

# NEWS

NATIONAL ACADEMY OF SCIENCES  
NATIONAL ACADEMY OF ENGINEERING  
INSTITUTE OF MEDICINE  
NATIONAL RESEARCH COUNCIL

F R O M T H E N A T I O N A L A C A D E M I E S

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National Academy of Engineering

## **FOR IMMEDIATE RELEASE**

### **NATIONAL ACADEMY OF ENGINEERING ELECTS 68 MEMBERS AND NINE FOREIGN ASSOCIATES**

WASHINGTON — The National Academy of Engineering (NAE) has elected 68 new members and nine foreign associates, announced NAE President Charles M. Vest today. This brings the total U.S. membership to 2,267 and the number of foreign associates to 196.

Election to the National Academy of Engineering is among the highest professional distinctions accorded to an engineer. Academy membership honors those who have made outstanding contributions to "engineering research, practice, or education, including, where appropriate, significant contributions to the engineering literature," and to the "pioneering of new and developing fields of technology, making major advancements in traditional fields of engineering, or developing/implementing innovative approaches to engineering education."

A list of newly elected members and foreign associates follows, with their primary affiliations at the time of election and a brief statement of their principal engineering accomplishments.

#### **New Members**

**Joseph A. "Bud" Ahearn**, retired senior vice president, CH2M Hill Ltd., Englewood, Colo. For contributions to improving the environment and transportation infrastructure through engineering and construction projects.

**Ilhan A. Aksay**, professor, department of chemical engineering, Princeton University, Princeton, N.J. For advances in ceramic processing methods, biologically inspired materials processing, and field-induced layering of colloidal crystals.

**Montgomery M. Alger**, vice president of research and development and chief technology officer, Air Products and Chemicals Inc., Allentown, Pa. For the innovative fusion of business and process engineering models to advance engineering applications and analysis.

**Lisa Alvarez-Cohen**, Fred and Claire Sauer Professor and chair of civil and environmental engineering, University of California, Berkeley. For discovery and application of novel microorganisms and biochemical pathways for microbial degradation of environmental contaminants.

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**John David Anderson Jr.**, curator of aerodynamics, National Air and Space Museum, Smithsonian Institution, Washington, D.C and professor emeritus, aerospace engineering, Clark School of Engineering, University Maryland, College Park. For aerospace engineering and history textbooks and for contributions to hypersonic gas dynamics.

**Daniel N. Baker**, director, Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder. For leadership in studies, measurements, and predictive tools for the Earth's radiation environment and its impact on U.S. security.

**Cynthia Barnhart**, associate dean for academic affairs and professor of civil and environmental engineering and engineering systems, Massachusetts Institute of Technology, Cambridge. For professional leadership, and for contributions to optimization and transportation models, algorithms, and applications.

**Rebecca M. Bergman**, vice president, cardiac rhythm disease management, new therapies and diagnostics, Medtronic Inc., Mounds View, Minn. For technical leadership in the development of interventional vascular devices and drug delivery systems.

**Jacobo Bielak**, university professor of civil and environmental engineering and director, Computational Seismology Lab, Carnegie Mellon University, Pittsburgh. For advancing knowledge and methods in earthquake engineering and in regional-scale seismic motion simulation.

**Clyde Leonard Briant**, Otis E. Randall University Professor and vice president for research, Brown University, Providence, R.I. For elucidation of microstructural effects on high-temperature mechanical performance of metals.

**Andrei Z. Broder**, fellow and vice president, search and computational advertising, Yahoo! Research, Sunnyvale, Calif. For contributions to the science and engineering of the World Wide Web.

**James William Burns**, senior vice president and head of drug and biomaterial research and development, Genzyme Corp., Waltham, Mass. For pioneering the development and commercialization of hyaluronan-based products and therapeutics to prevent surgical adhesions.

**Gang Chen**, Warren and Towneley Rohsenow Professor, department of mechanical engineering, Massachusetts Institute of Technology, Cambridge. For contributions to heat transfer at the nanoscale and to thermoelectric energy conversion technology.

**Brian Clark**, Schlumberger Fellow, Schlumberger Technology Center, Schlumberger Companies, Sugar Land, Texas. For contributions and leadership in development and worldwide implementation of measurement-while-drilling technology.

**Robert E. Cohen**, St. Laurent Professor of Chemical Engineering, Massachusetts Institute of Technology, Cambridge. For research on polymer morphology and surfaces, commercial products and processes, successful entrepreneurship, and novel educational programs.

**John P. Connolly**, senior technical advisor, Anchor QEA LLC, Montvale, N.J. For development of integrated water-quality models used for remediation and management planning for large, contaminated water bodies.

**Martin Cooper**, executive chairman and co-founder, ArrayComm Inc., Del Mar, Calif. For leadership in the creation and deployment of the cellular portable handheld telephone.

**Michael T. Duke**, president and chief executive officer, Wal-Mart Stores Inc., Bentonville, Ark. For leadership and contributions to the design and implementation of innovative logistics and retail technologies.

**Heinz Erzberger**, Ames Fellow (retired), NASA Ames Research Center, Moffett Field, Calif. For automation of air traffic management systems that increases capacity and reduces delays and fuel consumption.

**Richard C. Flagan**, executive officer of chemical engineering, Irma and Ross McCollum-William H. Corcoran Professor of Chemical Engineering, and professor of environmental science and engineering, California Institute of Technology, Pasadena. For leadership in invention, measurement, production, and technology of aerosols.

**Paul G. Gaffney II**, vice admiral, U.S. Navy (retired); and president, Monmouth University, West Long Branch, N.J. For technical leadership in naval research and development and its impact on U.S. defense, ocean policy, and the Arctic.

**Arthur Gelb**, president, Four Sigma Corp.; and co-founder, retired chairman, and chief executive officer, TASC (The Analytic Sciences Corp.), Belmont, Mass. For leadership in applying Kalman filtering techniques to the solution of critical national aerospace problems.

**Maryellen Giger**, faculty director, Imaging Research Institute, department of radiology, University of Chicago Medical Center, Chicago. For contributions to digital signal analysis for improved cancer detection and treatment, and for innovations in interdisciplinary training.

**C. Randy Giles**, director, optical subsystems and advanced photonics research department, Bell Labs, Alcatel-Lucent, Holmdel, N.J. For contributions to advanced lightwave communication networks including erbium-doped fiber amplifiers, fiber Bragg grating-based subsystems, and MEMs crossconnects.

**Irene Greif**, IBM Fellow and director, collaborative user experience, IBM Thomas J. Watson Research Center, Cambridge, Mass. For founding the field of Computer-Supported Cooperative Work, and for leading research teams to shape and commercialize the field.

**William D. Gropp**, Paul and Cynthia Saylor Professor of Computer Science, University of Illinois, Urbana-Champaign. For contributions to numerical software in the area of linear algebra and high-performance parallel and distributed computation.

**Laura M. Haas**, IBM Distinguished Engineer and director of computer science, IBM Almaden Research Center, San Jose, Calif. For innovations in the design and implementation of systems for information integration.

**Eugene E. Haller**, professor of materials science and Liao-Cho Innovation Endowed Chair, department of materials science and engineering, University of California, Berkeley. For improvements in semiconductor performance through contributions to synthesis of ultrapure and doped crystals.

**Jeffrey Alan Hubbell**, director, Institute for Biomedical Engineering, and professor of materials science, Laboratory for Regenerative Medicine and Pharmacobiology, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland. For contributions to the science, engineering, and technology of bioactive materials for the benefit of patients.

**Michael R. Johnson**, rear admiral, U.S. Navy (retired); and associate vice chancellor for facilities management, University of Arkansas, Fayetteville. For leadership and achievements in U.S. Naval construction management and projects throughout the world.

**Michael I. Jordan**, Pehong Chen Distinguished Professor, department of electrical engineering and computer science and department of statistics, University of California, Berkeley. For contributions to the foundations and applications of machine learning.

**Brewster Kahle**, digital librarian, director, and co-founder, Internet Archive, San Francisco. For archiving and making available all forms of digital information.

**Eric W. Kaler**, provost and senior vice president for academic affairs, Stony Brook University, Stony Brook, N.Y. For elucidation of structure-function relationships in surfactant systems that has led to novel formulations of complex, self-assembled media.

**Abraham E. Karem**, president and founder, Karem Aircraft Inc., Lake Forest, Calif. For development of long-endurance unmanned aerial vehicles and variable rotor speed VTOL aircraft systems.

**Jay D. Keasling**, Hubbard Howe Jr. Distinguished Professor of Biochemical Engineering, University of California, Berkeley; and chief executive officer and vice president of fuels synthesis, Joint BioEnergy Institute, Emeryville, Calif. For developing synthetic biology tools to engineer the antimalarial drug artemisinin.

**Jon Khachaturian**, founder, president, and chief executive officer, Versabar, Houston. For developing innovative, safe, reusable, and economical heavy lifting systems to advance the international marine industry.

**Thomas F. Kuech**, Milton J. and A. Maude Shoemaker Professor and past chair, department of chemical and biological engineering, University of Wisconsin, Madison. For contributions to chemical vapor deposition of compound semiconductors.

**Derrick M. Kuzak**, group vice president, global product development, Ford Motor Co., Dearborn, Mich. For leadership in the design and development of automotive vehicles.

**Einar V. Larsen**, director for systems engineering, GE Energy, Schenectady, N.Y. For the invention and application of flexible AC transmission systems devices leading to enhanced performance of the electric power grid.

**Hau L. Lee**, Thoma Professor of Operations, Information, and Technology, Graduate School of Business, Stanford University, Stanford, Calif. For contributions demonstrating the impact of information-sharing on supply chain design and management.

**Anthony Leonard**, Theodore von Kármán Professor of Aeronautics Emeritus, California Institute of Technology, Pasadena. For contributions to simulation of turbulence, new vortex methods of flow simulation, and understanding of flow-induced vibration.

**Dennis P. Lettenmaier**, Robert and Irene Sylvester Professor of Civil and Environmental Engineering, University of Washington, Seattle. For contributions to hydrologic modeling for stream water quality and hydro-climate trends and models for improved water management.

**Robert A. Lindeman**, retired vice president and chief engineer for intelligence systems, Northrop Grumman Mission Systems, Castle Rock, Colo. For contributions to U.S. signals intelligence processing, algorithms and architecture, and implementation of innovative near real-time systems operations.

**John O. Marsden**, president, John O. Marsden LLC, Phoenix. For contributions to the technology of processing copper and gold ores.

**David A.B. Miller**, W.M. Keck Foundation Professor of Electrical Engineering, and professor of applied physics, Ginzton Laboratory, Stanford University, Stanford, Calif. For contributions to the physics and application of semiconductor nanostructures, including the discovery of the Quantum Confined Stark Effect.

**Tom M. Mitchell**, E. Fredkin University Professor and chair, machine learning department, School of Computer Science, Carnegie Mellon University, Pittsburgh. For pioneering contributions and leadership in the methods and applications of machine learning.

**David J. Mooney**, dean for chemical/biological sciences and engineering, and Robert P. Pinkas Family Professor of Bioengineering, School of Engineering and Applied Sciences, Harvard

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University, Cambridge, Mass. For contributions to the fields of tissue engineering and regeneration.

**David L. Morse**, senior vice president and director of corporate research, Corning Inc., Corning, N.Y. For contributions to photochromic materials and leadership in fiber-optic technology.

**Ali Mosleh**, professor of mechanical engineering, department of mechanical engineering, University of Maryland, College Park. For contributions to the development of Bayesian methods and computational tools in probabilistic risk assessment and reliability engineering.

**William New Jr.**, principal, The Novent Group, Palo Alto, Calif. For developing applications of pulse oximetry technology to clinical problems of blood oxygen monitoring, and for innovations in neonatal audiology.

**Paul D. Nielsen**, chief executive officer and director, Software Engineering Institute, Carnegie Mellon University, Pittsburgh. For leadership of the systems engineering and design of advanced national satellite programs, including restructuring and upgrades of MILSTAR.

**Gregory Hammond Olsen**, principal, GHO Ventures, Princeton, N.J. For research and commercialization of optical components for fiber communications and national defense.

**Gregory B. Olson**, Wilson-Cook Chaired Professor in Engineering Design, department of materials science and engineering, Northwestern University, Evanston, Ill. For contributions to research, development, implementation, and teaching of science-based design of materials.

**Thomas W. Parks**, professor, School of Electrical and Computer Engineering, Cornell University, Ithaca, N.Y. For contributions to digital filter design, fast computation of Fourier transforms, and education.

**Larry L. Peterson**, Robert E. Kahn Professor of Computer Science, department of computer science, Princeton University, Princeton, N.J. For contributions to the design, implementation, and deployment of networked software systems.

**Roderic I. Pettigrew**, director, National Institute of Biomedical Imaging and Bioengineering, National Institutes of Health, Bethesda, Md. For the use of MRI in human blood-flow studies and leading advancements in bioengineering research and education as the initial director of NIBIB.

**George F. Pinder**, director, Research Center for Groundwater Remediation Design and professor of civil and environmental engineering and of mathematics, University of Vermont, Burlington. For leadership in groundwater modeling applied to diverse problems in water resources.

**Mark Richard Pinto**, executive vice president and chief technical officer, Applied Materials Inc., Santa Clara, Calif. For contributions to modeling and manufacturing technologies for semiconductor devices.

**Stephen B. Pope**, Sibley College Professor of Engineering, Sibley School of Mechanical and Aerospace Engineering, Cornell University, Ithaca, N.Y. For contributions to the modeling of turbulent flow, including the development of probability distribution function methodologies for turbulent combustion.

**William R. Pulleyblank**, vice president, Center for Business Optimization, IBM Business Consulting Services, Somers, N.Y. For contributions to the theory and methods of optimization and leadership in their application to business problems.

**Arthur H. Rosenfeld**, commissioner, California Energy Commission, Sacramento. For leadership in energy efficiency research, development, and technology deployment through the development of appliance and building standards and public policy.

**Richard C. Scherrer**, retired aircraft design consultant, Port Townsend, Wash. For his pioneering work on revolutionary aircraft designs with extremely low radar cross sections that led to the F117A stealth fighter.

**Ben Shneiderman**, professor of computer science, department of computer science, University of Maryland, College Park. For research, software development, and scholarly texts concerning human-computer interaction and information visualization.

**John C. Wall**, vice president and chief technical officer, Cummins Inc., Columbus, Ind. For leadership and management of research, design, development, and production of low-emission, fuel-efficient heavy-duty diesel engines.

**Mark N. Wegman**, IBM Fellow and head of computer science, IBM Thomas J. Watson Research Center, Hawthorne, N.Y. For contributions to computer algorithms and compiler optimization that have influenced many areas of computer science theory and practice.

**Andrew J. Whittle**, head, department of civil and environmental engineering and SMART Research Professor, Massachusetts Institute of Technology, Cambridge. For development of soil models and numerical analyses that advance the design of braced excavations and offshore structures.

**Alan S. Willsky**, Edwin S. Webster Professor of Electrical Engineering and Computer Science and co-director, Laboratory for Information and Decision Systems, Massachusetts Institute of Technology, Cambridge. For contributions to model-based signal processing and statistical inference.

**Xiang Zhang**, Chancellor's Professor, Ernest S. Kuh Endowed Chair Professor, and director, NSF Nanoscale Science and Engineering Center, department of mechanical engineering, University of California, Berkeley. For the pioneering contributions in metamaterials and creation of the first optical superlens with resolutions beyond the fundamental diffraction limit.

#### **New Foreign Associates**

**José M. Aguilera**, professor, department of chemical engineering and bioprocesses, Pontificia Universidad Católica de Chile, Santiago. For advancing food material technology and the understanding of structure functions in foods.

**Edward J. Davison**, University Professor Emeritus of Electrical and Computer Engineering, University of Toronto, Toronto. For contributions to control system methodology for model reduction, robust servomechanisms and decentralized control.

**L.K. Doraiswamy**, Anson Marston Distinguished Professor Emeritus, department of chemical and biological engineering, Iowa State University, Ames. For outstanding leadership in the development of the Indian chemical industry and contributions to organic synthesis engineering, heterogeneous reactions and reactors.

**Kenji Ishihara**, professor of research and development initiative, department of civil engineering, Chuo University, Tokyo. For advancing understanding of the fundamental behavior of sand during earthquakes and its application to practice.

**Danie G. Krige**, independent consultant, Florida Hills, South Africa. For development of statistical methods and their application to resource valuation.

**Sang Yup Lee**, dean, College of Life Science and Bioengineering, and Distinguished Professor and LG Chem Chair Professor, department of chemical and biomolecular engineering, KAIST, Daejeon, Republic of South Korea. For leadership in bacterial biotechnology and metabolic engineering, including development of fermentation processes for biodegradable polymers and organic acids.

**N.R. Narayana Murthy**, chairman of the board and chief mentor, Infosys Technologies Ltd., Bangalore, India. For contributions to the development of global information technology services.

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**Jens Nielsen**, professor in systems biology, department of chemical and biological engineering, Chalmers University of Technology, Göteborg, Sweden. For contributions to the development of fungal biotechnology for pharmaceutical intermediates and neutraceuticals.

**Jun-ichi Nishizawa**, president emeritus, Tokyo Metropolitan University, Tokyo. For contributions to the Static Induction Devices, dislocation-free semiconductor processing, and optical device technologies.

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