



NATIONAL ACADEMY OF ENGINEERING
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National Academy of Engineering Elects 67 Members and 12 Foreign Members

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Washington , DC, February 5, 2015 – The National Academy of Engineering (NAE) has elected 67 new members and 12 foreign members, announced NAE President C.D. (Dan) Mote Jr. today. This brings the total U.S. membership to 2,263 and the number of foreign members to 221.

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

New Members

Atwater Jr., Harry A., Howard Hughes Professor of Applied Physics and Materials Science, California Institute of Technology, Pasadena. For contributions to plasmonics.

Balakrishnan, Hari, professor of computer science, Massachusetts Institute of Technology, Cambridge. For contributions to wired and wireless networks and distributed systems.

Bardasz, Ewa A., president, ZUAL Associates Consulting, Mentor, Ohio. For novel automotive lubricants, low-emission engine development, and education of engineering professionals.

Bhatia, Sangeeta, investigator, Howard Hughes Medical Institute; John J. and Dorothy Wilson Professor of Health Sciences and Technology and Electrical Engineering and Computer Science, Massachusetts Institute of Technology; and director, Laboratory for Multiscale Regenerative Technologies, Cambridge, Mass. For tissue engineering and tissue regeneration technologies, stem cell differentiation, and preclinical drug evaluation.

Blanchard, Cheryl R., chief executive officer, MicroCHIPS Inc., Lexington, Mass.; and consultant, Blanchard Consulting LLC, Fort Wayne, Ind. For creation and commercialization of biomaterial products and gender-based medical devices for musculoskeletal health.

Bowcutt, Kevin G., senior technical fellow and chief scientist of hypersonic design and applications, Boeing Co., Huntington Beach, Calif. For development and demonstration of air-breathing hypersonic vehicles and the implementation of design optimization methods.

Bray, Jonathan D., faculty chair in earthquake engineering excellence and professor of geotechnical engineering, University of California, Berkeley. For contributions to earthquake engineering and advances in mitigation of surface faulting, liquefaction, and seismic slope failure.

Brown, Emery N., Warren M. Zapol Professor of Anesthesia, Harvard Medical School; and Edward Hood Taplin Professor of Medical Engineering and professor of computational neuroscience, Massachusetts Institute of Technology, Cambridge. For development of neural signal processing algorithms for understanding memory encoding and modeling of brain states of anesthesia.

Bush, Wesley G., chairman, chief executive officer, and president, Northrop Grumman Corp., Falls Church, Va. For engineering leadership in national security.

Caulkins, Jonathan P., H. Guyford Stever Professorship of Operations Research and Public Policy, Carnegie Mellon University, Pittsburgh. For contributions to the analysis, modeling, and engineering of drug policy in the United States and abroad.

Chandrakasan, Anantha, Joseph F. and Nancy P. Keithley Professor of Electrical

Engineering and head, department of electrical engineering and computer science, Massachusetts Institute of Technology, Cambridge. For development of low-power circuit and system design methods.

Das, Santosh K., retired vice president, Polymer Technologies Inc., Randolph, N.J. For understanding of the composition, structure, property, and processing interrelationships of rapidly solidified amorphous and microcrystalline alloys.

Daubechies, Ingrid, professor and James B. Duke Professor of Mathematics, Duke University, Durham, N.C. For contributions to the mathematics and applications of wavelets.

Divan, Deepakraj M., president, chief technical officer, and co-founder, Varentec Inc., San Jose, Calif. For design and commercialization of advanced power conversion technologies for improved quality and controllability of the power grid.

Elsworth, Derek, professor of energy and geo-environmental engineering, Pennsylvania State University, University Park. For contributions to understanding natural processes affecting flow and transport properties of fractured rocks.

Evans, Eric D., director, MIT Lincoln Laboratory, Lexington, Mass. For development of remote sensing systems, improvised explosive device (IED) detection, and ship antimissile defense.

Fonck, Raymond J., Steenbock Professor of Physical Science and professor of engineering physics, University of Wisconsin, Madison. For advances in fusion plasma spectroscopy diagnostics and leadership of the U.S. fusion program into the burning plasma era.

Ghani, Tahir, Intel Senior Fellow, technology and manufacturing group, and director, transistor technology and integration, Intel Corp., Hillsboro, Ore. For development of transistor technologies for logic products.

Gharib, Morteza (Mory), vice provost for research, Hans W. Liepmann Professor of Aeronautics, and professor of bioinspired engineering, California Institute of Technology, Pasadena. For contributions to fluid flow diagnostics and imagery, and engineering of bioinspired devices and phenomena.

Girod, Bernd, Robert L. and Audrey S. Hancock Professor of Electrical Engineering; senior associate dean, online learning and professional development; and faculty director, Center for Image Systems Engineering, Stanford University, Stanford, Calif. For contributions to video compression, streaming, and multimedia systems.

Gleason, Karen Klinecicz, associate provost and Alexander and I. Michael Kasser

Professor of Chemical Engineering, Massachusetts Institute of Technology, Cambridge. For invention, application development, scale-up, and commercialization of chemically vapor-deposited polymers.

Goebel, Dan M., senior research scientist, Jet Propulsion Laboratory, Pasadena, Calif. For contributions to low-temperature plasma sources for thin-film manufacturing, plasma materials interactions, and electric propulsion.

Grubbs, Robert H., Victor and Elizabeth Atkins Professor of Chemistry, California Institute of Technology, Pasadena. For developments in catalysts that have enabled commercial products.

Guha, Supratik, director of physical sciences, Thomas J. Watson Research Center, IBM Corp., Yorktown Heights, N.Y. For contributions to field effect transistor technology that allow continued scaling of silicon microelectronics.

Hamburger, Ronald, senior principal, Simpson Gumpertz & Heger Inc., San Francisco. For advances in seismic design principles and practices for buildings through research and development of codes and guidelines.

Henry, Robert E., emeritus senior vice president and Regent Consultant, Fauske & Associates LLC, Burr Ridge, Ill. For understanding and analysis of severe power reactor accidents and their impact on design and accident management.

Hering, Janet G., director, Swiss Federal Institute of Aquatic Science and Technology, Dübendorf; and professor, Swiss Federal Institutes of Technology, Lausanne and Zürich. For contributions to understanding and practice of removal of inorganic contaminants from drinking water.

Hsieh, J. Jim, chairman and chief executive officer, Sheumann Laser Inc. (formerly Axcel Photonics Inc.), Marlborough, Mass. For development and commercialization of long-wavelength lasers for fiber-optic communication.

Hsieh, Ming, chairman, chief executive officer, and co-founder, Fulgent Therapeutics, Temple City, Calif. For development and commercialization of biometric identification systems.

Hu, S. Jack, interim vice president for research, J. Reid and Polly Anderson Professor of Manufacturing Technology, professor of mechanical engineering, and professor of industrial and operations engineering, University of Michigan, Ann Arbor. For methods for predicting and diagnosing root causes of product quality variation in multistage assembly systems.

Jahns, Thomas M., Grainger Professor of Power Electronics and Electrical Machines,

and professor of electrical and computer engineering, University of Wisconsin, Madison. For advancement of permanent magnet machines and drives for transportation and industrial applications.

Jovanovic, Milan M., vice president of research and development, Delta Products Corp., Research Triangle Park, N.C. For efficiency improvements of AC-DC power supplies in information technology systems.

Kleinberg, Robert L., Schlumberger Fellow, Schlumberger-Doll Research, Cambridge, Mass. For contributions to formation evaluation and development of pulsed nuclear magnetic resonance logging.

Klier, John, distinguished fellow and global research and development director, polyurethanes and automotive systems, Dow Chemical Co., Midland, Mich. For contributions to novel coatings, polymer dispersions, and low volatile organic compounds technologies.

Konikow, Leonard F., scientist emeritus, U.S. Geological Survey, Reston, Va. For modeling of coupled groundwater and surface water flow and of solute transport in groundwater.

Kullman, Ellen J., chair and chief executive officer, E.I. du Pont de Nemours and Co., Wilmington, Del. For leadership in the business growth and transformation of a global science and engineering company.

Liu, Philip Li-Fan, Class of 1912 Professor in Engineering, and director of the School of Civil and Environmental Engineering, Cornell University, Ithaca, N.Y. For coastal engineering research, education, computer modeling, and leadership for tsunami and wave damage.

Lonberg, Nils, senior vice president, immuno-oncology and biologics discovery, Bristol-Myers Squibb, Redwood City, Calif. For development of fully human monoclonal antibody therapeutics using innovative transgenic expression systems.

McClendon, Brian, vice president of engineering, Google Inc., Mountain View, Calif. For strategic, technical, and managerial leadership resulting in widespread accurate and useful geographic information.

Mitragotri, Samir, director, Center for Bioengineering, and professor of chemical engineering, University of California, Santa Barbara. For development, clinical translation, and commercialization of transdermal drug delivery systems.

Muellner, George Kenneth, vice chairman of the board, The Aerospace Corp., El Segundo, Calif. For leadership in the research, design, and development of advanced air

and space vehicles.

Myers, Kyle J., director, division of imaging and applied mathematics, Center for Devices and Radiological Health, U.S. Food and Drug Administration, Silver Spring, Md. For development of analytical and regulatory science methods for accuracy and safety of medical imaging devices.

Perlman, Radia, fellow at EMC Corporation, Hopkinton, Mass. For contributions to Internet routing and bridging protocols.

Powers, Dana Auburn, senior scientist, nuclear energy and fuel cycle programs, Sandia National Laboratories, Albuquerque, N.M. For contributions to commercial nuclear power plant safety worldwide and to radioactive source-term processes.

Radke, Clayton J., professor of chemical engineering, University of California, Berkeley. For understanding of mixed-wettability and foam-enhanced oil recovery through thin film and pore-scale models.

Ravichandran, Guruswami, John E. Goode Jr. Professor of Aerospace, professor of mechanical engineering, and director, Graduate Aerospace Laboratories, California Institute of Technology, Pasadena. For contributions to mechanics of dynamic deformation, damage, and failure of engineering materials.

Reddy, Junuthula N., distinguished professor, Regents' Professor, and inaugural holder of the Oscar S. Wyatt Jr. Endowed Chair in Mechanical Engineering, Texas A&M University, College Station. For contributions to composite structures and to engineering education and practice.

Reif, L. Rafael, president, Massachusetts Institute of Technology, Cambridge. For technical and educational contributions and for university leadership.

Rometty, Virginia M., chairman, president, and chief executive officer, IBM Corp., Armonk, N.Y. For strategic applications of systems engineering and leadership in development of services science and its application to business processes.

Rus, Daniela, Andrew (1956) and Erna Viterbi Professor of Electrical Engineering and Computer Science and director, Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology, Cambridge. For contributions to distributed robotic systems.

Srolovitz, David J., Joseph Bordogna Professor of Engineering and Applied Science, University of Pennsylvania, Philadelphia. For theory and simulation of microstructure and properties of materials and leadership in computational materials engineering.

Stephens, Graeme L., director, Center for Climate Sciences, Jet Propulsion Laboratory,

Pasadena. For elucidation of Earth's cloud system and radiation balance.

Sulzberger, Virginia C., retired director of engineering, North American Electric Reliability Corp., Livingston, N.J. For leadership and development of electric power system reliability standards.

Szeliski, Richard, distinguished scientist, Microsoft Corp., Redmond, Wash. For contributions to computer vision, computer graphics, and interactive image and video rendering.

Temes, Gabor C., professor, electrical engineering and computer science department, Oregon State University, Corvallis. For contributions to analog signal processing and engineering education.

Theodorou, Doros N., professor of chemical engineering, National Technical University of Athens, Greece. For statistical-mechanical-based strategies and simulation algorithms to predict the structure and properties of polymers and zeolites.

Todd, Michael J., Leon C. Welch Professor, School of Operations Research and Information Engineering, Cornell University, Ithaca, N.Y. For contributions to the theory and application of algorithms for continuous optimization.

Towler, Gavin P., vice president and chief technology officer, UOP LLC (a Honeywell company), Des Plaines, Ill. For process designs for commercial petrochemicals and for leadership in refining and chemical research.

Tsapatsis, Michael, professor and Amundson Chair in Chemical Engineering and Materials Science, University of Minnesota, Minneapolis. For design and synthesis of zeolite-based materials for selective separation and reaction.

Van Trees, Harry L., professor emeritus and director emeritus, Center of Excellence in Command, Control, Communications, Computing, and Intelligence, George Mason University, Fairfax, Va. For contributions to detection, estimation, and modulation theory and leadership of defense communication systems.

Wagner, Norman J., Robert L. Pigford Chair of Chemical Engineering and joint professor, department of physics and astronomy, University of Delaware, Newark. For understanding flow-induced microstructural transitions in complex liquids and invention of ballistic-resistant fabrics by strain-hardening suspensions.

Wiesner, Mark R., James L. Meriam Professor of Civil and Environmental Engineering, and director, Center for the Environmental Implications of Nanotechnology, Duke University, Durham, N.C. For contributions to membrane technologies for water treatment and understanding of environmental behavior and risk of nanomaterials.

Wood, Eric F., Susan Dod Brown Professor of Civil and Environmental Engineering, Princeton University, Princeton, N.J. For development of land surface models and use of remote sensing for hydrologic modeling and prediction.

Wynne, James J., program manager, local education outreach, Thomas J. Watson Research Center, IBM Corp., Yorktown Heights, N.Y. For co-invention of excimer laser surgery for vision corrective procedures.

Yang, Vigor, William R.T. Oakes Professor and chair, School of Aerospace Engineering, Georgia Institute of Technology, Atlanta. For contributions to combustion physics in propulsion systems and to aerospace engineering education.

Yao, David D., Piyasombatkul Family Professor and professor of industrial engineering and operations research, Columbia University, New York City. For understanding of stochastic systems and their applications in engineering and service operations.

Yoganathan, Ajit P., Regents' Professor, Wallace H. Coulter Distinguished Faculty Chair in Biomedical Engineering, and director, Center for Innovative Cardiovascular Technologies, Georgia Institute of Technology, Atlanta. For improvements in the biomechanics of prosthetic heart valves and the development of heart repair devices.

New Foreign Members

Couvreur, Patrick, professor and director, Physical Chemistry, Pharmaceutical Technology, and Biopharmacy Laboratory, University of Paris-Sud (Paris-XI), Châtenay-Malabry, France. For advances in nanomedicine and commercialization of targeted nanotechnology systems for cancer treatment.

Freeze, R. Allan, president, R. Allan Freeze Engineering Inc., White Rock, British Columbia, Canada. For numerical modeling, stochastic subsurface hydrology, risk assessment, and optimization for groundwater engineering.

Gladden, Lynn F., pro-vice-chancellor for research and Shell Professor of Chemical Engineering, University of Cambridge, United Kingdom. For contributions to chemical reactor engineering through the uniquely specific application of magnetic resonance imaging.

Jameson, Graeme John, Laureate Professor of Chemical Engineering and director, Centre for Multiphase Processes, University of Newcastle, New South Wales, Australia. For development of innovative flotation technology for advanced mineral processing.

Liñán, Amable, professor emeritus, motopropulsión y termofluidodinámica, Escuela Técnica Superior de Ingenieros Aeronáuticos, Madrid, Spain. For discoveries using

asymptotic analyses in combustion and for contributions to advance engineering science.

Martins, Nelson, assistant to the director general and research consultant, electrical power systems, CEPEL, Brazilian Electrical Energy Research Center, Rio de Janeiro, Brazil. For development of dynamic analysis software tools and techniques for large electric power systems.

Nakashima, Masayoshi, professor, Disaster Prevention Research Institute, Kyoto University, Japan. For large-scale dynamic testing of buildings that has advanced structural earthquake engineering.

Nethercot, David A., emeritus professor of civil engineering, Imperial College London, United Kingdom. For contributions to structural steel design and construction, and for service to structural engineering worldwide.

Nørskov, Jens Kehlet, Leland T. Edwards Professor of Engineering, professor of photon science, and director, SUNCAT Center for Interface Science and Catalysis, Stanford University, Stanford, Calif. For theoretical approaches to design of heterogeneous catalysts, linking reaction rates to microscopic catalyst properties.

Shahidi, Ghavam, IBM Fellow and director of silicon technology, Thomas J. Watson Research Center, IBM Corp., Yorktown Heights, N.Y. For contributions to silicon-on-insulator complementary metal-oxide semiconductor (CMOS) technology.

van Loosdrecht, M.C.M (Mark), professor and group leader, environmental biotechnology, Delft University of Technology, Den Haag, Netherlands. For the invention and development of wastewater treatment systems for nutrient removal.

Vetterli, Martin, professor, communication systems, Ecole Polytechnique Fédérale de Lausanne, Switzerland. For development of time-frequency representations and algorithms in multimedia signal processing and communications.

Founded in 1964, the U.S. National Academy of Engineering is a private, independent, nonprofit institution that provides engineering leadership in service to the nation. Its mission is to advance the well-being of the nation by promoting a vibrant engineering profession and by marshalling the expertise and insights of eminent engineers to provide independent advice to the federal government on matters involving engineering and technology.

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National Academy of Engineering

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