolated an isotope of calcium using kinetic theory. Developed a process to manufacture the precursor of Orlon. Validated a theory of quenching for combustion.

Contributions: Nationally recognized speaker on the special problems of women in technical careers and the challenge of space. Initiated the largest Job Corps Training Center for girls at Poland Springs, Maine.

Honors: Rockefeller Service Award, Princeton University. American Men of Science. Who's Who in the East. Who's Who of American Women.

Education: Ph.D. in Chemistry from University of Illinois.

1965

Martha J. B. Thomas

In recognition of her significant contributions to the science of chemistry, as an engineer, educator, and administrator, while fulfilling her duties as a wife and mother.

Achievements: Developed Sylvania's natural white phosphor for fluorescent lamps to impart daylight hues. Developed a phosphor that raised mercury lamp brightness by 10%. Established two pilot plants for the preparation of phosphors.

Contributions: Secretary, Society of Woman Engineers.

Honors: National Research Fellow, Boston University. American Men of Science. Who's Who of American Women. Who's Who in Engineering. The World Who's Who of Women.

Education: Ph.D. in Physical Chemistry from Boston University

1964

Grace Murray Hopper

In recognition of her significant contributions to the burgeoning computer industry as an engineering manager and originator of automatic programming systems.

Achievements: Wrote programs for the first automatically sequenced digital computer (forerunner of the electronic computer). Conceived a compiling system that enables the computer to write its own program from key instructions. Designed the first English language compiler system, later incorporated into today's COBOL.

Honors: Phi Beta Kappa. Sigma Xi. Naval Ordnance Development Award. Fellow, Institute of Radio Engineers. Vassar College Fellow, Yale University. Numerous honorary doctorates.

Education: Ph.D. in Mathematics from Yale University.

Deceased 1992.

1963

Beatrice Hicks

In recognition of her significant contributions to the theoretical study and analysis of sensing devices under extreme environmental conditions, and her substantial achievements in international technical understanding, professional guidance and engineering education.

Achievements: Pioneered in the design, development, and manufacture of pressure and gas density controls for aircraft. Invented the gas density switch, a key component in systems using artificial atmospheres.

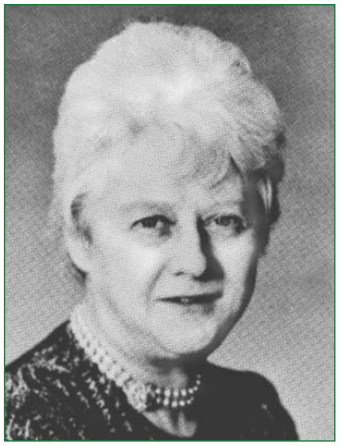
Contributions: NSPE representative for "Project Ambassador," a fact-finding goodwill tour of South America. Founder, Society of Women Engineers. President, Society of Women Engineers. Trustee, Society of Women Engineers.

Honors: Honorary Sc.D., Hobart and William Smith.

Education: M.S. in Physics from Stevens Institute of Technology.

Deceased 1979.

1962



Laurence Delisle Pellier

In recognition of her significant contributions to the field of metallurgy.

Achievements: Researched construction metals for chemical plants, particularly stainless steels and titanium alloys. Pioneered in the application of electron microscopy to metallurgy. Holds a patent for gold plating surgical needles.

Contributions: Subcommittee on Electron Microstructure of Metals, American Society of Testing and Materials. Charter Member, Society of Women Engineers.

Education: M.S. in Metallurgy from Stevens Institute of Technology.

1961

Laurel van der Wal

In recognition of her significant contributions to the developing field of space biology.

Achievements: Originated project Mia in which mice hitchhiked rides in U.S. rockets, providing data on physiological effects of space flight. Researched weightlessness phenomena, escape and recovery systems, and design of manned spacecraft.

Contributions: Board of Airport Commissioners, Los Angeles. Chair, National Education Committee, American Rocket Society.

Honors: Fellowship in Aeronautics, National Research Council. Woman of the Year for Science, Los Angeles Times.

Firsts: First SWE Award recipient to work as a professional model, art instructor, deputy sheriff, and gambling casino dealer.

1960

Esther M. Conwell

In recognition of her significant contributions as a research physicist in the field of solid state research.

Achievements: Collaborated on the theory behind conduction of electricity in semi-conductor materials used in transistors. Contributed to the understanding of carrier mobility and carrier conduction in materials. Directed solid state physics at Sylvania/GTE.

Honors: Phi Beta Kappa. Fellow, American Physical Society. American Men of Science. Pi Mu Epsilon. Phi Beta Kappa. Sigma Xi.

Education: Ph.D. in Physics from University of Chicago.

1959

Désirée le Beau

In recognition of her significant contributions to the field of rubber reclamation.

Achievements: Developed a rubber tie pad for railroads. Directed Midwest Rubber Reclaiming Co.'s Research Department during WWII, when synthetic rubber processes were desperately needed. Holds several patents in reclaiming processes for synthetic rubber.

Honors: Woman of Achievement, St. Louis. Currie Lecturer, Pennsylvania State College. Sigma Xi. Iota Sigma Pi. Fellow, American Institute of Chemists.

Education: Ph.D. in Chemistry from University of Graz (Austria).

Firsts: First woman chair of the division of Colloid Chemistry, American Chemical Society.

1958

Mabel M. Rockwell

In recognition of her significant contributions to the field of electrical control systems.

Achievements: Influenced the use of special instrumentation for underwater propulsion systems and submarine guidance. Designed transmission and distribution systems for the San Joaquin Valley District in California. Originated, organized, and directed scientific developments of production processes for Lockheed Aircraft Corporation. Invented the Serjdetour telephone protector. Developed a shipboard missile launcher.

Education: B.S. in Science, Teaching and Mathematics from Massachusetts Institute of Technology.

Deceased 1979.

1957

Rebecca H. Sparling

In recognition of her significant contributions to high temperature metallurgy and nondestructive testing of metals.

Achievements: Expanded engineering knowledge in the use of materials for aerospace structures. Prepared the first book on malleable iron castings to be written in America for 20 years. Directed the design and castings of a magnesium wing 16 feet long, 5 feet wide, and only 1/2 to 1/4 inch thick with extremely close tolerances.

Honors: Who's Who in the West.

Education: M.S. in Physical Chemistry from Vanderbilt University.

Firsts: One of the first women to become registered as a professional engineer in California.

Deceased 1996.

1956

Elise F. Harmon

In recognition of her significant contributions to the area of component and circuit miniaturization.

Achievements: Holds numerous patents including a hot stamp method of infusing silver conductors on polymerized materials, a mechanism for stretching fabric to obtain uniform tautness, and an inject printing machine for film resistors. Improved high altitude carbon brush performance, enabling American airplanes to maintain superiority during WWII. Researched action of grease and lubricants in high speed bearings. Established the pilot plant procedures for an entirely new method of printed circuitry.

Honors: Who's Who in Engineering, Who's Who in the West. Who's Who of American Women.

Education: B.S. in Chemistry from University of Texas.

Deceased 1985.

1955

Margaret H. Hutchinson

In recognition of her significant contributions to the field of chemical engineering.

Achievements: Led research and development projects for improved fractionator tray design. Designed units to recover and purify acetic aid, sulfur dioxide, alcohol, and aviation gasoline. Designed processes for chemical, petrochemical, and petroleum installations including the first commercial penicillin plant.

Education: Sc.D. in Chemical Engineering from Massachusetts Institute of Technology.

Firsts: First woman elected to American Institute of Chemical Engineers. First woman to receive Sc.D. from MIT in Chemical Engineering.

1954

Edith Clarke

In recognition of her many original contributions to stability theory and circuit analysis.

Achievements: Developed the calculator and 60 cycle system charts for transmission line performance widely used by engineers today. Created the circuit analysis method using components to study circuit unbalances. Holds many patents in power system analysis.

Honors: Phi Beta Kappa. Sigma Xi. Tau Beta Pi. Eta Kappa Nu.

Education: M.S. in Electrical Engineering from Massachusetts Institute of Technology.

Firsts: First woman elected to Fellow, American Institute of Electrical Engineers.

Deceased 1959.

1953

Elsie Gregory MacGill

In recognition of her meritorious contributions to aeronautical engineering.

Achievements: Transformed a railway boxcar manufacturer into an aircraft factory during World War II, producing 23 Hawker Hurricane Fighters per week. Engineered production of the Curtiss Helldiver for the U.S. Navy.

Contributions: An outspoken advocate of equal pay for equal work before the concept became popular.

Honors: Fellow, Royal Society of Arts. Associate Fellow, Royal Aeronautical Society.

Education: M.S. in Aeronautical Engineering from University of Michigan.

Firsts: First woman to receive MSAE from University of Michigan. First woman to become Chief Aeronautical Engineer with a company in North America. First woman to design, build, and test her own airplane.

Deceased 1980.

1952

Maria Telkes

In recognition of her meritorious contributions to the utilization of solar energy.

Achievements: Devised a portable distilling system using solar energy to convert sea water to drinking water on life rafts. Designed a heating system based on the latent heat of fusion of salt-hydrates for the first solar home at Dover, Massachusetts. Designed, built and tested solar thermoelectric generators for terrestrial and space uses. Researched and developed solar ovens and solar heaters suing air and liquid heat exchangers. Holds numerous patents for solar devices.

Contributions: Has long been an advocate of solar energy over nuclear energy.

Honors: Sigma Xi.

Education: Ph.D. in Physical Chemistry from University of Budapest.

Deceased 1996.

Nominations for the Society of Women Engineers Achievement Award are accepted from Society members or from non-members familiar with the field of engineering. The Award is given annually to a woman who has made outstanding contributions in the engineering field. She does not need to be member of the Society. She should be a person of status and should have progressed to a high ranking position in her engineering career. The main criteria for selection are based on the significance of the achievements cited on her behalf, with sustained contributions in engineering design, production, management, education or research.

To be eligible for the Award, the nominee must be a woman who is actively engaged in engineering and meets one of the following qualifications:

- Has an engineering degree from a recognized college or university and not less than 6 years of increasingly important engineering experience.
- Has a degree in a science related to engineering from a recognized college or university and not less than 6 years of increasingly important engineering experience.
- Has not less than 11 years of increasingly important engineering experience indicating outstanding competency and achievement.

The Award consists of:

- Life membership in the Society of Women Engineers
- Award Pin, the emblem of the Society surrounded by a wreath
- Plaque, engraved with the citation
- An engraved Steuben bowl (since 1981)

Requests for information may be directed to:
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Phone: 1(312) 596-5223
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www.swe.org