National Academy of Engineering Elects 87 Members and 18 International Members

FOR IMMEDIATE RELEASE

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Washington DC, February 06, 2020 —The National Academy of Engineering (NAE) has elected 87 new members and 18 international members, announced NAE President John L. Anderson today. This brings the total U.S. membership to 2,309 and the number of international members to 281.

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." Election of new NAE members is the culmination of a yearlong process. The ballot is set in December and the final vote for membership occurs during January.

Individuals in the newly elected class will be formally inducted during a ceremony at the NAE's annual meeting in Washington, D.C., on Oct. 4. A list of the newly elected members and international members follows, with their primary affiliations at the time of election and a brief statement of their principal engineering accomplishments.

NEW MEMBERS:

Abron, Lilia A., chief executive officer, president, and founder, PEER Consultants, P.C., Washington, D.C. For leadership in providing technology-driven sustainable housing and environmental engineering solutions in the United States and South Africa.

Allen, Eleanor, chief executive officer, Water for People, Englewood, Colo. For leadership and advocacy in making clean water and sanitation systems accessible to people around the world.

Allstot, David J., professor, electrical engineering and computer science, Oregon State University, Corvallis. For research and commercialization of mixed-mode integrated circuits and systems.

Ambrose, Robert O., division chief, software, robotics, and simulation division, NASA Johnson Space Center, Houston. For advances in dexterous space robotics, and for leadership in human-robotic teaming in space operations.

Barbat, Saeed D., executive technical leader, safety research and innovation, Ford Motor Co., Dearborn, Mich. For leadership in automotive safety and contributions to the science of crashworthiness, occupant protection, and biomechanics.

Basser, Peter J., senior investigator, section on quantitative imaging and tissue sciences, National Institutes of Health, Bethesda, Md. For development of diffusion tensor MRI and streamline tractography, transforming the characterization of brain disorders and visualization of nerve fiber pathways.

Bekins, Barbara A., research hydrologist, U.S. Geological Survey, U.S. Department of the Interior, Menlo Park, Calif. For contributions to characterizing subsurface microbial populations related to contaminant degradation.

Bent, Stacey F., professor, department of chemical engineering, Stanford University, Stanford, Calif. For contributions to materials surface chemistry and its application across technology platforms from energy to electronics.

Berson, Thomas, chief security adviser, Salesforce.com Inc., San Francisco. For contributions to cybersecurity in the commercial and intelligence communities.

Biller, Stephan R., vice president, Watson IoT, IBM Corp., Durham, N.C. For leadership and advancement of manufacturing technologies and innovations based on the Internet of Things and digital data.

Bolden, Charles F., former administrator, National Aeronautics and Space Administration, Alexandria, Va. For leadership and development of U.S. human spaceflight and space operations programs, and for revitalizing fundamental aeronautics research.

Brown, Alison K., president and chief executive officer, NAVSYS Corp., Colorado Springs, Colo. For contributions to research and development of precision navigation and timing technologies.

Brown, Marilyn A., Regents' Professor and Brook Byers Professor of Sustainable Systems, School of Public Policy, Georgia Institute of Technology, Atlanta. For bridging engineering, social and behavioral sciences, and policy studies to achieve cleaner electric energy.

Candler, Graham V., McKnight Presidential Professor, aerospace engineering and mechanics, University of Minnesota, Minneapolis. For development and validation of computational models for high-fidelity simulation of supersonic and hypersonic interactions.

DesRoches, Reginald, William and Stephanie Sick Dean of Engineering, George R. Brown School of Engineering, Rice University, Houston. For research and design of resilient infrastructure systems to mitigate damage from natural disasters and other extreme conditions.

Emer, Joel, senior distinguished research scientist, NVIDIA, Westford, Mass. For quantitative analysis of computer architecture and its application to architectural innovation in commercial microprocessors.

Espinosa, Horacio D., James and Nancy Farley Professor of Mechanical Engineering, Northwestern University, Evanston, Ill. For contributions bridging nanoscale experimentation and atomistic simulations.

Fan, John C.C., president, chief executive officer, and chairman of the board, Kopin Corp., Westborough, Mass. For innovation and entrepreneurship in electronic materials and devices for displays.

Faul, Margaret M., vice president, drug product technologies, Amgen, Newbury Park, Calif. For technical leadership in the development of marketed medicines and leadership in enabling technologies, pharmaceutical standards, green chemistry, and sustainability.

Fleming, Karl N., president, KNF Consulting Services LLC, Spokane, Wash. For contributions to probabilistic risk assessment methods and their application to enhance the safety of nuclear power facilities.

Frantz, Gene A., co-founder and chief technical officer, Octavo Systems, Sugar Land, Texas. For leadership in the development and commercialization of digital signal microprocessors.

Freedman, Paul L., chief executive officer, LimnoTech, Ann Arbor, Mich. For development and application of science-based computer models for watershed assessment, remediation, and management.

Gautam, Rajeev, president and chief executive officer, performance materials and technologies, Honeywell, Morris Plains, N.J. For business and technical leadership in the oil, gas, and petrochemicals industry.

Gebhardt, Eric, retired chief technology officer and vice president of engineering, GE Power, General Electric Co. (GE Energy), Houston. For development and utilization of advanced electric generation technologies including gas and wind turbines.

Giallorenzi, Thomas R., senior technical fellow, Communication Systems-West, L3Harris, Salt Lake City. For innovation and entrepreneurship in civilian and military communication networks and systems.

Gilbert, Robert B., department chair and professor, civil, architectural, and environmental engineering, University of Texas, Austin. For advancing the use of reliability analyses, risk assessment, and risk-based decision-making for complex engineering projects.

Goodson, Kenneth E., Davies Family Provostial Professor and senior associate dean, department of mechanical engineering, Stanford University, Stanford, Calif. For developments in microprocessor thermal management and nanoscale heat conduction.

Hall, Kenneth C., Julian Francis Abele Professor, department of mechanical engineering and materials, Duke University, Durham, N.C. For development of unsteady aerodynamic and aeromechanics theories and analysis for internal and external aerodynamic flows.

Hanson, Vicki L., executive director and chief executive officer, Association for Computing Machinery, New York City. For contributions to the design of accessible systems, and for leadership in the computer science and engineering community.

Harris, Latonia M., scientific director, pharmaceutical development and manufacturing science, Janssen Pharmaceutical Companies of Johnson & Johnson (J&J), Malvern, Pa. For leadership in biomanufacturing of a breakthrough immunotherapy biotherapeutic, and for outreach activities in STEM education.

Helms, Susan J., principal and owner, Orbital Visions LLC, Colorado Springs, Colo. For accomplishments in civil and military space programs.

Hering, Susanne V., founder and president, Aerosol Dynamics Inc., Berkeley, Calif. For advances and commercialization in aerosol measurements and instrumentation.

Hubbard, Susan S., associate laboratory director and senior scientist, earth and environmental sciences, Lawrence Berkeley National Laboratory, Berkeley, Calif. For contributions to hydrogeophysics and biogeophysics and the geophysics of permafrost.

Ishrak, Omar, chairman and chief executive officer, Medtronic, Minneapolis. For contributions to diagnostic ultrasound, and for leadership in medical technology innovation and globalization.

Jackson, Dana (Keoki), chief engineer and vice president of engineering and program operations, Lockheed Martin Corp., Bethesda, Md. For developing human and technological aerospace capabilities for national security, and for promoting global technology cooperation.

Jankovic, Mrdjan, senior technical leader, Ford Research and Advanced Engineering, Ford Motor Co., Dearborn, Mich. For contributions to nonlinear control theory and automotive technology.

Keller, Sallie Ann, division director, social and decision analytics division, and professor of public health sciences, Biocomplexity Institute & Initiative, University of Virginia, Charlottesville. For development and application of engineering and statistical techniques in support of national security and industry.

Kevrekidis, Ioannis G., Bloomberg Distinguished Professor, department of chemical and biomolecular engineering, Johns Hopkins University, Baltimore. For research on multiscale mathematical modeling and scientific computation for complex, nonlinear reaction, and transport processes.

Klemencic, Ronald, chairman and chief executive officer, Magnusson Klemencic Associates (MKA), Seattle. For innovation in the design of high-rise buildings worldwide, and for research and design guidelines to advance structural engineering practices.

Kolda, Tamara G., distinguished member of the technical staff, informatics and systems assessments, Sandia National Laboratories, Livermore, Calif. For contributions to the design of scientific software, including tensor decompositions and multilinear algebra.

Kornfield, Julia A., professor, chemical engineering, California Institute of Technology, Pasadena. For developing megasupramolecules for antimisting fuel additives and light-adjustable intraocular lenses to improve cataract surgery outcomes.

Krajewski, Paul E., director, global research and development, General Motors Co., Warren, Mich. For development and implementation of lightweight automotive materials.

Kramer, Steven L., professor, civil and environmental engineering, University of Washington, Seattle. For contributions to geotechnical earthquake engineering, including liquefaction, seismic stability, and seismic site response.

Kurfess, Thomas R., chief manufacturing officer, Oak Ridge National Laboratory, Oak Ridge, Tenn. For development and implementation of innovative digital manufacturing technologies and system architectures.

Kurose, James F., distinguished professor, College of Information and Computer Science, University of Massachusetts, Amherst. For contributions to the design and analysis of network protocols for multimedia communication.

Kurtz, Sarah, professor, materials science and engineering, University of California, Merced. For contributions to the development of GaInP/GaAs photovoltaic cells and leadership in solar cell reliability and quality.

Lauby, Mark G., senior vice president and chief engineer, North American Electric Reliability Corp. (NERC), Atlanta. For the development and application of techniques for electric grid reliability analysis.

Li, Fei-Fei, Sequoia Capital Professor, computer science, Stanford University, Stanford, Calif. For contributions in building large knowledge bases for machine learning and visual understanding.

Lieber, Charles M., Joshua and Beth Friedman University Professor, chemistry and chemical biology, Harvard University, Cambridge, Mass. For contributions at the intersection of nanoelectronics, materials design, and neuroscience.

Litvinov, Eugene, chief technologist, business architecture and technology, ISO New England, Holyoke, Mass. For development of optimization mathematics for new electricity markets and innovative applications for electric grid control, visualization, and planning.

Liu, Chen-Ching, American Electric Power Professor, electrical and computer engineering department, Virginia Tech, Blacksburg. For contributions to computational methods for power system restoration and cybersecurity.

Margulies, Susan S., Wallace H. Coulter Chair Professor, biomedical engineering, Georgia Tech and Emory University, Atlanta. For elaborating the traumatic injury thresholds of brain and lung in terms of structure-function mechanisms.

Marzetta, Thomas L., Distinguished Industry Professor, electrical and computer engineering, New York University Tandon School of Engineering, Brooklyn. For contributions to massive multiple-input multiple-output antenna arrays in wireless communications.

McKenzie, Paul F., chief operating officer, CSL Behring, King of Prussia, Pa. For delivering breakthrough medicines, modernizing process development and

manufacturing, and integrating modern engineering concepts in pharmaceutical industries.

Médard, Muriel, Cecil H. Green Professor, electrical engineering and computer science, Massachusetts Institute of Technology, Cambridge. For contributions to the theory and practice of network coding.

Mejia, Lelio H., senior principal engineer, Geosyntec Consultants, Oakland, Calif. For the evaluation, design, and construction of embankment dams and foundation systems and contributions to geotechnical earthquake engineering.

Meller, Russell D., vice president, research and development, Fortna Inc., Louisville, Colo. For contributions to large-scale distribution center design and operation.

Momoh, James A., chairman and chief executive officer, Nigerian Electricity Regulatory Commission, Abuha, Nigeria. For the development of electric grid optimization techniques and implementation of advanced technology and policy for emerging electric grids in Africa.

Monteiro, Paulo J.M., Roy W. Carlson Distinguished Professor, civil and environmental engineering, University of California, Berkeley. For contributions to the science and nanotechnology of concrete for sustainable construction and durable structures.

Murthy, Jayathi Y., Ronald and Valerie Sugar Dean and Distinguished Professor, Henry Samueli School of Engineering and Applied Science, University of California, Los Angeles. For the development of unstructured solution-adaptive finite volume methods for heat, mass, and momentum transport.

Niklason, Laura E., professor of anesthesiology and biomedical engineering, Yale University, New Haven, Conn. For cardiovascular tissue engineering, lung regeneration, and biomedical imaging.

Nocedal, Jorge, Walter P. Murphy Professor, industrial engineering and management sciences, Northwestern University, Evanston, Ill. For contributions to the theory, design, and implementation of optimization algorithms and machine learning software.

Ochoa, Ellen, retired director, NASA Johnson Space Center, Boise, Idaho. For service as an astronaut, a technical leader in government, and an optical scientist/engineer.

Ortwein, Sara N., former president, XTO Energy Inc., Magnolia, Texas. For engineering leadership in the upstream sector of the oil and gas industry.

Peterson, Per F., William S. Floyd and Jean McCallum Floyd Chair in Engineering, nuclear engineering, University of California, Berkeley. For experimental and analytical research contributions for the design and development of passive safety systems for advanced nuclear reactors.

Roberto, Francisco F., technical specialist/manager for process technology and innovation, technical services/processing and metallurgy, Newmont, Englewood, Colo. For advancing biotechnical applications for environmentally responsible mine production.

Roby, Anne K., executive vice president, Linde PLC, Ridgefield, Conn. For developments in oxidation processes, and for leadership in technological developments, safety, and business growth in global industrial gas companies.

Rofougaran, Ahmadreza, chief technology officer, co-chief executive officer, and founder, Movandi Corp., Irvine, Calif. For the development of radio system-on-a-chip technology for wireless networking.

Russell, Mark E., vice president of engineering, technology and mission assurance, Raytheon Co., Waltham, Mass. For leadership in developing radar systems for enhanced national security and safety.

Sawhney, Amarpreet Singh, chairman of the board, Ocular Therapeutix Inc., Bedford, Mass. For development of innovative medical devices that have impacted millions of patients.

Shapiro, Alexander A., Russell Chandler III Chair and professor, School of Industrial and Systems Engineering, Georgia Institute of Technology, Decatur. For contributions to the theory, computation, and application of stochastic programming.

Shor, Peter W., Morss Professor of Applied Mathematics, Massachusetts Institute of Technology, Cambridge. For pioneering contributions to quantum computation.

Shotwell, Gwynne, president and chief operating officer, SpaceX, Hawthorne, Calif. For bringing affordable, commercially competitive space transportation to NASA and the U.S. National Security Space Launch.

Sottos, Nancy R., Donald B. Willett Professor of Engineering, materials science and engineering, University of Illinois, Urbana-Champaign. For contributions to the design and applications of self-healing and multifunctional materials.

Sutton, Michael A., distinguished professor, mechanical and biomedical engineering, College of Engineering and Computing, University of South Carolina,

Columbia. For creation of digital image correlation-based measurement technology and its dissemination through commercialization and applications in industry.

Tamargo, Maria C., professor, physical chemistry and inorganic chemistry, City College of New York, New York City. For forging the way toward an inclusive science and engineering research community, and for contributions to molecular-beam epitaxy of semiconductor materials.

Taylor, Russell H., John C. Malone Professor, department of computer science, Johns Hopkins University, Baltimore. For contributions to the development of medical robotics and computer-integrated systems.

Thompson, Mark E., professor of chemistry and materials, University of Southern California, Los Angeles. For development of highly efficient electrophosphorescent materials for organic light emitting devices used in displays and lighting worldwide.

Tromp, Rudolf M., research staff member, IBM Research Division, IBM Thomas J. Watson Research Center, Yorktown Heights, N.Y. For contributions to development and commercialization of nanoscale characterization methods, and their application in materials science.

Tsang, Leung, professor, electrical engineering and computer science, University of Michigan, Ann Arbor. For contributions in wave scattering and microwave remote sensing theories for satellite missions.

Vahala, Kerry J., Ted and Ginger Jenkins Professor of Information Science and Technology and Applied Physics, California Institute of Technology, Pasadena. For research and application of nonlinear optical microresonators to the miniaturization of precision time and frequency systems.

Vaia, Richard A., senior scientist, emergent materials systems, Air Force Research Laboratory, Dayton, Ohio. For aerospace applications of polymeric nanomaterials, and for technical leadership in materials for national defense applications.

Walker, Steven H., chief technology officer, Lockheed Martin Corp., Bethesda, Md. For leadership of national security R&D at the Defense Advanced Research Projects Agency and the U.S. Air Force.

Wampler, Charles W., II, senior technical fellow, Chemical and Materials Systems Laboratory, General Motors Global R&D, Warren, Mich. For leadership in robotic systems in manufacturing, mathematical methods for robot motion and machine design, and traction battery modeling.

Washington, Kenneth E., chief technology officer, Ford Motor Co., Dearborn, Mich. For leadership in nuclear safety, information systems and high-performance computing, space research, and automotive technologies.

Yue, Dick K.P., Philip J. Solondz Professor, mechanical and ocean engineering, Massachusetts Institute of Technology, Cambridge. For contributions to ocean engineering and innovation of OpenCourseWare to make higher education freely available worldwide.

Zhang, Jie, founder, chief scientist, and chairman, GeoTomo, Houston. For advances in earthquake seismology, geophysical imaging, and medical technology.

NEW INTERNATIONAL MEMBERS:

Arzt, Eduard, chief executive officer and scientific director, INM – Leibniz Institute for New Materials, Saarland University, Saarbrücken, Germany. For research on mechanical properties and development of bio-inspired functional surfaces for medical adhesives and novel gripping systems.

Blöschl, Günter, professor of hydrology and water resources, Institute of Hydraulic Engineering and Water Resources, Vienna University of Technology (TU Wien), Vienna, Austria. For international leadership in the prediction and management of extreme hydrological events.

Chin, Daeje, chief executive officer, SkyLake Investment Co., Seoul, South Korea. For innovations and industry leadership in semiconductor technology.

D'Andrea, Raffaello, chief executive officer, Verity Studios, Zürich. For contributions to the design and implementation of distributed automation systems for commercial applications.

Deng, Zhonghan John, chief executive officer/chairman, Vimicro Group, Zhongxing Microelectronics Co. Ltd., Beijing, China. For development of the world's first CMOS single-chip web camera and China's Surveillance Video and Audio Coding (SVAC) national video standard.

Emri, Igor, professor of mechanics, University of Ljubljana, Ljubljana, Slovenia. For contributions to the testing and modeling of time-dependent materials, and to novel sound and vibration isolation materials.

Felser, Claudia Anna-Maria, director, Max Planck Institute for Chemical Physics of Solids, Dresden, Germany. For the prediction and discovery of engineered quantum materials ranging from Heusler compounds to topological insulators.

Goenka, Pawan K., managing director, Mahindra & Mahindra Ltd., Mumbai, India. For leadership and expansion of Mahindra's automotive business in India, and for contributions in automotive engine lubrication.

Harrison, Susan T., professor, chemical engineering, University of Cape Town, Cape Town, South Africa. For leadership in biochemical engineering and its application to mining and environmental remediation.

Jagadish, Chennupati, distinguished professor, electronic materials engineering, Australian National University, Canberra. For contributions to nanotechnology for optoelectronic devices.

Marquardt, Wolfgang, chairman, Forschungszentrum Jülich GmbH, Jülich, Germany. For contributions to process systems engineering and large-scale computations, and for national leadership in science/technology policy and management.

Meli Piralla, Roberto, research professor emeritus, Engineering Institute, National Autonomous University of Mexico (UNAM), Mexico City. For advancing the preservation of historic structures and improving the seismic safety of concrete, masonry, and adobe structures worldwide.

Sefton, Michael V., University Professor and Michael E. Charles Professor of Chemical Engineering, University of Toronto, Ontario, Canada. For advances in biomaterials and tissue engineering through cell microencapsulation, and for leadership of large-scale research initiatives.

Sellen, Abigail J., deputy director and principal researcher, Microsoft Research Cambridge, Cambridge, United Kingdom. For contributions that ensure consideration of human capabilities in the design of computer systems.

Sharaf, Essam Abdel Aziz, professor, department of public works, Cairo University, Giza, Egypt. For leadership to modernize transportation systems in Egypt and the Middle East through scholarship, advocacy, and public policy.

Su, Guaning, president emeritus, Nanyang Technological University, Singapore. For contributions to regional security and defense, and for academic leadership.

Vogel, Viola, professor, health sciences and technology, ETH Zürich, Zürich. For elucidation of how proteins work as nanoscale mechanochemical switches, and applications to bioengineering and medicine.

Ward, Rabab K., professor emeritus, electrical and computer engineering, University of British Columbia, Vancouver, Canada. For innovative applications of signal processing to industrial and bioengineering problems.

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