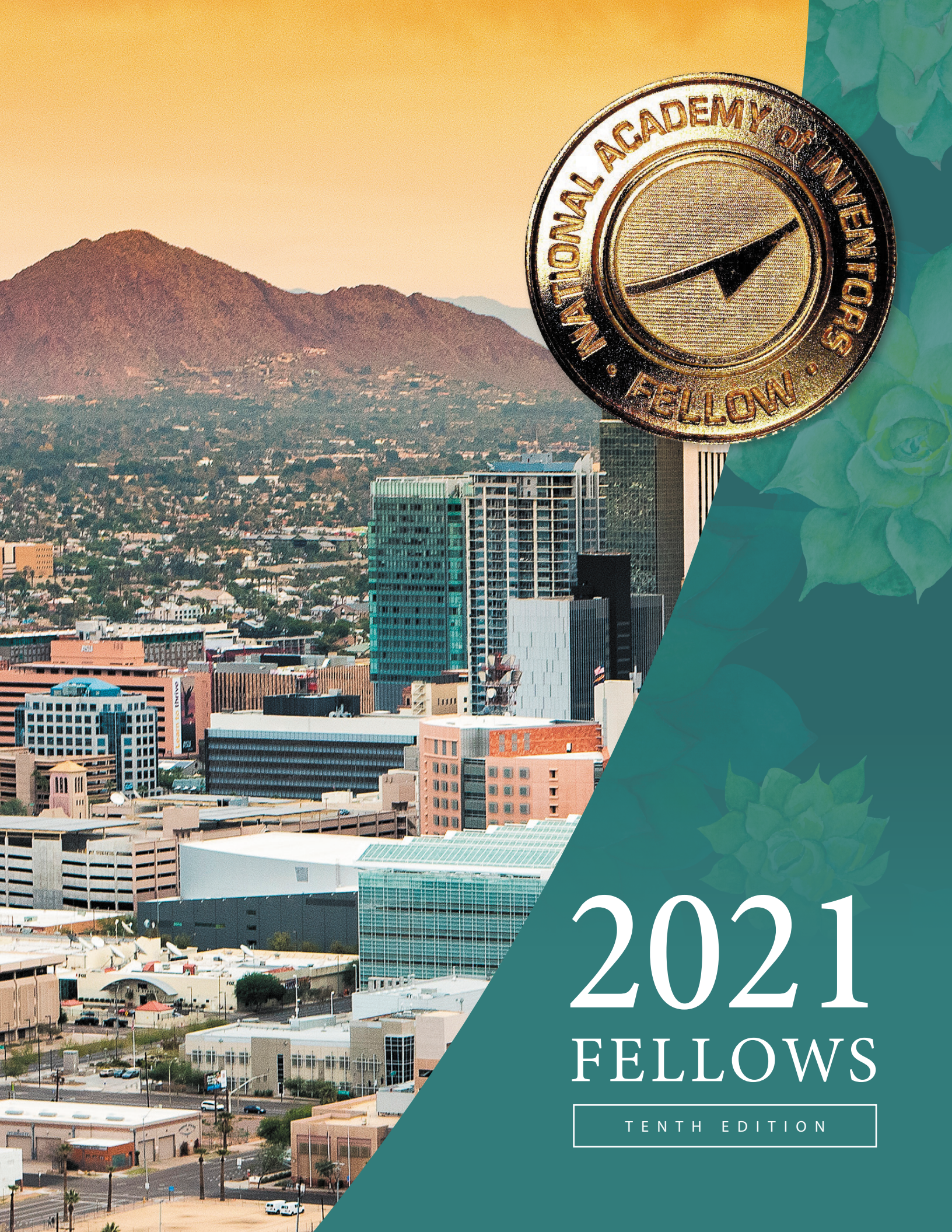




2021 FELLOWS

TENTH EDITION



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ABOUT THE NAI FELLOWS PROGRAM

Election to NAI Fellow status is the highest professional distinction accorded solely to academic inventors who have demonstrated a prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development and the welfare of society.

With the induction of the 2021 class, the program has 1567 Fellows worldwide representing more than 300 prestigious universities and governmental and non-profit research institutes. Collectively, the Fellows hold more than 53,000 issued U.S. patents, which have generated over 13,000 licensed technologies and companies, and created more than 1 million jobs. In addition, over \$3 trillion in revenue has been generated based on NAI Fellow discoveries.

NAI FELLOWSHIP REQUIREMENTS

- Nominees should have made outstanding contributions to innovation in areas such as patents and licensing, innovative discovery and technology, significant impact on society and support and enhancement of innovation
- Nominees must be a named inventor on patent(s) issued by the United States Patent and Trademark Office (the median patent count among current NAI Fellows is 20)
- Nominees must be affiliated with an academic organization, e.g., university, college, non-profit research institute or government research agency
- Nominees do not have to be current members of nor affiliated with an NAI Member Institution (recommended)
- All U.S. and non-U.S. citizens are eligible for nomination
- Deceased nominees are not eligible

Self-nomination, team submissions and nominations submitted by relatives are not eligible.

Nominations open May – July annually

Find more information at www.AcademyofInventors.com/Fellows





UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

March 30, 2022

Dear Friends:

On behalf of the United States Patent and Trademark Office (USPTO), I congratulate the National Academy of Inventors' (NAI) newly elected 2021 class of Fellows. The USPTO is honored to participate in recognizing these 164 academic luminaries of innovation, who have received the highest professional distinction through the NAI. Their discoveries and innovative technologies have revolutionized numerous fields and industries, and they are an inspiration for future innovators.

I also commend the NAI for continuing to celebrate and honor the incredible achievements of these top academic inventors. The USPTO greatly values the significant positive impact NAI Fellows continue to make on our society, economy, and quality of life. I am grateful to have served on the selection committee for this prestigious award for several years, and the caliber of the applicants continues to impress me.

The USPTO also highly regards its partnership with the NAI, which reflects our shared mission to advance and protect intellectual property. Our work together will continue to benefit the global innovation community.

Again, congratulations to the 2021 NAI Fellows for their outstanding accomplishments, and for all they have contributed to the world.

Warmest regards,

A handwritten signature in blue ink, which appears to read "Andrew Hirshfeld", is positioned above the printed name.

Andrew Hirshfeld
Performing the Functions and Duties of the
Under Secretary of Commerce for
Intellectual Property and Director of the
United States Patent and Trademark Office

P.O. Box 1450, Alexandria, Virginia 22313-1450 – www.USPTO.GOV



Congressional Record

PROCEEDINGS AND DEBATES OF THE **117th** CONGRESS, SECOND SESSION

House of Representatives

HON. GREG STANTON OF ARIZONA

Extension of Remarks

Honoring the 164 Inventors Inducted as the 2021 Fellows of the National Academy of Inventors *Monday, April 4, 2022*

Mr. STANTON of Arizona. Speaker, I rise today to honor the 164 inventors who will soon be inducted as the 2021 Fellows of the National Academy of Inventors (NAI) in an induction ceremony in Phoenix, Arizona that will feature a keynote address by U.S. Commissioner for Patents, Andrew Hirshfeld. To be named as a Fellow, these men and women were nominated by their peers and have undergone the scrutiny of the NAI Selection Committee, having had their innovations deemed as making significant impact on quality of life, economic development and welfare of society. Collectively, this elite group holds over 4,800 patents. This year's class of Fellows includes individuals from 118 research universities and non-profit research institutes spanning across the United States and the world. The now 1,567-member group of Fellows is composed of more than 200 senior leaders of research universities and nonprofit research institutes, over 600 members of the National Academies of Sciences, Engineering, and Medicine; 45 inductees of the National Inventors Hall of Fame, 63 recipients of the U.S. National Medal of Technology and Innovation and U.S. National Medal of Science, 45 Nobel Laureates, 450 AAAS Fellows, 314 IEEE Fellows and 251 Fellows of the American Academy of Arts & Sciences, among other awards and distinctions. The NAI was founded in 2010 to recognize and encourage inventors with patents issued from the U.S. Patent and

Trademark Office, enhance the visibility of academic technology and innovation, encourage the disclosure of intellectual property, educate and mentor innovative students and translate the inventions of its members to benefit society.

We are greatly indebted to innovators such as the ones being inducted for their contributions to society through their inventions. I commend these individuals, and the organizations and taxpayers that support them, for the work they do to revolutionize the world we live in. As the following inventors are inducted, may it encourage future generations to strive to meet this high honor and continue the spirit of discovery and innovation.

The 2021 NAI Fellows include:

Katerina Akassoglou, University of California--San Francisco; Norma A. Alcantar, University of South Florida; Zhiqiang An, University of Texas Health Science Center at Houston; Treena Arinzeh, New Jersey Institute of Technology; Andrea Armani, University of Southern California; Santokh S. Badesha, Purdue University; Sanjay Banerjee, The University of Texas at Austin; Ravi Bellamkonda, Duke University; Ronald D. Berger, Johns Hopkins University; Madan M. Bhasin, Louisiana State University.

Greg E. Blonder, Boston University; Jef D. Boeke, NYU Langone Health; Thomas Boland, The University of Texas at El Paso; Xandra O. Breakefield, Massachusetts General Hospital Research Institute; Joan E.

Brennecke, The University of Texas at Austin; Marcel P. Bruchez, Carnegie Mellon University; Vladimir Bulovic, Massachusetts Institute of Technology; Anthony N. Caruso, University of Missouri-Kansas City; Babu Chalamala, Sandia National Laboratories; Joseph Chappell, University of Kentucky.

Shaochen Chen, University of California, San Diego; Shigao Chen, Mayo Clinic; Yingying Chen, Rutgers, The State University of New Jersey; Shih Cheng-Yen, Tzu Chi University of Science and Technology; Tze-Chiang Chung, The Pennsylvania State University; William W. Clark, University of Pittsburgh; Stuart L. Cooper, The Ohio State University; Max D. Cooper, Emory University; Gerard L. Cote, Texas A&M University; Douglas F. Covey, Washington University in St. Louis.

Gregory P. Crawford, Miami University; Ronald G. Crystal, Weill Cornell Medicine; Fa F. Dai, Auburn University; Ted M. Dawson, Johns Hopkins University; Ananth Dodabalapur, The University of Texas at Austin; Patricia Donahoe, Massachusetts General Hospital Research Institute; Elmootazbellah Elnozahy, King Abdullah University of Science and Technology; Thomas H. Epps, University of Delaware; Rong Fan, Yale University; Liesl Folks, The University of Arizona.

Holloway H. Frost, Jr., The University of Texas at Arlington; Bruce K. Gale, The University of Utah; Bruce C. Gates,

University of California; Davis, Jordan J. Green Johns Hopkins University; Paula T. Hammond, Massachusetts Institute of Technology; Benjamin G. Harvey, Naval Air Warfare Center, Weapons Division--NAWCWD China Lake; Ayanna Howard, The Ohio State University; James E. Hubbard, Jr., Texas A&M University; Alex Ignatiev, University of Houston; David Jaffray, University of Texas MD Anderson Cancer Center; Cherie R. Kagan, University of Pennsylvania; Hari Kalva, Florida Atlantic University.

Richard B. Kaner, University of California, Los Angeles; Anumantha G. Kanthasamy, University of Georgia; Sanjiv Kapoor, Illinois Institute of Technology; Jeffrey Karp, Harvard University; Frederick A. Kish, Jr., North Carolina State University; George Koob, National Institutes of Health; Joerg Lahann, University of Michigan; Sidney E. Law, University of Georgia; Kelvin H. Lee, University of Delaware; Gwo-Bin Lee, National Tsing Hua University.

Craig A. Lehmann, Stony Brook University; Xingen Lei, Cornell University; Henry A. Lester, California Institute of Technology; King C. Li, University of Illinois at Urbana-Champaign; Xiaochun R. Li, University of California, Los Angeles; Chenzhong Li, Tulane University; Zhiyong Liang, Florida State University; Jianming Liang, Arizona State University; Zhi-Pei Liang, University of Illinois at Urbana-Champaign; Ming C. Lin, University of Maryland, College Park.

Steven R. Little, University of Pittsburgh; Zheng-Rong Lu, Case Western Reserve University; Yi Lu, The University of Texas at Austin; Serge Luryi, Stony Brook University; Thomas R. Mackie, University of Wisconsin-Madison; Shlomo Magdassi, The Hebrew University of Jerusalem; Ajay Malshe, Purdue University; Terry Matsunaga, The University of Arizona; John A. McLean, Vanderbilt University; Craig H. Meyer, University of Virginia.

Alan J. Michaels, Virginia Polytechnic Institute and State University; Jeffrey Milbrandt, Washington University in St. Louis; Sumita B. Mitra, University

of South Florida; Osama Mohammed, Florida International University; Subhra Mohapatra, University of South Florida; Duncan T. Moore, University of Rochester; Daniel Moran, Washington University in St. Louis; Morton M. Mower, University of Colorado Denver; Russell J. Mumper, The University of Alabama; Govindarajan Muralidharan, Oak Ridge National Laboratory.

Sri R. Narayan, University of Southern California; D. Scott NeSmith, University of Georgia; Tse Nga Ng, University of California, San Diego; Vincent C. Njar, University of Maryland, Baltimore; Richard D. Noble, University of Colorado Boulder; Anson Ong, The University of Texas at San Antonio; Abraham Oommen, University of Nebraska-Lincoln; Karen Panetta, Tufts University; Khanh D. Pham, Air Force Research Laboratory; Rosalind W. Picard, Massachusetts Institute of Technology; Lawrence Pileggi, Carnegie Mellon University; Jill Pipher, Brown University; Brian W. Pogue, Dartmouth College; Maurizio Prato, University of Trieste.

Samuel Prien, Texas Tech University; Jose C. Principe, University of Florida; Susan E. Quaggin, Northwestern University; Clive Randall, The Pennsylvania State University; Amanda Randles, Duke University; Theodore W. Randolph, University of Colorado Boulder; Venigalla B. Rao, The Catholic University of America; Nalini K. Ratha, University at Buffalo, The State University of New York; Behzad Razavi, University of California, Los Angeles; Charles M. Rice, The Rockefeller University.

Subrata Roy, University of Florida; Bulent Sarlioglu, University of Wisconsin-Madison; Majid Sarrafzadeh, University of California, Los Angeles; Richard Sayre, New Mexico Consortium; David V. Schaffer, University of California, Berkeley; Richard A. Schatz, Duke University; Julie M. Schoenung, University of California, Irvine; Richard R. Schrock, Massachusetts Institute of Technology; Chandan K. Sen, Indiana University; Cyrus Shahabi, University of Southern

California.

Fergus Shanahan, University College Cork; K.B. Sharpless, The Scripps Research Institute; Pei-Yong Shi, The University of Texas Medical Branch; Andrei Shkel, University of California, Irvine; Steven J. Simske, Colorado State University; Raghupathy Sivakumar, Georgia Institute of Technology; Alexander H. Slocum, Massachusetts Institute of Technology; Jill P. Smith, Georgetown University; Joshua Smith, University of Washington; Susan L. Sokolowski, University of Oregon.

Milan Sonka, University of Iowa; Natalie Stingelin, Georgia Institute of Technology; Gerald B. Stringfellow, The University of Utah; Luyi Sun, University of Connecticut; Earl E. Swartzlander, Jr., The University of Texas at Austin; Juming Tang, Washington State University; Michael M. Thackeray, Argonne National Laboratory; Ganesh Thakur, University of Houston; Bruce Tromberg, National Institutes of Health; Mark E. Van Dyke, The University of Arizona.

Thirumalai V. Venkatesan, The University of Oklahoma; Jian-Ping Wang, University of Minnesota; Binghe Wang, Georgia State University; Nien-Hwa Wang, Purdue University; Shan X. Wang, Stanford University; Bennett C. Ward, Virginia Commonwealth University; James J. Watkins, University of Massachusetts Amherst; Anthony S. Weiss, The University of Sydney; Gregory F. Welch, University of Central Florida; David G. Whitten, The University of New Mexico.

David Williams, University of Rochester; Darren Woodside, Texas Heart Institute; Hong Yan, City University of Hong Kong; Paul G. Yock, Stanford University; Richard A. Yost, University of Florida; Habib Zaghoulani, University of Missouri-Columbia; Ya-Qin Zhang, Tsinghua University; Ming-Ming Zhou, Mount Sinai Health System.

CLASS OF 2021 FELLOWS INDUCTION

CEREMONY SPEAKERS



Elizabeth Lea Dougherty

Eastern Regional Outreach Director, U.S. Patent and Trademark Office

As the Eastern Regional Outreach Director for the U.S. Patent and Trademark Office (USPTO), Elizabeth Dougherty, J.D., carries out the strategic direction of the Under Secretary of Commerce for Intellectual Property and Director of the USPTO, and is responsible for leading the USPTO's East Coast stakeholder engagement. Focusing on the region and actively engaging with the community, Ms. Dougherty ensures the USPTO's initiatives and programs are tailored to the region's unique ecosystem of industries and stakeholders. Ms. Dougherty has more than 25 years of experience working at the USPTO. She served as the Senior Advisor to the Under Secretary of Commerce for Intellectual Property and Director of the USPTO. In this role, she worked closely across the Agency's leadership to implement the policies and priorities for the USPTO. She began her career at the USPTO as a patent examiner after graduating from The Catholic University of America with a bachelor's degree in physics. While a patent examiner, Ms. Dougherty went on to obtain her J.D. from The Columbus School of Law at The Catholic University of America and served as a Senior Legal Advisor in the Office of Patent Legal Administration for a significant part of her career.

Ms. Dougherty has dedicated much of her career to the USPTO's outreach and education programs focusing on small businesses, startups and entrepreneurs. In this effort she has developed, implemented, and supervised programs that support the independent inventor community, small businesses, entrepreneurs, and the intellectual property interests of colleges and universities. Ms. Dougherty is a member of the Virginia Bar, the Giles S. Rich American Inn of Court, the Pauline Newman American Inn of Court, the American Bar Association, the Federal Circuit Bar Association, the American Intellectual Property Law Association, the Patent and Trademark Office Society, the Supervisory Patent Examiners and Classifiers Organization, Women in Science and Engineering, Federally Employed Women, and the Network of Executive Women.



Paul R. Sanberg, FNAI

President, National Academy of Inventors

Dr. Paul R. Sanberg is president and founder of NAI. He is the former senior vice president for research, innovation and knowledge enterprise at University of South Florida, and currently Distinguished University Professor of medicine, engineering, and business, and executive director of the Center of Excellence for Aging and Brain Repair. His innovations have been instrumental in translating new pharmaceutical and cellular therapeutics to clinical trials and commercialization for Tourette syndrome, stroke, ALS, Alzheimer's, Huntington's and Parkinson's disease. He is an inventor on 167 U.S. and international patents; author of over 700 scientific articles and 14 books, with about 40,000 citations. He has served on editorial boards for numerous scientific journals, is editor-in-chief of NAI's journal Technology and Innovation, and has received numerous scientific awards, including the AIMBE Advocate Award; Australian Alumni Award (ANU); Bryden Alumni Award (York U); Fulbright Specialist; McGovern Science & Society Award (Sigma Xi); Ove Ferno Prize; Florida Academy of Sciences Medalist; Florida Inventors Hall of Fame inductee; Fellow of AAAS, ACNP, AIMBE, BMES, IEEE, Sigma Xi, the Royal Societies of the Arts, Biology, Chemistry, Medicine and Public Health; and AAAS-Lemelson Invention Ambassador. He served twice on the nomination evaluation committee for the National Medal of Technology and Innovation; and advisory board for the APLU Commission on Innovation, Competitiveness, and Economic Prosperity. He was the first in his family to graduate college, and has been a master flight instructor and airplane enthusiast most of his adult life. He was recently elected a Fellow of the Royal Aeronautical Society. He is a Charter Fellow of NAI.

CLASS OF 2021 FELLOWS



Katerina Akassoglou | *University of California - San Francisco*

Katerina Akassoglou, Ph.D., is a professor of neurology and Senior Investigator at the Gladstone Institutes and University of California, San Francisco. Akassoglou is a leader in neuroimmunology and the inventor of a first-in-class immunotherapy to neutralize the toxic effects of blood in disease. She is the recipient of the Baranzic Prize for Innovation in MS Research, the John J Abel Award in Pharmacology, and the Presidential Early Career Award for Scientists and Engineers. She holds 10 issued and 10 pending U.S. patents and 10 of her patents have been licensed to three companies. She is the founder and Board Director of Therini Bio. She has published 101 papers and five book chapters. Akassoglou is a Fellow of the ANA and the AAAS. She was named by the San Francisco Business Times among the 2021 Most Influential Women in Bay Area Business.



Norma A. Alcantar | *University of South Florida*

Norma A. Alcantar, Ph.D., is a professor of chemical, biological and materials engineering and the College of Engineering Associate Dean for Research at the University of South Florida. Alcantar is a global pioneer in developing innovative natural technologies and is internationally recognized for her inventions to filter contaminants from fresh water and provide clean drinking water to worldwide water-scarce areas; creating new technologies for clearing up oil spills; implementing a hybrid technology to remove bacteria and ammonia from aquaculture systems; and creating novel therapies for Alzheimer's disease and treatments for cancer tumor cells. She holds 22 U.S. patents. Alcantar has published over 50 articles and book chapters; presented at more than 100 national and international conferences; and served as guest editor and reviewer for numerous journals, as well as for granting agencies such as the NSF and Alzheimer's Association. She is a Fellow of AIMBE; Chair of the AIMBE Committee of Underrepresented Minorities; Inductee of the Florida Inventor's Hall of Fame; Member-at-Large of the Engineering Section of the AAAS; and Member of the Council for Racial Justice at USF.



Zhiqiang An | *University of Texas Health Science Center at Houston*

Zhiqiang An, Ph.D., is a professor of molecular medicine, the Robert A. Welch Distinguished University Chair in Chemistry, and Director of the Texas Therapeutics Institute at the University of Texas Health Science Center at Houston. An is an acknowledged leader in academic drug discovery. He was inducted into the University of Kentucky College of Agriculture, Food and Environment's Hall of Distinguished Alumni. He holds 25 U.S. patents in the area of drug discovery. Ten of his patents have been licensed to six companies. He has published 170 peer-reviewed original articles, two books, and 11 book chapters, and serves as Deputy Editor-in-Chief of Antibody Therapeutics (Oxford) and on the editorial board of Protein & Cell (Springer) and Mycology (Taylor & Francis). An is a Fellow of the SIMB, the ASM, and AAAS.



Treena Arinzeh | *New Jersey Institute of Technology*

Treena L. Arinzeh, Ph.D., is a distinguished professor in biomedical engineering at the New Jersey Institute of Technology. Arinzeh is a pioneer in stem cell therapeutics, tissue engineering and biomaterials. She is the recipient of the NSF Career Award, Presidential Early Career Award for Scientists and Engineers Award, Black Engineer of the Year Award – Educational Leadership Award, Thomas Edison Patent Award, and George Bugliarello Prize (Sigma Xi). She holds 13 U.S. patents and two foreign patents that have been licensed to one company. She is the co-founder of BioRegenics, Inc. She has published 220 peer-reviewed journal articles, books, book chapters, and conference proceedings/abstracts and serves as an associate editor of Science Advances and serves on the editorial board of five other journals. Arinzeh is a fellow of BMES and the AIMBE.



Andrea Armani | *University of Southern California*

Andrea Armani, Ph.D., is the Vice Dean of New Initiatives and the Irani Chair in Chemical Engineering and Materials Science in the Viterbi School of Engineering at the University of Southern California. Armani develops new nanomaterials and optical devices that have applications in portable disease diagnostics and telecommunications. Her impact extends beyond her patents into the larger innovation ecosystem through her role as a mentor and through her work with the World Economic Forum. Prof. Armani has trained over 100 researchers in her lab, and several have started companies. She is the recipient of the NIH New Innovator Award, the PECASE, and the ONR Young Investigator award. She holds eight U.S. patents that have been licensed, has published over 150 peer-reviewed journal articles, and serves as Associate Editor for ACS Photonics and for Optics Letters. Armani is a Fellow of SPIE, Optica, and AAAS.



Santokh S. Badesha | *Purdue University*

Santokh S. Badesha, Ph.D., D.Sc., is a Corporate Fellow and Manager of Open Innovation at Xerox. He is also an Adjunct Innovation Professor at Purdue University. Badesha is responsible for providing direction and strategies for materials research and leads cross-functional development efforts in high performance materials for component design for marking subsystems. He conducts independent research to design novel materials for image generation devices and patented technologies that is used in nearly all major Xerox printing system families. He holds 258 issued U.S. Patents and additional 50+ applications at different stages of the patenting process. He received an Honorary Doctor of Science from Clarkson University for his contributions to science, technology, and intellectual property, building academic and industrial partnerships, and his help in shaping research programs. Badesha is a Fellow of the Royal Society of Chemistry, UK and Chartered Scientist; Member of NAE, Fellow of NAI, Fellow of Punjab Science Congress, and Honorary Member of the Society of Imaging Science & Technology.



Sanjay Banerjee | *The University of Texas at Austin*

Sanjay K. Banerjee, Ph.D., is the Cockrell Regents Chair Professor of Electrical and Computer Engineering and Director of the Microelectronics Research Center at the University of Texas at Austin. Banerjee is active in beyond-CMOS nanoelectronic transistors based on 2D materials and spintronics, fabrication and modeling of advanced MOSFETs, and solar cells. He is the recipient of the IEEE Grove Award, the SIA/SRC University Researcher Award and the ECS Callinan Award. He holds 35 U.S. patents that have been licensed to five companies. He has published over 1000 refereed archival papers, and 10 book chapters. Banerjee serves on the Technical Advisory board of Applied Novel Devices. Banerjee is a Fellow of IEEE, APS and AAAS.



Ravi V. Bellamkonda | *Emory University*

Ravi V. Bellamkonda, Ph.D., is a Professor of Biology and Biomedical Engineering and Provost and Executive Vice President for Academic Affairs at Emory University. His current research focuses on developing innovative strategies to combat diffuse adult and pediatric brain tumors. Bellamkonda's numerous awards include the Clemson Award for Applied Research from the Society for Biomaterials, EUREKA award from the National Cancer Institute (National Institutes of Health), a Transformative R01 from the National Cancer Institute (current), a CAREER award from the National Science Foundation, Lifetime Achievement Award from Ian's Friends Foundation supporting Pediatric Brain Tumor Research, and Best Professor Award from the Georgia Tech Biomedical Engineering student body. He holds 13 U.S. patents with two more pending, and is the co-founder of two startups, Abby Biomed and Exvade Biosciences. His 'Tumor Monorail' device for brain tumors was awarded Breakthrough Device status by the FDA, and an IDE application is currently under review with the FDA for first-in-human trials. He is a nationally recognized leader and has served as the past president of the AIMBE. Bellamkonda is a fellow of multiple scientific societies including the International Academy of Medical and Biological Engineering, the AAAS, and the International Society for Biomaterials.



Ronald David Berger | *Johns Hopkins University*

Ronald D. Berger, M.D., Ph.D., is a professor of medicine and biomedical engineering, and the Nicholas J. Fortuin MD Professor in Cardiology at Johns Hopkins University. He is the Director of Inpatient Cardiology and Director of the Cardiac Electrophysiology Fellowship Program at Johns Hopkins Hospital. Berger has made important contributions in the fields of ECG analysis, cardiac catheter ablation, cardio-pulmonary resuscitation, and defibrillation technologies. He holds 38 U.S. patents that have been licensed to eight companies. He has founded or co-founded four start-up companies. Berger has published over 300 papers in the medical literature and serves on editorial boards for four journals. Berger is a Fellow of the Heart Rhythm Society and has received multiple awards, including a FIRST Award from the NIH, an Established Investigator Award from the AHA, and an Abell Foundation Award for Research Translation.



Madan M. Bhasin | *Louisiana State University*

Madan M. Bhasin, Ph.D., is Chief Scientific Advisor at MATRIC and an Adjunct Professor at the Cain Department of Chemical Engineering at Louisiana State University. His primary area of expertise is heterogeneous catalysis, with a strong emphasis on surface science and the analytical techniques involved in catalyst characterization. Bhasin has 25 U.S. patents and 24 publications in peer-reviewed journals. He was named Honorary Visiting Professor to Cardiff University in 2012, where he has been working with Prof. Graham Hutchings and the Cardiff Catalysis Institute to start new research directions in hydrocarbon activation. Bhasin is the recipient of numerous ACS and Catalysis Society awards and one AIChE award. DOW Chemical gave him the highest prestigious Hebert DOW Gold medal and the first President's award to anyone in research and development. He was elected ACS Fellow in the inaugural class of 2007 ACS Fellows. Last year, he was elected AIChE Fellow. Dr. Bhasin was elected to the NAE in 2006.



Greg E. Blonder | *Boston University*

Greg E. Blonder, Ph.D., is currently a visiting scientist at Boston University after a long career as AT&T's Chief Technology Advisor, venture capitalist, entrepreneur, and academic. Blonder is the recipient of over a hundred U.S. and international patents which have been licensed or sold to dozens of companies. These include pioneering LED lighting and semiconductor laser packages, two-factor authentication, picture passwords, and numerous consumer products. His inventions have resulted in millions of units sold and hundreds of millions in revenue. Blonder's experiments in barbecue science led to a NYTimes best-seller and helps barbecue professionals and equipment manufacturers do more with less.



Jef D. Boeke | *NYU Langone Health*

Jef D. Boeke, Ph.D., D.Sc., elucidated a major form of DNA movement in the genome, whereby specific DNA regions called retrotransposons move via their RNA, and coined the term retrotransposition to describe the process. He has innovated extensively in tech/dev and biotech. He leads an international team synthesizing the highly engineered genome of the first synthetic eukaryote, Yeast 2.0. Since 2017, he has led the "Dark Matter Project", which uses Big DNA tech to unravel the mechanisms by which mammalian genes get turned on and off. During the pandemic, his lab developed the highly automated RT-PCR workflow and software infrastructure that is central to a COVID testing pipeline deployed by a company he helped found, the Pandemic Response Lab. He has also founded Avigen Inc., CDI Labs, Inc., and Neochromosome Inc. and serves on the SAB of several other Biotechs. In 2014, After 28 years at Johns Hopkins School of Medicine, he founded the Institute for Systems Genetics at NYU Langone Health. Dr. Boeke is a Member of the National Academy of Sciences, the AAA&S, and the American Academy of Microbiology.



Thomas Boland | *The University of Texas at El Paso*

Thomas Boland, Ph.D., is a professor at The University of Texas at El Paso. Boland's patent on cell printing laid the foundation to what has become the field of bioprinting today. His patents in bioprinting have been licensed by Organovo, Tevido Biodevices and Miptek, the latter two were also founded by him. His publications were cited over 11,500 times, and his h-factor is 37. He is a fellow of the Biomedical Engineering Society and the AIMBE.



Xandra O. Breakefield | *Massachusetts General Hospital Research Institute*

Xandra O. Breakefield, Ph.D., is Professor of Neurology at Harvard Medical School and Massachusetts General Hospital. Her laboratory focuses on diseases of the nervous system. She has carried out gene therapy for hereditary tumor suppressor syndromes in mouse models using AAV vectors. Recent work also involves characterization of extracellular vesicles (exosomes and microvesicles) released by cells, including their use as biomarkers, their ability to communicate among cells in their microenvironment and their potential as therapeutic delivery vehicles in the nervous system. She has received the Society for Neuroscience Salpeter Lifetime Achievement Award, and the HMS Silen Lifetime Achievement Mentoring Award. She is a recipient of an Outstanding Investigator Award from the National Cancer Institute, a fellow of the AAAS and the NAI, and past president of the American Society of Gene and Cell Therapy. She holds 28 U.S. patents and has over 540 publications.



Joan F. Brennecke | *The University of Texas at Austin*

Joan F. Brennecke, Ph.D., is a professor of chemical engineering and the Cockrell Family Chair in Engineering #16 at The University of Texas at Austin. Brennecke is an expert in the field of chemical separations, where she has pioneered the design, testing and use of a class of materials called ionic liquids. She is the recipient of the Professional Progress Award from AIChE, the E. O. Lawrence Award from the U.S. Department of Energy, and the E. V. Murphree Award from the ACS. She holds nine U.S. patents that have been licensed to two companies. She is a co-founder of Ionic Research Technologies, LLC. She has published over 200 peer-reviewed articles and served as the Editor-in-Chief of the Journal of Chemical and Engineering Data from 2010-2020. Brennecke is a member of the NAE and a Fellow of AAAS.



Marcel Pierre Bruchez | *Carnegie Mellon University*

Marcel P. Bruchez, Ph.D., is Professor of Biological Sciences, Professor of Chemistry and Director, Molecular Biosensor and Imaging Center at Carnegie Mellon University. Bruchez is a pioneer in the use of new fluorescent labels for biological measurements. He invented quantum dots for stable, sensitive, multiplexed biological detection. He received the 2006 Lord Rank Prize for Optoelectronics and was named as a TR100 Innovator by MIT's Technology Review Magazine in 2004. He holds 34 U.S. patents and related foreign patents that have been licensed by six companies. He is the founder of Sharp Therapeutics and co-founder of Quantum Dot Corporation (acquired by Life Technologies, Inc, 2006). He has published 99 articles, one book, and four book chapters and serves on the editorial board for Biomolecules and Frontiers in Genetics. His companies have created over 500 person-years of employment and their products have been used by thousands of researchers to advance scientific knowledge.



Vladimir Bulović | *Massachusetts Institute of Technology*

Vladimir Bulović, Ph.D., joined the faculty of MIT in July 2000 and is the Fariborz Maseeh Professor of Emerging Technology and the MIT School of Engineering's Associate Dean for Innovation. He leads the Organic and Nanostructured Electronics Laboratory and is co-director of the eni-MIT Solar Frontiers Center and MIT's Innovation Initiative. Bulović's research interests include studies of physical properties of organic and organic/inorganic nanocrystal composite thin films and structures, and development of novel nanostructured optoelectronic devices. He is an author of over 140 research articles (cited over 10,000 times) and an inventor of over 50 U.S. patents in areas of light emitting diodes, lasers, photovoltaics, photodetectors, chemical sensors, programmable memories, and micro-electro machines, majority of which have been licensed and utilized by both start-up and multinational companies.



Anthony Caruso | *University of Missouri-Kansas City*

Anthony Nicholas Caruso, Ph.D., is Curators' Professor of Physics and Electrical Engineering and Associate Vice Chancellor for Research at the University of Missouri – Kansas City. Caruso has made contributions to sub-fields in nuclear engineering, magnetism and more recently, pulsed power. His team is the recipient of an R&D 100 award for the discovery and commercialization of a neutron spectrometer; the Intel Researchers in Connectivity Award for new dielectric layers in next generation transistors; and, was awarded a Young Investigator by Office of Naval Research and Defense Threat Reduction Agency. He is the founder of three companies, producing pulsed power die and nuclear sensing instrumentation, is an Associate Editor for the IEEE Transactions on Nuclear Science and has published over 100 peer reviewed articles. Caruso is the founder and director of the Missouri Institute for Defense & Energy, a 60-person entity whose mission is to improve quality of life by bridging academia with industry to address wicked problems.



Babu Chalamala | *Sandia National Laboratories*

Babu Chalamala, Ph.D., is head of the Energy Storage Technology and Systems Department at Sandia National Laboratories. Chalamala made contributions to advance grid energy storage and display technologies. He is a Distinguished Lecturer of the IEEE Power and Energy Society and received the James Eads Award from the Academy of Sciences St. Louis. He holds nine U.S. patents with four pending U.S. patent applications; his work has led to two startup companies. He has published 120 articles, three book chapters and 11 edited volumes. He served on the editorial boards of the Proceedings of the IEEE, IEEE Access, IEEE/OSA Journal of Display Technology, and Energy Storage Journal. He currently serves as a Senior Editor of IEEE Access and as editor for Cambridge University Press Elements series on Grid Energy Storage. He is a Fellow of the IEEE and AAAS, and a member of the Materials Research Society and the Electrochemical Society.



Joseph Chappell | *University of Kentucky*

Joe Chappell, Ph.D., is Professor and Chair of the Department of Pharmaceutical Sciences at the University of Kentucky. Chappell's work has focused on interesting chemicals produced by plants that have a wide array of applications from flavors/fragrances to medicinally relevant compounds, and the development of Synthetic Biology platforms for the reliable production of these chemicals. Chappell has over 40 issued patents which have been the basis for serial entrepreneurial start-up enterprises. Allylix was started in 2002 and ultimately purchased in 2014. He is currently a co-founder for Tritera and Enepret, companies focused on personal care and pharmaceutical product lines. Chappell has published over 100 peer-reviewed, research articles and honored as a Distinguished Professor at the Université Louis Pasteur in Strasbourg, France in 2002, an honorary Ph.D. awarded by the University of Kalmar, Sweden and his election as a Fellow to the AAAS in 2010.



Shigao Chen | *Mayo Clinic*

Shigao Chen, Ph.D., is Professor of Radiology at Mayo Clinic. Chen is a pioneering ultrasound physicist with a track record of developing novel imaging biomarkers for clinically relevant problems. He is a member of the Board of Governors of American Institute of Ultrasound in Medicine (AIUM), and has served as Secretary, Vice Chair, and Chair of both AIUM Technical Standards Committee and AIUM Elastography Community. He holds 17 U.S. patents and 21 foreign patents as well as 31 additional pending patent applications, 37 of which have been licensed to six companies. His inventions enable noninvasive, low-cost, and accurate diagnosis and quantification of liver steatosis, hepatic fibrosis, and cancer microvascular signature. He has published 135 journal papers and served as Principal Investigator of eight major NIH and DoD grants. Chen is a Fellow of AIMBE and a Fellow of American Institute of Ultrasound in Medicine.



Shaochen Chen | *University of California, San Diego*

Shaochen Chen, Ph.D., is a Professor and Chair in the NanoEngineering Department and Professor in the Bioengineering Department at the University of California, San Diego. Chen is a pioneer in 3D bioprinting and its applications for tissue engineering and regenerative medicine. He is the recipient of NSF CAREER Award, ONR Young Investigator Award, NIH Edward Nagy New Investigator Award, and ASME Milton C. Shaw Manufacturing Research Medal. He holds 12 U.S. patents and three foreign patents that have been licensed to three companies. He is a co-founder of Allegro 3D, Inc. He has published 217 peer-reviewed articles, and 19 books and book chapters. He served as an Associate Editor of ASME Journal of Manufacturing Science and Engineering and Journal of Biomedical Nanotechnology, and is on the editorial board of eight journals. Chen is a Fellow of AAAS and European Academy of Sciences and Arts.



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Yingying (Jennifer) Chen, Ph.D., is Professor and Peter D. Cherasia Faculty Scholar at Rutgers University. She is the Associate Director of Wireless Information Network Laboratory (WINLAB). She has gained international recognition for her creative inventions and impactful research work in Mobile Computing and Mobile Security. She has been recognized with prestigious invention awards including the IEEE Region 1 Technological Innovation in Academic Award in 2017, the New Jersey Inventors Hall of Fame Innovator Award in 2012, the NSF CAREER Award in 2010, and the Google Faculty Research Award in 2010. She has also received seven Best Paper Awards in high-profile international conferences. She holds nine U.S. patents, three of which have been licensed to industry companies for product development. She has published three books, four book chapters and over 200 journal and conference papers. She serves on the editorial boards for IEEE/ACM ToN, IEEE TMC, ACM TOPS, and IEEE TWireless. Chen is a Fellow of IEEE.



Shih Cheng-Yen | *Tzu Chi University of Science and Technology*

Master Cheng Yen is leading research and development of herbal medicine around the world, and for its “multiple achievements in the fields of medicine, medicine and technology-related research and development, resulting in outstanding contributions and profound influence”. The Five Treasures of Jingsi Bencao invented by the Master, in the era of Grand Lesson Education, the Master saved people by administering medicine and medicine and won the highest honor of Chinese medicine in China, the Jade Rank Award, the world’s top inventors. Dharma Master Cheng Yen has more than two thousand books, five thousand publishing articles, and JingSi Aphorism to inspire communities in need. The Tzu Chi storytelling is another most welcome innovation. Dharma Master Cheng Yen was born in 1937. Her mentor, Venerable Master Yin Shun, instructed her to work “for Buddha’s teachings, from sentient beings.” In 1966 she founded the Buddhist Tzu Chi Foundation. Its purpose was to “help the poor and educate the rich” – to give material aid to the needy and inspire love and humanitarian spirit in both the giver and receiver.



Tze-Chiang Chung | *The Pennsylvania State University*

Mike Chung, Ph.D., is a Professor of Materials Science and Engineering at Pennsylvania State University. In his early career, Chung was involved in the pioneer work of conducting polymers that lead to the development of organic electronics. After becoming a Principal Investigator at Exxon in the 1980s and a Professor at Penn State in the 1990s, he pioneered the research in the direct synthesis of functional polyolefins, then focused on their applications in low-k microelectronic packaging, low dielectric loss communication material, polymer-film capacitor for energy storage, and Petrogel for oil spill recovery. Chung is the recipient of numerous prestigious awards and honors from industry, universities, and governmental agents. He holds 46 U.S. patents and 12 foreign patents, some of which were licensed to three companies. He is the co-founder of Advanced Polyolefin Technologies (ADOPT) LLC. He has published 235 papers, two books, 12 book chapters and serves as Executive Editor for Journal of Material Science and Engineering.



William W. Clark | *University of Pittsburgh*

William W. Clark, Ph.D., is a Professor of Mechanical Engineering and Materials Science at the University of Pittsburgh. Clark has been active in dynamic systems and controls research for more than thirty years. His recent research has focused on mechatronics and control, with emphasis on measurements for medical applications including wearable sensors for analysis of human motions, energy harvesting using smart materials, and a variety and sensors for medical applications. He holds eleven U.S. patents and his patents have been licensed to four companies. He is the founder of Diamond Kinetics Director and the founding director of the Innovation & Entrepreneurship program in the Swanson School of Engineering. He has published over 100 journal and conference articles and book chapters and has served as associate editor of two peer-reviewed journals. Clark is Fellow of the ASME.



Max Cooper | *Emory University*

Max D. Cooper, M.D., is a Georgia Research Alliance Eminent Scholar, Professor of Pathology and Laboratory Medicine and Vaccine Center member at Emory University School of Medicine. Cooper and colleagues established the dual nature of the immune system, discovered antibody class switching by B cells, and defined the hematopoietic tissue origin of B and pre-B cells. He currently studies the evolution of adaptive immunity and explores the use of lamprey monoclonal antibodies for diagnosis and therapy of infectious diseases and lymphoid malignancies. Cooper is a member of the U.S. NAS, NAM, AAAS, the French Academy of Sciences and the Royal Society of London. Honors include the Society for Experimental Biology and Medicine Founder's Award, Sandoz Prize in Immunology, American College of Physicians Science Award, AAI Lifetime Achievement Award, AAI-Dana Foundation Award in Human Immunology Research, Avery-Landsteiner Prize, Robert Koch Prize, AAI Excellence in Mentoring Award, Japan Prize, and Albert Lasker Basic Medical Research Award.



Stuart L. Cooper | *The Ohio State University*

Stuart L. Cooper, Ph.D., is Professor of Chemical and Biomolecular Engineering at Ohio State University. Cooper has made important contributions relating to polyurethane technology involving synthesis, studies of microphase separation, and polyurethane blood-materials interactions affecting their application as implants. He was elected to the NAE in 2011 and received Founders Awards from AIChE and the Society for Biomaterials. He is a Founding Fellow of AIMBE, and a Fellow of AAAS, AIChE, ACS, APS and Sigma Xi. He served as President of the Society for Biomaterials and Sigma Xi. He holds seven patents and founded the start-up company, CCL Biomedical. He has published more than 400 peer reviewed articles, numerous book chapters, and has edited seven books. He published two books on Polyurethane Biomaterials. He has served on a number of academic, governmental and editorial advisory boards, and since 1988 has been Editor of the Journal of Biomaterials Science, Polymer Edition.



Gerard L. Coté | *Texas A&M University*

Gerard L. Coté, Ph.D., is a Texas A&M Regents Professor, Director of the TEES Center for Remote Health Technologies and Systems, and holder of the James J. Cain Professor I in Biomedical Engineering at Texas A&M University. Coté is an expert in biomedical sensing for diagnostic and monitoring applications, developing innovative hand-held and wearable point-of-care technologies and systems for a variety of chronic and infectious disease applications. He has is the recipient of several awards including the IEEE Sensors Council Technical Achievement Award, the University of Connecticut School of Engineering Academy of Distinguished Engineers, and Texas A&M University System Patent Awards. He is an entrepreneur, holds several U.S. patents, and has co-founded three medical device companies namely; BioTex, BasePair BioTechnologies, and Visualase (acquired by Medtronic in 2014). Coté has also co authored over 400 publications, leading to him being named Fellow of four prestigious societies namely; IEEE, SPIE, BMES, and AIMBE..



Douglas Floyd Covey | *Washington University in St. Louis*

Douglas F. Covey, Ph.D., is the Andrew C. and Barbara B. Taylor Distinguished Professor of Psychiatry, Professor of Pharmacology in Developmental Biology and Professor of Anesthesiology at Washington University in St. Louis, School of Medicine. Covey is recognized internationally for his research on steroid chemistry and pharmacology, most notably for research on neuroactive steroids. He is the recipient of the ACS St. Louis Award and Washington University in St. Louis Chancellor's Award for Innovation and Entrepreneurship. He holds 16 U.S. patents and 69 foreign patents that have been licensed to three companies. He is a co-founder of Sage Therapeutics, Inc. He has published 374 articles, reviews, and book chapters and is on the editorial board for Steroids. Covey is a member of The Johns Hopkins Society of Scholars.



Gregory P. Crawford | *Miami University*

Gregory P. Crawford, Ph.D., is president of Miami University in Oxford, Ohio. Crawford began his research career at Xerox PARC and has launched two startup biotechnology companies based on his university research discoveries. He has leveraged his academic role to elevate entrepreneurship education, innovative research, and entrepreneurial startups at Brown University, the University of Notre Dame, and Miami University. Crawford has received numerous recognitions for his professional and community service, including Notre Dame's 2011 Rev. William A. Toohey, C.S.C. Award for promoting social justice, and Kent State's 2018 Distinguished Alumni Award. He holds 16 U.S. patents and is co-founder of Corum Medical and Myomics. In addition, he has published more than 350 articles, books, and book chapters, and edited seven books.



Ronald G. Crystal | *Weill Cornell Medicine*

Ronald G Crystal, M.D., is Chairman of the Department of Genetic Medicine at Weill Cornell Medicine and a board-certified physician in internal medicine and pulmonary disease. Crystal developed the therapy used worldwide to treat alpha 1-antitrypsin deficiency and is a pioneer in the field of gene therapy, for which he received the Human Gene Therapy Pioneer Award and the American Thoracic Society Amberson Award. He holds 30 U.S. biomedical patents and 34 foreign patents that have been licensed to three companies. He has founded several biotech startup companies, has published over 900 scientific articles, and his work has been cited over 70,000 times in the scientific literature. He serves on the editorial boards of numerous peer-reviewed journals and is an Honorary Fellow of the Royal College of Physicians in Ireland, as well as holder of an honorary professorship from Sichuan University and an honorary degree from Goethe University Frankfurt.



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Fa Foster Dai, Ph.D., is the Godbold Endowed Chair Professor at Auburn University. Dai is known for his pioneering work in frequency synthesizers and data converter IC designs. He holds 17 U.S. patents in the field of integrated circuits. He is the co-founder of Digital Analog Integration Inc. He has published two textbooks, six book-chapters, over 80 journal papers, and over 160 conference papers. He has served as the Guest Editor for IEEE Journal on Solid State Circuits and IEEE Transactions on Industrial Electronics. He has served on the technical program committees for several IEEE conferences. He was the 2016 TPC Chair and the 2017 General Chair of IEEE Bipolar-BiCMOS Circuits and Technology Meeting. He has served as the 2019 TPC chair, the 2020 conference chair, and the 2021 general chair for IEEE Custom Integrated Circuits Conference. Dai is a Fellow of IEEE.



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Ted M. Dawson, M.D., Ph.D., is the Director of the Institute for Cell Engineering and the Leonard and Madlyn Abramson Professor in Neurodegenerative Diseases at Johns Hopkins University School of Medicine. Dawson is a leader in the molecular mechanisms of neurodegeneration in Parkinson's disease. He pioneered how nitric oxide kills neurons and discovered a unique cell death pathway designated parthanatos. He is the recipient of the Derek Denny-Brown Young Neurological Scholar Award, the Paul Beeson Physician Faculty Scholar Award, and the Santiago Grisolia Medal and a Javits Neuroscience Investigator Award. He holds 18 U.S. patents and several foreign patents that have been licensed to two companies. He is the founder of three startup companies. He has published over 600 articles, books, and book chapters and serves on the editorial board of many peer-reviewed journals. Dawson is a member of the National Academy of Medicine, and a Fellow of AAAS, ANA, AAN and AHA.



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Ananth Dodabalapur, Ph.D., is the Motorola Regents Chair in Engineering at The University of Texas at Austin. His present research includes organic and inorganic thin-film transistors and optoelectronic devices. In 2003, he co-founded OrganicID, a company that is investigating using printable polymer electronics to fabricate low-cost RFID tags for the 13.56 MHz frequency. He was the founding Editor-in-Chief of Flexible and Printed Electronics. He has published more than 250 articles in refereed journals which have resulted in an H Index of 93 (Google Scholar), and has 27 issued U.S. patents, which have been cited nearly 2000 times. He is a Fellow of IEEE.



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Patricia K. Donahoe, M.D., is the Director of Pediatric Surgical Research Laboratories and Chief Emerita of Pediatric Surgical Services at Massachusetts General Hospital and the Marshall K. Bartlett Professor of Surgery at Harvard Medical School. Her research focuses on the genetics of congenital anomalies, including the examination of targetable differences between ovarian somatic and cancer stem cells, and the role of Mullerian Inhibiting Substance as a therapeutic for ovarian and other reproductive cancers, and as an oncofertility contraceptive agent for preserving ovarian reserve in women undergoing chemotherapy. She is the 2021 recipient of the Jacobsen Innovation Award of the American College of Surgeons and the 2011 Society of University Surgeons Lifetime Achievement Award. She is a member of the NAS and the Institute of Medicine and is a Fellow of the AAAS. Donahoe has published over 308 peer-reviewed publications and has received research prizes and honorary degrees reflecting her work in developmental and reproductive biology, the genetics of birth defects, and her dedication to translational science.



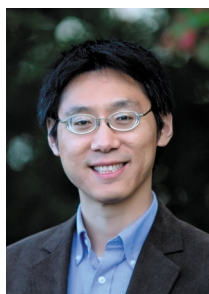
Elmootazbellah Elnozahy | *King Abdullah University of Science and Technology*

Elmootazbellah (Mootaz) Elnozahy, Ph.D., is a Professor of Computer Science at King Abdullah University of Science and Technology, where he previously served as special advisor to the president and dean of the Computer, Electrical and Mathematical Sciences and Engineering. He holds 58 U.S. patents, some of which were licensed to Xerox or used in litigation by IBM. He has published over 25 articles on dependable computing, lower-power computing and performance. Elnozahy is a Fellow of the IEEE. Previously, he was chair of the IEEE technical committee on dependable computing, chair of the IFIP 10.4 Working Group on Dependability, Associate Editor for the IEEE Transactions on Parallel and Distributed Systems, and Associate Editor for the IEEE Transactions on Dependable and Secure Computing. He received the Trailblazer Award from the University of Texas, an IBM President Award and was named an IBM Master Inventor for life.



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Thomas H. Epps, III, Ph.D., is the Allan & Myra Ferguson Distinguished Professor of Chemical & Biomolecular Engineering at the University of Delaware. Epps has led innovation in nanostructured polymers and sustainable products from biomass. He is a recipient of the Percy Julian Award (NOBCCHE), Dillon Medal (APS), Martin Luther King, Jr. Visiting Professorship (MIT), and PECASE Award (Department of Defense). He holds five patents and has eight patents/provisionals pending. He is co-founder of Lignolix, a startup focused on the valorization of biomass waste, and he has a consulting firm, Epps Cubed Consulting. Epps has been on the founding team for two additional startups. He has published more than 125 peer-reviewed articles and is Associate Editor for Science Advances. Epps is a NAS Kavli Fellow and a Fellow of the APS, RSC, AIMBE, Polymers Division of the ACS, and ACS.



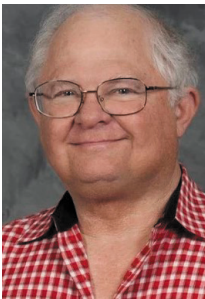
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Rong Fan, Ph.D., is Professor of Biomedical Engineering at Yale University. Fan is the inventor of a number of bioanalytical technologies including single-cell protein secretome profiling that has been commercialized and widely used in the immuno-oncology industry and spatial multi-omics sequencing that enabled high-spatial-resolution genome-wide mapping of transcriptomic, proteomic, and epigenomic information in tissue. He is the recipient of the NSF CAREER Award and the Packard Fellowship for Science and Engineering. He holds 19 U.S. patents and 13 foreign patents that have been licensed to four companies. He is the founder of IsoPlexis, Singleron Biotechnologies, and AtlasXomics. He has published 112 peer reviewed journal articles, three book chapters, and serves as the editorial board member for Genomics, Proteomics and Bioinformatics and GEN Biotechnology. Fan is a fellow of the AIMBE and a member of the Connecticut Academy of Science and Engineering.



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Liesl Folks, Ph.D., is Senior Vice Provost for Academic Affairs and Provost and a Professor of Electrical and Computer Engineering at the University of Arizona. Folks is an internationally recognized expert in the fields of magnetic materials and devices, nanoscale metrology, and spin-electronic devices. Folks' significant inventions to date have centered on dynamics in magnetic materials, devices incorporating magnetic materials suitable for data storage or for random access memory applications, and semiconductor devices for application as magnetic field sensors. She holds 14 U.S. patents that have been licensed to an array of data storage companies. Folks has authored more than 60 peer reviewed journal articles resulting in more than 12,600 citations. She has long been a leader in expanding inclusion in STEM. She served as President of the IEEE Magnetics Society from 2013-2014, and co-chaired the 2020 Review of the National Nanotechnology Initiative for the National Academies.



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Holloway H. Frost is an adjunct professor at The University of Texas Arlington. His inventive activities span multiple fields, including high-speed memory systems, molten salt nuclear reactors, and reconfigurable radio networks. He holds over 50 U.S. patents and several foreign patents. The founder, CEO, and technical drive behind Texas Memory Systems, Frost is widely recognized as a pioneer in the field of solid-state memory systems and the inventor of Variable Stripe RAID. His technical work has been incorporated into several groundbreaking product lines, including the RAMSAN family of solid-state drives and IBM's highly successful FlashSystem storage systems. He has collaborated with major universities on research and entrepreneurial development programs. Frost actively supports the next generation of inventors through, for example, his initiation of the Grace Hopper Scholarship program, which awards scholarships to STEM students in recognition of Rear Admiral Grace M. Hopper, a computer science pioneer and military leader.



Bruce K. Gale | *The University of Utah*

Bruce K. Gale, Ph.D., is Professor and Chair of Mechanical Engineering at the University of Utah. Gale is the inventor of multiple microfluidic-related technologies for use in drug discovery, medical diagnostics, genetic analysis, biological sample preparation, microparticle and nanoparticle separations, infertility treatments, and trauma reconstruction. He is the recipient of Distinguished Mentoring, Research, and Teaching Awards. He holds 25 U.S. patents and at least five foreign patents that have been licensed to six companies. He is the founder of Carterra, Espira, Advanced Conceptions (Nanonc), wFluidx, and Microsurgical Innovations. He has published 151 journal articles, six book chapters, and more than 300 conference articles and serves on the editorial board of the Journal for Micromechanics and Microengineering.



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Bruce C. Gates, Ph.D., is Distinguished Professor of Chemical Engineering at the University of California, Davis. Gates has reported advances in understanding of catalytic hydrodesulfurization reactions that have guided discovery of catalysts for deep desulfurization for production of clean-burning fossil fuels and alleviation of acid rain. He has laid foundations for understanding of the most highly dispersed supported metal catalysts. He is the recipient of the Walker, Wilhelm, and Alpha Chi Sigma awards of the AIChE; the Somorjai and Petroleum Chemistry awards of the ACS; the Burwell and Boudart awards of the North American Catalysis Society; and the Pruitt award of the Council for Chemical Research. He holds five U.S. patents and has published about 600 articles and book chapters and two books. Gates is a member of the NAE.



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Jordan J. Green, Ph.D., is a Professor of Biomedical Engineering, Ophthalmology, Neurosurgery, Oncology, Materials Science & Engineering, and Chemical & Biomolecular Engineering at Johns Hopkins University. He is Director of the Biomedical Engineering Undergraduate Program, Translational Tissue Engineering Center Associate Director, and Translational ImmunoEngineering Center Associate Director at JHU. Green innovates nanobiotechnology, gene therapy, immunotherapy, and cell therapy to advance medicine. He is the recipient of the AIChE Colburn Award, BMES Rita Schaffer Award, and Presidential Early Career Award for Scientists and Engineers. He holds eight U.S. Patents and 20 foreign patents that have been licensed to multiple biotechnology companies. He is the founder of AsclepiX Therapeutics, Dome Therapeutics, Cove Therapeutics, WyveRNA Therapeutics, and OncoSwitch Therapeutics. He has published over 150 scientific articles and serves as Associate Editor at Science Advances. Green is a Fellow of the AIMBE, Biomedical Engineering Society, and Controlled Release Society.



Paula T. Hammond | *Massachusetts Institute of Technology*

Paula T. Hammond, Ph.D., is an Institute Professor and Head of the Department of Chemical Engineering at the Massachusetts Institute of Technology. She is a member of MIT's Koch Institute for Integrative Cancer Research, the MIT Energy Initiative, and a founding member of the MIT Institute for Soldier Nanotechnology. The core of her work is the use of electrostatics and other complementary interactions to generate functional materials with highly controlled architecture. Hammond has been elected into the NAE, NAM, and AAAS. She won the ACS Award in Applied Polymer Science in 2018, the 2013 AIChE Charles M. A. Stine Award, the 2014 AIChE Alpha Chi Sigma Award for Chemical Engineering Research, and the Department of Defense Ovarian Cancer Teal Innovator Award in 2013. Hammond has published over 320 papers, and over 20 patent applications. She is the co-founder and member of the Scientific Advisory Board of LayerBio, Inc. and a member of the Scientific Advisory Board of Moderna Therapeutics.



Benjamin G. Harvey | *Naval Air Warfare Center, Weapons Division – NAW-CWD China Lake*

Benjamin G. Harvey, Ph.D., is a Senior Research Chemist at the Naval Air Warfare Center, Weapons Division (NAWCWD). Harvey has made significant contributions to the development of sustainable aviation fuels, high temperature polymers, biosynthetic materials for defense applications, and high-temperature single-molecule magnets. He is the recipient of the 2011 Top Navy Scientists of the Year Award, the 2012 NAVAIR National Commander's Award, 2013 McLean Award, 2016 SERDP Project of the Year Award, and was selected as an Associate NAWCWD Fellow in 2021. He currently holds 81 U.S. patents, 20 of which have been licensed. He has published 79 articles in peer-reviewed journals, including nine cover articles since 2017. He is a member of the DoD Biotechnology Community of Interest, Journal of Chemical Technology and Biotechnology editorial board, Joint Bioenergy Institute advisory board, and the ACS. He is also an active referee for more than a dozen high impact journals.



Ayanna Howard | *The Ohio State University*

Ayanna Howard, Ph.D., is the Dean of Engineering at The Ohio State University and Monte Ahuja Endowed Dean's Chair. Howard has made significant contributions in the design of innovative human-robot interaction technologies and for improving access and equity through artificial intelligence technologies. She is the recipient of the Anita Borg Institute Richard Newton Educator ABIE Award, CRA A. Nico Habermann Award, Richard A. Tapia Achievement Award, NSBE Janice Lumpkin Educator of the Year Award, and ACM Athena Lecturer Award. She holds a number of U.S. patents that have been licensed based on research from her lab at the Georgia Institute of Technology. She is the founder of Zyrobotics, a non-profit company which develops STEM educational products to engage children of all abilities. She has published over 275 peer-reviewed publications and currently serves as editor for Science Robotics. Howard is a Fellow of IEEE, AAAI, and AAAS.



James E. Hubbard, Jr. | *Texas A&M University*

James E. Hubbard, Jr., Ph.D., is the Oscar S. Wyatt, Jr. Chair I professor at the Texas A&M University. He is internationally known for control of adaptive structures, and spatially distributed systems for the real-time control. He is widely viewed as a founding father of the field of Smart Structures. He is the recipient of the SPIE Lifetime Achievement Award, the SPIE Innovative Product of the Year Award, and is a Permanent Fellow of the Hagler Institute for Advanced Studies. He holds 24 patents and is the founder of four companies. He has published four books and more than 100 technical articles in peer reviewed journals. Hubbard is a Fellow of the AIAA, SPIE, ASME and a member of the NAE, The Academy of Medicine, Engineering and Science of Texas and the Virginia Academy of Science, Engineering and Medicine.



Alex Ignatiev | *University of Houston*

Alex Ignatiev, Ph.D., is Emeritus Professor of Physics and is currently Chief Technology Officer and founder of Lunar Resources, Inc., a space industrial corporation commercializing space resources. Ignatiev has contributed to the development and commercialization of high temperature superconducting technology including spinning off a company to produce HTS wire; has singularly developed the utilization of the vacuum of space for materials processing; has opened the field of resistive memory as a new approach for data storage; and has directed a NASA-sponsored center for materials innovation for over 25 years. Ignatiev is the founder of four companies, holds 35 U.S. patents, and four foreign patents, has published over 320 refereed scientific papers, and has been the recipient of NASA, State of Texas, and City of Houston recognition awards for his research and development efforts. Ignatiev has been elected to the International Academy of Astronautics and the Kazakhstan National Academy of Sciences.



David Jaffray | *University of Texas MD Anderson Cancer Center*

David Jaffray, Ph.D., is Senior Vice President and Chief Technology and Digital Officer at The University of Texas MD Anderson Cancer Center. He is also a professor of Radiation Physics with a dual appointment in Imaging Physics. Before joining MD Anderson, Jaffray served as Executive Vice President for Technology and Innovation at the University Health Network/Princess Margaret Cancer Centre in Toronto, Ontario. He led UHN's information technology transformation, designed the roadmap for digital transformation. Jaffray holds multiple patents and has authored more than 275 peer-reviewed publications in topics related to cancer, including, the development of new radiation treatment machines, exploring the fundamental limits of imaging system performance, and the development of novel nanoparticle formulations for improved detection of cancer. Jaffray has an interest in commercialization and has led the development of a variety of commercial products, including software and hardware for safe, high-quality cancer care.



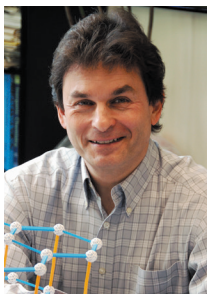
Cherie R. Kagan | *University of Pennsylvania*

Cherie R Kagan, Ph.D., is the Stephen J. Angello Professor of Electrical and Systems Engineering, Materials Science and Engineering, and Chemistry at the University of Pennsylvania. Kagan is Penn Engineering's Associate Dean for Research and Director of the NSF Engineering Research Center for the Internet of Things for Precision Agriculture. Kagan is an innovator in the synthesis, assembly, and integration of low-dimensional, colloidal nanomaterials, layered organic-inorganic metal-halide perovskites, and organic semiconductors in optical and optoelectronic devices. She was named the MIT Technology Review TR10 Innovator for Flexible Transistors, an ACS Top 12 Young Women at the Forefront of Chemistry, and a MilliporeSigma Distinguished Lecturer; received IBM's Outstanding Technical Achievement Award; and was selected to the Defense Sciences Study Group. She holds 42 U.S. and 16 foreign patents. She has published more than 145 articles and served as an Associate Editor for ACS Nano for eight years and the 2021 MRS President. 1998, 2003, 2007, 2009, 2013, and 2020, and papers that were best paper finalists in 2015 and 2017.



Hari Kalva | *Florida Atlantic University*

Hari Kalva, Ph.D., is a professor in the Department of Electrical Engineering and Computer Science at the Florida Atlantic University. Kalva is a renowned expert in visual computing, with focus on compression, communication, and analytics. He holds 30 U.S. patents and 17 foreign patents. Several of his patents are standard essential patents and have been licensed for use in widely deployed video streaming products and services. Kalva is the founder of Videopura, a video streaming tech startup. He has published over 150 peer-reviewed articles and authored two books. Kalva received his Ph.D. in Electrical Engineering from Columbia University in 2000, M.S. in Computer Engineering from Florida Atlantic University, and a B.Tech. in Electronics and Communications Engineering from N.B.K.R. Institute of Science and Technology, S.V. University, India in 1991.



Richard B. Kaner | *University of California, Los Angeles*

Richard B. Kaner, Ph.D., is a Distinguished Professor of Chemistry and Materials Science and Engineering at the University of California, Los Angeles and holds the Dr. Hong Chair in Materials Innovation. Kaner invented the world's hardest metal, co-invented a membrane that separates oil from water, and holds the first patent on how to synthesize graphene, a single layer of carbon. He is the recipient of the: Materials Research Society Medal, RSC Centenary Prize, Chemical Pioneer Award, ACS Award in the Chemistry of Materials and ACS Applied Polymer Science Award. He holds 65 U.S. patents and co-founded Polycera, Nanotech Energy, SuperMetalix and SILQ. He has published over 450 peer-reviewed articles in top journals and serves as an Associate Editor of Materials Research Bulletin. Kaner is a Fellow of AAAS, ACS, APS, European Academy of Arts and Sciences, European Academy of Sciences, MRS and RSC.



Anumantha Kanthasamy | *University of Georgia*

Anumantha G. Kanthasamy, Ph.D., is Professor and Isakson Endowed Chair at the University of Georgia. His important contributions to invention and innovation are in the field of drug discovery in Parkinson's Diseases and other neurological diseases. He is the recipient of the John H. "Johnny" Isakson Chair and Georgia Research Alliance Eminent Scholar in Parkinson's Research to lead the newly formed neurodegenerative research center at UGA. He also received the 2021 Toxicology Research Career award from the American Society of Pharmacology and Experimental Therapeutics and the Society of Toxicology-Metal Toxicology Career award. He holds 10 patents that are in the process of licensing to two companies. He is the founder of PK Biosciences and Probiome Therapeutics. He has published over 200 peer-reviewed papers and serves as Associate Editor of Toxicological Sciences. Kanthasamy is a Fellow of both the AAAS and the Academy of Toxicological Sciences.



Sanjiv Kapoor | *Illinois Institute of Technology*

Sanjiv Kapoor, Ph.D., is a Professor of Computer Science and Director of Graduate Programs in Computational Decision Science at the Illinois Institute of Technology. He has made important contributions in the field of algorithm design and data structures with application to information organization and retrieval, computational geometry, robotics, mathematical modeling, network optimization and computational economics. He has ten U.S. patents and patent applications, one currently with IBM and others having been acquired. He also has copyright on algorithms that were licensed to an information technology company and he has been part of two startup companies. He has published more than 100 articles and his work on epidemiological modeling has been used at the Niti Ayog of the Government of India as part of policy planning during the COVID crisis.



Jeffrey Karp | *Harvard University*

Jeffrey M. Karp, Ph.D., is the Distinguished Chair in Clinical Anesthesiology at Brigham and Women's Hospital and a Professor at Harvard Medical School in Boston. Karp has over 100 issued or pending national and international patents. Several technologies developed in his lab have led to multiple products currently in development or on the market and for the launch of ten companies that have raised over \$500 million in funding. Technologies include high-tech skin-care (Skintifique, products sold in pharmacies throughout EU), tissue adhesives (Tissium, EU Approval, 2017), immunomodulation with biologically responsive materials (Alivio Tx, acquired by Puretech Health, 2021), small molecule regenerative therapeutics (\$FREQ – NASDAQ), cannabinoid therapeutics (Molecular Infusions acquired by Suterra Wellness, 2019), biomedical devices to improve child safety (Landsdowne Labs), needles that automatically gene therapy at their target (Bullseye Therapeutics), a bioengineered luminal coating for GI targeting (Altrix Bio), and fun personal care products for children (One Fun Company).



Frederick A. Kish, Jr. | *North Carolina State University*

Frederick A. Kish, Jr., Ph.D., is the M.C. Dean Distinguished Professor in Electrical and Computer Engineering and Director of the Nanofabrication Facility at NC State University. Kish has made important contributions to the invention and commercialization of technologies in the fields of optoelectronic/photonic devices and semiconductor materials. He is the recipient of the IEEE David Sarnoff Award, the IEEE/LEOS Engineering Achievement Award, the Optica Adolph Lomb Award, International Symposium on Compound Semiconductors Young Scientist Award, and the MIT Technology Review 100 Award. He is co-author of over 170 peer-reviewed journal and conference publications. Kish is a member of the NAE and a Fellow of the IEEE and Optica.



George Koob | *National Institutes of Health*

George F. Koob, Ph.D., is an internationally-recognized expert on alcohol and stress, and the neurobiology of alcohol and drug addiction. He is the Director of the National Institute on Alcohol Abuse and Alcoholism (NIAAA), where he provides leadership in the national effort to reduce the public health burden associated with alcohol misuse. As NIAAA Director, Koob oversees a broad portfolio of alcohol research ranging from basic science to epidemiology, diagnostics, prevention, and treatment. He previously served as Professor and Chair of the Scripps' Committee on the Neurobiology of Addictive Disorders and Director of the Alcohol Research Center at the Scripps Research Institute. Early in his career, Koob conducted research in the Department of Neurophysiology at the Walter Reed Army Institute of Research and in the Arthur Vining Davis Center for Behavioral Neurobiology at the Salk Institute for Biological Studies. He was a postdoctoral fellow in the Department of Experimental Psychology and the MRC Neuropharmacology



Joerg Lahann | *University of Michigan*

Joerg Lahann, Ph.D., is the Wolfgang Pauli Collegiate Professor of Chemical Engineering and Director of the Biointerfaces Institute at the University of Michigan. Lahann has made pioneering inventions related to advanced polymers and soft matter surface engineering. His research has contributed to a wide spectrum of industrial applications, ranging from nanoparticle-based cancer targeting and regenerative nanomedicine to the first-ever fully defined polymer substrates for long-term expansion of human embryonic stem cells. Lahann contributed to 50 national and international patents and patent applications, including 23 granted U.S. patents, several of which have been licensed to companies. Lahann is an elected Fellow of the AIMBE, has been selected by Technology Review as one of the top 100 young investigators, and is the recipient of the Nanoscale Science and Engineering Award, a NSF-CAREER award, and two Idea Awards from the Department of Defense. He has co-authored more than 280 publications and serves on the editorial boards of four prestigious journals in Polymer and Materials Science. His h-index is 65.



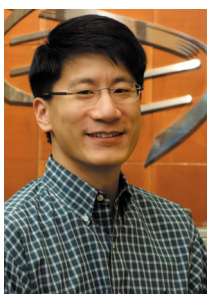
Sidney Edward Law | *University of Georgia*

Sidney Edward Law, Ph.D., is the Brooks Distinguished Professor Emeritus at the University of Georgia's College of Engineering and Director of its Applied Electrostatics Lab. Law's career, as inspired by mentor Prof. Henry Bowen via Rachel Carson's 1962 book "Silent Spring", has focused upon R&D of electrostatics for beneficial agricultural, biological, public-health, and space usages. Law has published over 140 scientific articles and book chapters, ten of which received Superior Paper Awards from ASABE and from IEEE in top 2 ½% international. He is the recipient of ASABE's Cyrus McCormick Gold Medal Award "for exceptional & meritorious engineering achievement in agriculture." He holds six U.S. patents and three foreign of which seven have been licensed or sublicensed to three companies. Law is a Senior Member of the IOP, a Life Fellow in both IEEE and ASABE and equivalent in ESA. He was inducted into the NAE in 1996.



Gwo-Bin Lee | *National Tsing Hua University*

Gwo-Bin Lee, Ph.D., is Tsing Hua Chair Professor at National Tsing Hua University (NTHU), Taiwan. Lee invented 1) integrated microfluidic systems for fast diagnosis of pathogens (including viruses and bacteria) and antimicrobial susceptibility tests for precision medicine of antibiotics, 2) automatic screening of artificial antibodies and 3) electromagnetic thermotherapeutic devices to treat tumors. He is the recipient of the Excellent Technology Transfer Award from NTHU, Outstanding Inventor Lifetime Award (Taiwan), and National Innovation Award (Taiwan). He holds 26 U.S. patents and over 100 foreign patents. He has co-founded three biotech startups. He has published more than 350 peer-reviewed articles. He is Editor-in-Chief of Microfluidics and Nanofluidics and was Associate EIC of IEEE Transactions on Nanotechnology. He is a Fellow of the following professional societies: AIMBE, ASME, IEEE, IET, and RSC. He is a corresponding member of the International Academy of Engineering.



Kelvin H. Lee | *University of Delaware*

Kelvin H. Lee, Ph.D., is the Gore Professor at the University of Delaware and is also the founding Institute Director for the National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL). Lee is a recognized leader in U.S. advanced manufacturing innovation policy as well as in diverse technical areas such as Alzheimer's disease diagnosis and biopharmaceutical manufacturing. He is recipient of the AIChE Professional Progress Award, the Biotechnology and Bioengineering Elmer Gaden Award for Outstanding Publication, the ACS BIOT Marvin Johnson Award, and inaugural winner of the American Electrophoresis Society Lifetime Achievement award, among others). He has inventions across five patent families, some of which are licensed to global companies. He has been associated with four start-up companies. He has published over 160 peer-reviewed articles and served as principal investigator on more than \$450 million of grants and contracts with government agencies and companies. Lee is a Fellow of AIMBE and AAAS.



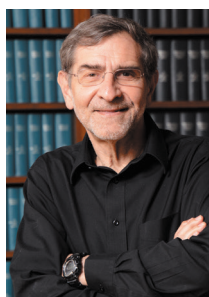
Craig A. Lehmann | *Stony Brook University*

Craig Lehmann, Ph.D., CC (NRCC), FACB, is a registered clinical chemist with the National Registry of Clinical Chemistry and a Fellow of the National Academy of Clinical Biochemistry. He retired from Stony Brook in 2019 as Dean of the School of Health Technology and Management. In addition to his more than 75 journal articles, he has edited and co-edited five clinical laboratory science textbooks and 14 book chapters. He is the editor and author of Saunders Manual of Clinical Laboratory Science published by W.B. Saunders. He previously served on the editorial board for American Association for Clinical Chemistry Strategies and presently serves on the editorial board of Clinical Laboratory Sciences. Lehmann has received awards such as the President's Award for Excellence in Teaching at Stony Brook University and the State University of New York's Chancellor's Award for Excellence in Teaching. In 2007, he received the American Association for Clinical Chemistry's Award for Outstanding Contributions in Education.



Xingen Lei | *Cornell University*

Xingen Lei, Ph.D., is a Professor of Molecular Nutrition at Cornell University. His most impactful research is the discovery and development of a new generation of bacterial phytase, which has facilitated the global use of feed phytase to preserve non-renewable inorganic phosphorus and decrease manure phosphorus excretion. Lei is the recipient of the FASS-AFIA New Frontiers in Animal Nutrition Award and ten other prestigious awards. He holds 22 U.S. and 50 international patents. His inventions have been licensed to industry and applied in 50 countries. Lei has authored 229 peer-reviewed publications and edited a book on seaweed and microalgae as alternative proteins. He is an Associate Editor of Journal of Nutrition and on over 10 editorial boards. Lei is the president of the international society of trace elements in man and animals and a co-leader for a large USDA-funded project to empower the U.S. broiler industry for transformation and sustainability.



Henry A. Lester | *California Institute of Technology*

Henry A. Lester, Ph.D., is a Professor of Biology and Biological Engineering at the California Institute of Technology. Lester has contributed several new techniques at the intersection of neuroscience, ion channels, receptors, transporters, and pharmacology. He developed the concept of “inside-out” pharmacology for nicotine addiction and applied the concept to other abused and psychiatric drugs. He received the Cole Award in Membrane Biophysics from the Biophysical Society and the Fuller Award in Neuropharmacology from the American Society for Pharmacology and Experimental Therapeutics. He holds seven U.S. patents. He served on the Board of Axon Instruments and co founded Neurion Pharmaceuticals. He has published more than 350 papers and has served on the editorial board of more than a dozen journals. Lester is a member of AAAS and a Fellow of the AAAS Council.



King Chuen Li | *University of Illinois at Urbana-Champaign*

King C. Li, M.D., is Inaugural Dean (retired) at Carle Illinois College of Medicine, University of Illinois Urbana Champaign. Li has made important contributions to the field of molecular imaging and theranostics. He is the recipient of the Gold Medal from the Association of University Radiologists. He holds 15 U.S. patents and three foreign patents that have been licensed to four companies. He is the co-founder of Targesome, Inc. He has published over 150 scientific articles and serves on the editorial board for five different journals. Li is a Fellow of AIMBE, American College of Radiology, International Society of Magnetic Resonance in Medicine, Association of University of Radiologists, and Society of Advanced Body Imaging.



Chenzhong Li | *Tulane University*

Chenzhong Li, Ph.D., is the Professors of Biochemistry and Biomedical Engineering at Tulane University. Li is a pioneer in biosensors and bioelectronics for theranostics. He is the recipient of the 2016 Pioneer in Technology Development Award by the Society for Brain Mapping and Therapeutics, the 2016 Minority-Serving Institution Faculty Award in Cancer Research by the AACR. He holds seven U.S. patents and eight foreign patents that have been licensed to two companies. He is the co-founder of Shenzhen Zhongmei Chemicals Inc. and Biosensus Inc. He has published 170 journal articles, two books, eight book chapters and serves as the Co-Editor-in-Chief for the journal of Biosensor and Bioelectronics and the Associate Editors of journals RESEARCH and Biosensors. He is the former program director at the NSF. Chenzhong is a Fellow of AIMBE.



Xiaochun R. Li | *University of California, Los Angeles*

Xiaochun Li, Ph.D., is the Raytheon Endowed Chair in Manufacturing at University of California, Los Angeles. Li is a pioneer in science, technology, and commercial applications of nanotechnology enabled metals manufacturing and embedded micro/nano sensors in manufacturing. He is a recipient of 2002 NSF CAREER award, 2003 Jiri Tlustý Outstanding Young Manufacturing Engineer Award, and the 2008 Howard F. Taylor Award from American Foundry Society. He currently holds 22 issued patents (20 U.S and two foreign patents) in addition to nine pending ones, with ten of them licensed to three companies. He is the founder of MetaLi LLC for successful commercialization of nanoparticle enhanced metal products worldwide. He has published more than 250 refereed papers and serves as an Associate Editor for Journal of Manufacturing Processes and editors of Scientific Reports and International Journal of Precision Engineering and Manufacturing-Green Technology. Li is a Fellow of ASME.



Jianming Liang | *Arizona State University*

Jianming Liang, Ph.D., is an Associate Professor and a member of graduate faculties of Biomedical Informatics, Computer Science, Computer Engineering, and Biomedical Engineering at Arizona State University as well as an Adjunct Associate Professor of Radiology at Mayo Clinic. He has published over 100 peer-reviewed publications and serves on the editorial board of Medical Image Analysis. He holds 33 U.S. patents with an additional 40 patents pending. His research in lung cancer and colon cancer has led to two FDA-approved products. He also helped found IMANIN and VoxelCloud. He has received several awards, including the 2015 President's Award for Innovation, 2019 Faculty Innovation Award, 2020 Faculty Mentoring Award, and a 2020 MedIA Best Paper Award.



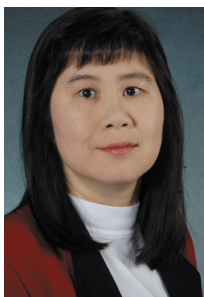
Zhi-Pei Liang | *University of Illinois at Urbana-Champaign*

Zhi-Pei Liang, Ph.D., is the Franklin W. Woeltge Professor of Electrical and Computer Engineering at the University of Illinois at Urbana-Champaign. He has made major and pioneering contributions to high-speed magnetic resonance imaging to enable real-time cardiac imaging and high-resolution molecular imaging of the brain. He is the recipient of the 1990 Sylvia Sorkin Greenfield Award from Medical Physics, 2012 Otto Schmitt Award from International Federation for Medical and Biological Engineering, 2014 Technical Achievement Award from IEEE Engineering in Medicine and Biology Society, and 2022 Gold Medal from International Society for Magnetic Resonance in Medicine. He is a Fellow of IEEE, International Society for Magnetic Resonance in Medicine, AIMBE, and International Academy of Medical and Biological Engineering. He has served as President of IEEE Engineering in Medicine and Biology Society (2011-2012) and as Chair-elect (2021-2024) and Chair (2024-2027) of International Academy of Medical and Biological Engineering.



Zhiyong Liang | *Florida State University*

Zhiyong (Richard) Liang, Ph.D., is the Sprint Eminent Scholar Chair and Professor at Department of Industrial & Manufacturing Engineering at FAMU-FSU College of Engineering, and the Director of the High-Performance Materials Institute (HPMI) at Florida State University. Liang has an extensive track record of innovation in the functionalization of carbon nanotubes and carbon nanotube alignment, new methodologies for creating useful nanotube films and composite materials, high strength nanocomposites, and actuators, and sensors. Liang produced more than 160 journal publications, 36 U.S. patents granted, and has advised 25 postdoc fellows, 23 Ph.D. and 32 MS students, as well as over 100 undergraduate Research Assistants. Liang's inventions have been licensed to four different start-up companies. Liang and his team have won 21 honors and awards in research and earned 28 students' awards, scholarships, and fellowships, including NASA Group Achievement Award, SAMPE and IEEE Best Paper Awards and multiple FSU inventor awards.



Ming C. Lin | *University of Maryland, College Park*

Ming C. Lin, Ph.D., is a Distinguished University Professor, Barry Mersky & Capital One Professor, and former Elizabeth Iribe Chair of Computer Science at University of Maryland, College Park. She is an Amazon Scholar and Parker Distinguished Professor Emerita at UNC-Chapel Hill. Her research areas include computer graphics, robotics, and virtual reality. She has received the NSF Young Faculty Career Award, IEEE VGTC VR Technical Achievement Award, Washington Academy of Sciences Distinguished Career Award, and 13 best paper awards. She holds five U.S. patents and one pending patents, along with over 15 copyrighted software systems that have been licensed to over 60 companies worldwide. She was the co-founder of Impulsonic, which was acquired by Valve. She has published over 300 refereed papers, co-authored/edited five books. She was EIC of IEEE Transactions on Visualization and Computer Graphics and served on over ten editorial boards. She is a Fellow of ACM, IEEE, Eurographics, and SIGGRAPH Academy.



Steven R. Little | *University of Pittsburgh*

Steven R. Little, Ph.D., is a Distinguished Professor and the William Kepler Whiteford Endowed Professor and Chair of the Department of Chemical and Petroleum Engineering at the University of Pittsburgh. Little is an innovator in drug formulation and delivery with innovations for treatments of diseases including cancer, cystinosis, glaucoma, transplantation, dry eye disease, periodontal disease, and pulmonary hypertension. Through his seven-year tenure as Chair, the Department of Chemical and Petroleum Engineering has seen over a two-fold increase in grant proposal submissions and a nearly two-fold increase in peer-reviewed publications. He is the recipient of over 50 awards and distinctions in his field and has published over 100 peer reviewed articles in scientific journals. He holds over 20 patents and pending patents, several which have been licensed by companies he founded or co-founded. Little has been elected as a Fellow of the AAAS, the AIMBE, the CRS, and the BMES.



Zheng-Rong Lu | *Case Western Reserve University*

Zheng-Rong Lu, Ph.D., is the M. Frank Rudy and Margaret Domiter Rudy Professor in the Department of Biomedical Engineering at Case Western Reserve University. Lu is a leading researcher and innovator in molecular imaging and drug delivery, especially with inventions covering novel tumor-specific MRI contrast agents and multifunctional lipids for non-viral gene therapy. He is the recipient of 2018 Gund-Harrington Scholar award. He holds 12 U.S. patents and eight foreign patents that have been licensed to four companies. He is the founder of Molecular Theranostics, LLC, US Motek, LLC, Jiangsu Motek Pharmaceutical, and Helios Biopharmaceuticals, LLC. He has published 193 articles, 10 book chapters, and edited one book, and serves on the editorial board of Molecular Pharmaceutics, Pharmaceutical Research, American Journal of Nuclear Medicine and Molecular Imaging, and Cells. He is a Fellow of AIMBE.



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Yi Lu, Ph.D., is a Professor and Richard J. V. Johnson - Welch Regents Chair in Chemistry at the University of Texas at Austin. Lu has made major contributions in developing DNAzyme/aptamer sensors for on-site and real-time environmental monitoring, point-of-care diagnostics and biomedical imaging. He pioneered the field of metal-specific DNAzymes and their conversions into sensors, including the catalytic beacon technology for fluorescent detection. His demonstration of translating most clinical lab tests into point-of-care tests using widely available glucometers have opened a new avenue for the public to adopt the sensors. He is a recipient of the 2015 Royal Society of Chemistry Applied Inorganic Chemistry Award and 2020 Joseph Chatt Award. He holds 30 U.S. patents and 10 foreign patents that have been licensed to two companies. He has 390 publications and served on editorial boards for over 10 journals. Lu is a Fellow of the Royal Society of Chemistry and AAAS Fellow.



Serge Luryi | *Stony Brook University*

Serge Luryi, Ph.D., is a Distinguished Professor Emeritus at the State University of New York at Stony Brook, formerly a Distinguished Member of the Technical Staff and a research group supervisor at Bell Laboratories (Murray Hill, NJ). At Stony Brook he served as Chair of the Electrical and Computer Engineering Department for 22 years. His research interests span sensor systems, radiation detectors, optoelectronic devices, and semiconductor physics in general. He has published over 250 journal papers in these areas and holds 54 U.S. patents. Dr. Luryi is a Fellow of IEEE, APS, and Optical Society of America. He served as Editor-in-Chief of IEEE Transactions on Electron Devices and was the Founder and Director of the triennial International Workshop on the Future Trends in Microelectronics.



Thomas R. Mackie | *University of Wisconsin-Madison*

Thomas R. Mackie, Ph.D., is an Emeritus Professor at the University of Wisconsin. Perhaps his most important inventions were for the tomotherapy concept which were used in the first image-guided intensity modulated radiotherapy systems. He is the recipient of the gold medals from both the American Association of Physicists in Medicine and the American Society of Radiation Oncology and the John Mallard award from the International Organization of Medical Physicists for innovation of high scientific quality. Mackie has more than 50 U.S. patents for medical devices in the field of radiotherapy and radiology many of which were licensed to companies. He is a co-founder of eight startup companies. He has published more than 180 articles and ten book chapters. He is a commissioner and co-chair of the International Commission of Radiation Units and Measurements which is approaching its centenary in 2025.



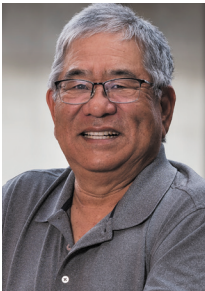
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Shlomo Magdassi, Ph.D., is a Professor of Chemistry at The Hebrew University of Jerusalem. Magdassi's research is in the fields of materials science, and in particular micro and nanoparticles. He has made important contributions to invention and innovation in 2D and 3D printing, printed electronics, solar energy, pharmaceuticals, food supplements, and cosmetics. He is the recipient of the Israel Chemical Society Award for Technological Innovations, the Solvay Award of the European Colloid and Interface Society, and the Kaye Award for Innovations of The Hebrew University. He holds 41 U.S. patents and 70 European patents, some of which have been licensed to 16 companies. He is the founder of nine startup companies. He has published 325 articles, four books, 30 book chapters and serves as an editorial board member for peer-reviewed journals. He is the head of the 3D printing center of Hebrew University, and Chairman of ASPER-HUJI Innovate - The Hebrew University's center for innovation and entrepreneurship.



Ajay Malshe | *Purdue University*

Ajay P. Malshe, Ph.D., is R. Eugene and Susie E. Goodson Distinguished Professor of Mechanical Engineering at Purdue University. Areas of his subject competencies and major contributions are advanced manufacturing, bio-inspired designing, multifunctional materials, science and frugal engineering for equitable technologies and products. Areas of his application interest and contributions are advanced agriculture and food manufacturing, in-space manufacturing, heterogeneous microelectronics packaging and high-performance mechanical machines. He is also an experienced business entrepreneur and started multiple companies including Daisy Systems, NanoMech (now VinTech Nano Materials) and others translating science for society and creating jobs. Malshe has received numerous prestigious international honors for his breakthrough contributions including election to the NAE, fellowships of the ASME, ASM, International Academy of Production Engineering, and the Institute of Physics. He has received over 25 patents and published over 250 peer-reviewed archival papers resulting in numerous R&D 100, Edison Award and Tibbetts Small Business award-winning engineered products.



Terry Matsunaga | *The University of Arizona*

Terry O. Matsunaga, Pharm.D., Ph.D., is a Research Professor in the Dept. of Medical Imaging at the University of Arizona. Matsunaga is an inventor of microbubble contrast agents as well as phase-change contrast agents. He holds 17 U.S. patents that have been licensed to two companies. He has published over 50 articles, books, and book chapters and has served for over 25 years on a number of peer-reviewed study sections for the NIH and the DOD. He has also served as a steering committee chair for the NHLBI SMARTT program from 2010 to 2018.



John A. McLean | *Vanderbilt University*

John A. McLean, Ph.D., is Stevenson Professor of Chemistry and Chair of the Department of Chemistry at Vanderbilt University. McLean has pioneered innovative technologies in the conceptualization, design, and construction of structural ion mobility and mass spectrometers, specifically targeting complex samples in systems, synthetic, and chemical biology. He is an Agilent Technologies Thought Leader Laboratory, a Waters Corporation Center of Innovation, and has received numerous honors and awards including the The Bunsen-Kirchhoff Prize (Society of German Chemists), R&D-100 Award, Excellence in Teaching Award (Student Affiliates of the ACS), American Society for Mass Spectrometry Research Award, Defense Threat Reduction Agency Research Award, among others. He holds 16 U.S. patents and applications and 12 foreign patents, many of which have been licensed to two companies. He has published over 150 articles and 20 book chapters and serves on several Editorial Boards of leading journals and is a Scientific Advisor to several leading companies.



Craig H. Meyer | *University of Virginia*

Craig H. Meyer, Ph.D., is a Professor of Biomedical Engineering and Radiology at the University of Virginia. Meyer is an inventor of magnetic resonance imaging (MRI) techniques for rapid image acquisition and image data processing. His most significant inventions are for spiral MRI, which captures image data very rapidly. He is the recipient of the 2014 Dean's Award for Excellence in Team Science Research, UVA School of Medicine, and is the first author of two of the "30 Magnetic Resonance in Medicine Papers that Helped Shape Our Field." He holds 37 U.S. patents and 13 foreign patents that have been licensed to four companies. He is co-founder of Springbok Analytics. He has published over 500 peer-reviewed papers and abstracts and five book chapters. Meyer is a Fellow of the International Society for Magnetic Resonance in Medicine and a Fellow of AIMBE.



Alan J. Michaels | *Virginia Polytechnic Institute and State University*

Alan J. Michaels, Ph.D., serves as the Director of the Spectrum Dominance Division at the Virginia Tech National Security Institute and as a Professor in the Bradley Electrical and Computer Engineering department. Michaels is a recognized expert in the field of military communications, with a focus on spread spectrum and digital chaotic communications technologies. He holds 44 U.S. patents and 78 foreign patents that have been licensed to six companies and directly to the U.S. Government. He is the founder of Tokay Systems and an early technology contributor to startup Adapdix. He has published 80 peer reviewed papers and provided a dozen invited talks at security forums like Blackhat and those sponsored by U.S. government agencies. Michaels is a Senior Member of the IEEE, a Professional Engineer in the Commonwealth of Virginia, and has led execution of over \$165M of research through his career.



Jeffrey Milbrandt | *Washington University in St. Louis*

Jeffrey Milbrandt, M.D., Ph.D., is the James S. McDonnell Professor and Head of Genetics, Executive Director of McDonnell Genome Institute, Co-Director of Needleman Center for Neurometabolism and Axonal Therapeutics, and a Professor of Pathology and Immunology, Medicine, and Neurology. Milbrandt's major discoveries include identification and characterization of GDNF neurotrophic factor family, establishing the molecular link between metabolism and axon health, and discovering that SARM1, the executioner of damaged axons, is an enzyme that breaks down NAD and is a promising drug target for treatment of degenerative disorders. He holds more than 30 U.S. patents and multiple foreign patents that have been licensed to more than ten companies and is the founder of two startup companies. He has published 280 papers. He has served on multiple scientific advisory boards and won numerous awards including the Washington University Alumni Faculty Award, School of Medicine's 2nd Century Award, Distinguished Faculty Award, and the Innovation and Entrepreneurship Award.



Sumita B. Mitra | *University of South Florida*

Sumita B. Mitra, Ph.D., is a Professor at the University of South Florida's Institute of Advanced Discovery and Innovation. Mitra previously worked for 32 years as Corporate Scientist in the 3M Oral Care Division and also served as the Industrial Director of the Minnesota Dental Research Center of Biomaterials and Biomechanics at the University of Minnesota. Presently she is partner/co-owner of Mitra Chemical Consulting LLC. Mitra was the first to integrate nanotechnology into dental materials to produce stronger, durable and more aesthetically pleasing fillings materials. Her innovation has been used to restore more than one billion teeth worldwide. Recipient of 100 U.S. patents and corresponding global equivalents and has over 100 publications. She has been inducted into the National Inventors Hall of Fame, elected to the NAE, winner of the European Inventor Award in Non-EPO countries, recognized by ACS Heroes of Chemistry Award, and Peyton-Skinner Award from International Association of Dental Research.



Osama A. Mohammed | *Florida International University*

Osama A. Mohammed, Ph.D., is a Distinguished Professor of Electrical Engineering and the Associate Dean of Research at the College of Engineering and Computing at Florida International University. Professor Mohammed developed techniques and inventions in power and energy systems, physics-based modeling in electric drives and renewable energy systems, and power electronics. He is also interested in EMI, wide bandgap devices, and ship power systems. His current research is related to intelligent grid distributed control and interoperability, cyber-physical systems, and co-design of cyber and physical components for future energy systems applications. He has published more than 850 articles in journals and conference records, most highly cited. Mohammed is an IEEE Fellow and an elected fellow of the Applied Computational Electromagnetic Society. He received the prestigious IEEE Power and Energy Society Cyril Veinott Electromechanical Energy Conversion Award, the Outstanding research award, and the outstanding doctoral mentor award from Florida International University.



Subhra Mohapatra | *University of South Florida*

Subhra Mohapatra, Ph.D., is a Professor of Molecular Medicine at the Morsani College of Medicine at the University of South Florida and a Research Career Scientist at James A. Haley Veterans Hospital. Mohapatra is a pioneering scientist/researcher whose work over 26 years has been instrumental in advancing the frontiers of drug delivery of therapeutics for cancer, traumatic brain injury and COVID-19. She developed a novel 3D scaffold for cell culture, now universally known as "tumor-on-a-disc" technology, enabling scientists to grow tumors in the lab which can be used to culture patient biopsies, test for anticancer compounds, and allow tailoring of personalized cancer treatment. This platform has led to a line of cell biology products which have been commercialized globally. She also pioneered novel methods significantly advancing drug delivery for cancer. She holds 18 U.S. patents and one foreign patent for her work, seven of which have been licensed to companies and are actively being developed.



Duncan T. Moore | *University of Rochester*

Duncan T. Moore, Ph.D., is the Rudolf and Hilda Kingslake Professor of Optical Engineering at the University of Rochester. Moore is an expert in gradient-index optics, computer-aided design, and the manufacture of optical systems. Moore has advised more than 50 graduate thesis students at the Institute of Optics. In 1993, Moore began a one-year appointment as science advisor to Senator John D. Rockefeller IV of West Virginia. Moore also chaired the successful Hubble Independent Optical Review Panel organized in 1990 to determine the correct prescription of the Hubble Space Telescope. Moore holds 20 U.S. patents. She is the founder and former president of Gradient Lens Corporation of Rochester, New York, the manufacturer of the high-quality, low-cost Hawkeye boroscope. Moore is a Fellow of prestigious organizations such as Optical Society of America, AAAS, IEEE, and AIMBE.



Daniel William Moran | *Washington University in St. Louis*

Daniel W. Moran, Ph.D. is a Professor of Biomedical Engineering at Washington University in Saint Louis with joint appointments in Neurosurgery, Neuroscience, and Physical Therapy. Moran's primary research interest is in the area of voluntary motor control where his lab investigates how various neural substrates control arm movements. The goal of this research is to restore voluntary arm control in paralyzed individuals via motor cortical recordings and function electrical stimulation of arm muscles or prosthetic limbs. This has led to over 60 publications that have been cited greater than 10,000 times (H-Index = 44). Furthermore, Moran's lab applies these scientific results to the development of novel neuroprosthetics devices resulting in ten issued patents. These patents were the basis for three startup companies cofounded by Moran and his colleagues. Moran is a Fellow of AIMBE and a Senior Member of IEEE.



Russell John Mumper | *The University of Alabama*

Russell J. Mumper, Ph.D., is the Vice President for Research & Economic Development at The University of Alabama. Mumper has received nearly \$30 million in research grants and contracts and has published more than 310 peer-reviewed scientific manuscripts and abstracts in areas of advanced drug delivery systems, nanotechnology, and medical and health properties of berries. He is a named inventor on 30 awarded U.S. and foreign patents, many of which have been licensed to companies. Mumper has founded five start-up companies. He has served extensively as an expert patent witness and consultant to the pharmaceutical industry. Mumper has received campus-wide teaching awards at two research-intensive universities. His experience and publications relating to a Three Year Flipped Classroom Initiative received international attention. Mumper is an elected fellow of the AAPS, and was instrumental in the commercialization of several medical, pharmaceutical, and health products.



Govindarajan Muralidharan | *Oak Ridge National Laboratory*

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Sri Narayan, Ph.D., is a Professor of Chemistry at the University of Southern California, where he and his research group have been tackling one of the biggest challenges of our time, namely, inventing inexpensive and robust systems to store electrical energy from solar and wind generation systems. His group has focused on developing inexpensive and safe energy storage concepts based on iron materials and easily synthesized small molecules, advancing the field of sustainable battery technologies. Narayan has been recognized by the Exceptional Achievement Award from the NASA-Jet Propulsion Laboratory, the award of the Fellow of the Electrochemical Society, and the Faculty Recognition Award of the Phi Kappa Phi Society. Prof. Narayan has over 100 journal publications in the field of batteries and fuel cells and was awarded at least 52 U.S. Patents. Several of his patents have been licensed for commercialization.



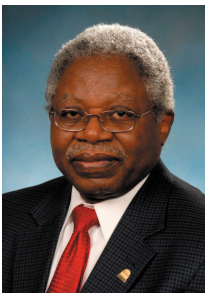
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Richard D. Noble, Ph.D., is the Research Professor of Chemistry at the University of Colorado Boulder. He is an internationally recognized leader in the use of novel membranes for important industrial separations. Noble is the recipient of 14 research awards including the AIChE Institute Excellence in Industrial Gas Technology, ACS National Award in Separation Science and Technology, AIChE Separations Division Clarence G. Gerhold Award, CU Boulder Inventor of the Year Award, and IChemE Innovator of the Year Award. He also received the AIChE Institute Service to Society Award for his work with abused and neglected juveniles in Boulder, CO. He currently holds 35 U.S. patents, nine of which are currently licensed to three companies. He has 353 research publications, 14 books and chapters, and serves on the editorial board for seven peer-reviewed journals. Noble is also a Fellow of the AIChE and of the North American Membrane Society.



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Jill Pipher, Ph.D., is the Elisha Benjamin Andrews Professor of Mathematics and Vice President for Research at Brown University. Pipher holds four patents for her joint work in cryptography with Brown professors Jeffrey Hoffstein and Joseph Silverman, developing one of the first lattice-based public key encryption systems and a startup company, NTRU Cryptosystems, acquired in 2009. Pipher has published in the fields of harmonic analysis, elliptic and parabolic partial differential equations and cryptography, and serves as editor for *Pure and Applied Analysis* and *Advanced Nonlinear Studies*. Pipher is a Fellow of the American Mathematical Society (AMS), the Association for Women in Mathematics (AWM), the Society for Industrial and Applied Mathematics, and the AAAS; and is an elected member of the AAA&S. She has served as President of AMS and of AWM.



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Brian W. Pogue, Ph.D., is the Chair and Professor of the Department of Medical Physics at the University of Wisconsin Madison, and adjunct Professor of Engineering at Dartmouth's Thayer School of Engineering. Pogue is well-recognized not only for outstanding scholarly research in the area of optical devices for the treatment of cancer, but also for translational work, invention, and entrepreneurship in this field, including as co-founder of two start-ups, DoseOptics and QUEL Imaging, the former of which is improving radiation therapy delivery accuracy for cancer patients. Pogue holds 12 issued U.S. Patents, several of which have been licensed to his startup companies, and 12 additional U.S. patents pending. He has published more than 450 peer-reviewed papers, which have been cited over 30,000 times with h-index of 90. Pogue is a Fellow member of Optica, SPIE and AIMBE and Editor-in-Chief of the *Journal of Biomedical Optics*.



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Jose C. Principe, Ph.D., is Distinguished Professor of Electrical and Computer Engineering at the University of Florida. Principe is an expert in computational neuroengineering and information theoretic machine learning. He is the recipient of the IEEE Shannon-Nyquist technical award, the IEEE Neural Network Pioneer Award, IEEE Career Award (EMBS), Gabor Award from the INNS Society, Honoris Causa from Aalto University, Finland, Universidad Mediterranea Italy, U. do Maranhao, Brasil, Teacher Scholar of the Year, University of Florida, Past President of the International Neural Network Society, and Past Editor in Chief of the IEEE Trans. Biomedical Engineering. He holds 43 U.S. patents that have been licensed to five companies. He is the founder of NeuroDimension LLC and Pulsics, LLC. He has published over 800 technical articles, five books, 24 book chapters. Principe is a Fellow of AAAS, IEEE, AIMBE, IABME. He graduated, as chair of the committee, 102 Ph.Ds.



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Clive A. Randall, Ph.D., is a Distinguished Professor of Materials Science and Engineering and has served as the Director of Materials Research Institute at The Pennsylvania State University, University Park, Pennsylvania, USA, since 2014. He was Director for the Center for Dielectric Studies between 1997 and 2013, and in 2013 formed a new Center as Co-Director, the Center for Dielectrics and Piezoelectrics, for which he still serves as Technical Advisor since 2016. He has authored/co-authored over 500 technical papers, with over 22,000 citations and an h-factor of 77. He also holds 15 patents (with two pending) in the field of electroceramics. Randall's research interests are in the area of discovery and compositional design of functional materials for electrical energy transduction and storage, defect chemistry and crystal chemistry and their impact on phase transition behavior, electromechanical devices based upon electrostriction and piezoelectrics, supercapacitors, thermoelectrics, and microwave materials.



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Theodore W. Randolph, Ph.D., is the Kenneth and Genevieve Gillespie Professor in the Department of Chemical and Biological Engineering at the University of Colorado, Boulder. He is the recipient of the Presidential Young Investigator Award, the AIChE Professional Progress Award, the AAPS, Dale E. Wurster Research Award in Pharmaceuticals and the Ebert Prize. He holds 27 U.S. patents that have been licensed to seven companies. Randolph is the founder of three start-up companies: RxKinetix, Inc., BaroFold Inc., and Vitrivax, Inc. He has published over 250 peer-reviewed publications and 18 book chapters. Randolph is a fellow of the AAPS.



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Behzad Razavi, Ph.D., is a Professor of Electrical and Computer Engineering at the University of California, Los Angeles. Razavi has, for 30 years, pioneered new work in the area of microchip design for communication systems, pushing the performance by introducing novel circuits and architectures. Razavi is the recipient of eight IEEE best paper awards, was named one of the top 10 authors in the 50-year history of the flagship microchip conference (ISSCC), and received in 2012 the Pederson Award, the IEEE’s highest award in the area of microelectronics. He holds 17 U.S. patents and has contributed to product design in more than a dozen large companies. He has published 200 papers, six textbooks, and two edited books. With an H-index of 70 and a total citations number exceeding 40,000, many of his publications have become trend setters. He is an IEEE Fellow and a member of the NAE.



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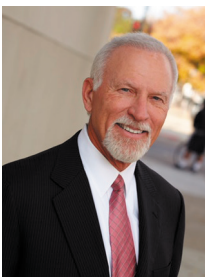
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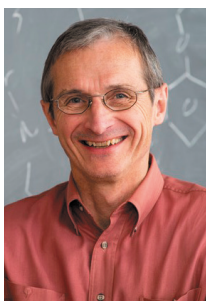
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Richard A. Schatz, Ph.D., attended the State University of New York at Buffalo from 1970-1973 and majored in Biology then attended Duke Medical School from 1973-1977. He completed a fellowship in Cardiology at Brooke Army Medical Center in San Antonio, Texas and is currently the Research Director at the Scripps Clinic in La Jolla, California. Schatz has authored over 200 articles, abstracts, and book chapters covering a variety of topics from coronary stenting, and gene therapy to hyperbaric oxygen for myocardial infarction and holds fifteen issued patents. Schatz was honored as the Distinguished Alumnus for 2003 at Duke University and as a Lifetime Scholar of the Barton Hayes Society in October 2005 by Duke University Medical Center. He is also a distinguished Fellow of the Hong Kong Cardiology Society, was awarded the Russ Prize for Bioengineering in 2019 and received an Honorary Doctorate in Biology from SUNY at Buffalo in 2020.



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Chandan K. Sen, Ph.D., is a Distinguished University Professor and J. Stanley Battersby Chair of Surgery at Indiana University (IU). Sen is a pioneer in the fields of tissue repair/regeneration related infection. His contributions to invention and innovation include in vivo tissue reprogramming technology, Tissue Nanotransfection, electroceutical technology against antimicrobial resistance and biofilm, and artificial intelligence guided prosthetic device with multi-axial joint. He is the recipient of the Bicentennial Medal, and the Edison Award for medical innovation and the Science and Humanity Prize. He holds 29 U.S. and 38 foreign patents that have been licensed to six companies. He is the founder of startup companies such as VispalExo and Medeoryx. He has published over 350 articles, 15 books and 69 book chapters and serves as editor-in-chief for the leading journals Antioxidant Redox Signaling and Advances in Wound Care.



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K. Barry Sharpless | *The Scripps Research Institute*

Karl Barry Sharpless, Ph.D., is an organic/Inorganic Chemist W. M. Keck Professor of Chemistry at The Scripps Research Institute (TSRI). He won the Nobel Prize in Chemistry 2001 “for his work on chirally catalysed oxidation reactions”. He is a member of the NAS, Italian Chemical Society, Royal Society of Chemistry, United Kingdom, and has won the Benjamin Franklin Medal in Chemistry, Franklin Institute, and the Wolf Prize in Chemistry, Wolf Foundation.



Pei-Yong Shi | *The University of Texas Medical Branch*

Pei-Yong Shi, Ph.D., is a Professor, John Sealy Distinguished Chair in Innovations in Molecular Biology, Director of Institute for Drug Discovery, and Vice President for Research Innovation at the University of Texas Medical Branch at Galveston. He works on RNA virus, drug discovery, and vaccine research. Shi holds seven U.S. and foreign patents, many of which have been licensed to leading pharmaceutical companies for countermeasure development. A recent example is his reporter neutralization assay that has enabled the rapid development of Pfizer’s COVID-19 vaccine, the first vaccine with efficacy in humans. Shi has published more than 350 peer-reviewed papers and serves on the editorial boards for *npj Vaccines*, *Journal of Virology*, and *Antiviral Research*. Shi is a Fellow of American Academies of Microbiology.



Andrei Shkel | *University of California, Irvine*

Andrei M. Shkel, Ph.D., is a Professor at the University of California, Irvine. Shkel is credited with cornerstone inventions in the design methodology of gyroscopic microelectromechanical systems. This technology is essential for navigation, positioning, targeting, and stabilization. The applications of this technology span from Military to Consumer Electronics to Medical Prosthetics. For his contributions in advancing the technology, he has been awarded in 2013 the Office of Secretary of Defense Medal for Exceptional Public Service. He holds 42 U.S. issued patents that have been licensed to a dozen of companies. His professional interests are reflected in over 300 publications and three books. He serves as Editor of *IEEE/ASME Journal of Micro-Electro-Mechanical Systems*, the Editorial Board Member of the *Journal on Gyroscopy and Navigation*, and the Founding Chair of the IEEE Inertial Sensors. Shkel is a Fellow of IEEE and the Past President of the IEEE Sensors Council.



Steven John Simske | *Colorado State University*

Steven J Simske, Ph.D., is Professor of Systems Engineering at Colorado State University. Simske is an engineer, inventor, and educator in areas such as cyber-physical security, security printing, analytics, imaging, and printing. He is a 2022 winner of the Colorado State University Best Teacher Award; winner of the Robert F. Reed Technology Award; and an Honorary Professor in Computer Science at the University of Nottingham. He holds 225 U.S. patents and hundreds of foreign patents that have been licensed and/or cross-licensed to dozens of companies. He has published over 400 articles, four books, and many book chapters; heads the Steering Committee for ACM DocEng; and is Associate Editor for several journals (ICAE, JIST, JWE). Simske is an IS&T Fellow and an IEEE Fellow.



Raghupathy Sivakumar | *Georgia Institute of Technology*

Raghupathy Sivakumar, Ph.D., is the Wayne J. Holman Chair and Vice President for Commercialization at the Georgia Institute of Technology. Sivakumar is co-inventor on 22 issued patents, and he has several more patent applications in process. Fifteen of these patents have been licensed to industry. Siva is the founder/founding member of three different venture-funded startups that all relied upon technologies built in his lab. Between 2015-2021, he spearheaded the CREATE-X initiative at Georgia Tech that has helped to launch over 300 ventures, all founded by Georgia Tech students. In September 2021, he was named as Georgia Tech's first vice president of commercialization and chief commercialization officer. Sivakumar is a Fellow of the IEEE.



Alexander H. Slocum | *Massachusetts Institute of Technology*

Alexander Slocum, Ph.D., is the Walter M. May and A. Hazel May Professor of Mechanical Engineering at MIT, a MacVicar Faculty Teaching Fellow, a Fellow of the ASME, and a member of the NAE. He has over 170 patents and has helped develop 11 products that have received R&D 100 awards for "one of the one hundred best new technical products of the year". He pioneered deterministic design of kinematic couplings, including the standard for all semiconductor wafer transport carriers. He has helped start several precision manufacturing equipment companies and has a passion for working with industry to solve real problems and identify fundamental research topics. He received the 1999 Martin Luther King Jr. Leadership Award, 2000 Massachusetts Professor of the Year, the Society of Manufacturing Engineer's Frederick W. Taylor Research Medal, ASME Leonardo daVinci, Machine Design, Thar Energy Design, and Spira Teaching Awards.



Jill P. Smith | *Georgetown University*

Jill P. Smith, M.D., is a Professor of Medicine at Georgetown University and the Lombardi Comprehensive Cancer Center. She was the former Director of Clinical & Translational Research at NIDDK, NIH. Smith also practices at the Washington DC Veterans Affairs Medical Center. She was elected the first female President of the American Pancreatic Association. As a clinical scientist, Smith has dedicated her entire academic career to patient care, teaching, and conducting research. Her passion has been bench-to-bedside translational research. Her basic science research has focused on G-protein-coupled receptors, in particular cholecystokinin receptors and their role in GI cancers. She is an inventor on over ten issued patents involving gastrointestinal diseases such as inflammatory bowel disease, nanoparticles, nonalcoholic hepatitis, and cancer therapeutics.



Susan L. Sokolowski | *University of Oregon*

Susan L. Sokolowski, Ph.D., is a Professor and Founding Director of the Sports Product Design MS program at the University of Oregon. Sokolowski is an academic and industry leader in sports product design and inventor of footwear, apparel, equipment, and material technologies. She has been internationally recognized for achievements in design innovation from entities such as Nike, The United States Olympic Committee, Vogue Magazine, Sports Illustrated, and the New York Times. She holds 45 U.S. patents and 68 foreign patents that have been licensed to or commercialized by Nike, Inc. She has published six peer reviewed journal articles, ten conference papers, 22 book chapters, and serves as a peer reviewer for various journals. Sokolowski is a member of Applied Human Factors and Ergonomics, the American Society for Testing and Materials International, the American Association of Textile Chemists and Colorists and the International Textile and Apparel Association.



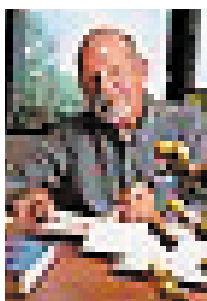
Milan Sonka | *University of Iowa*

Milan Sonka, Ph.D., is a Professor of Electrical and Computer Engineering, Professor of Ophthalmology & Visual Sciences, and Radiation Oncology, Co-director of the Iowa Institute for Biomedical Imaging, and Director of the Iowa Initiative for Artificial Intelligence at the University of Iowa. He holds 14 U.S. patents and one foreign patent, out of which 11 have been licensed to three companies. He is a co-founder of Medical Imaging Applications LLC, and VIDA Diagnostics Inc. He is the first author of four editions of “Image Processing, Analysis and Machine Vision” book (1993, 1998, 2008, 2014) and co-authored or co-edited 20 books/proceedings. He has published more than 190 journal papers and over 430 other publications, cited over 40,000 times with an H-index of 80. He is past Editor in Chief of the IEEE Transactions on Medical Imaging and member of the Editorial Board of the Medical Image Analysis journal. Sonka is a Fellow of IEEE, AIMBE, and MICCAI.



Natalie Stingelin | *Georgia Institute of Technology*

Natalie Stingelin, Ph.D., is a Professor in Materials Science and Engineering at the Georgia Institute of Technology. Stingelin is a material scientist recognized for her work in the broader area of polymer physics and, specifically, organic electronics and photonics. Her contributions include the creation of innovative device architectures, and the advancement of novel strategies that enable processing and design of soft electronic materials, such as organic semiconductors and inorganic/organic hybrid materials, with unique functional properties. Her work has led to patents directly assigned or licensed to companies, including multinationals and SMEs. Stingelin is an elected Fellow of the Materials Research Society and the Royal Chemical Society of Chemistry. She also was awarded a prestigious “Engineering and Physical Science” Suffrage Science award in 2021 — an award that celebrates women in science for their outstanding scientific research, communication work, and support of women in STEM.



Gerald B. Stringfellow | *The University of Utah*

Gerald B Stringfellow, Ph.D., is a Distinguished Professor at the University of Utah. Stringfellow has been a leader in the development of the fundamental concepts underlying the materials used in light emitting diodes (LEDs) and multi-junction solar cells. He identified both the material and the epitaxial growth technique for the red and amber LEDs in commercial use today. He also developed a model (the DLP model) that allowed researchers to understand the thermodynamic phase stability of alloy semiconductors used In LEDs and solar cells. He also identified the effects of surfactants that are now used in the manufacture of the solar cells used in space. He has published approximately 400 papers and is the author of the most widely used book on the subject (OMVPE Theory and Practice) in 1989 (second edition in 1999), translated into Chinese. He has received numerous national and international awards. He was elected to the NAE in 2002.



Luyi Sun | *University of Connecticut*

Luyi Sun, Ph.D., is a Professor at the University of Connecticut. Sun is a researcher in the field of polymer processing and polymer-based functional hybrids. He has made significant contributions to injection stretch blow molding, polymer nanocomposites, and smart polymeric materials. He is the recipient of the Morand Lambla Award given by the Polymer Processing Society (2020). He holds 23 U.S. patents and 50 foreign patents, among which seven patents have been commercialized into products. He has published over 260 journal articles and serves as associate editor for Advanced Industrial and Engineering Polymer Research and Clays and Clay Minerals. Sun is a Fellow of the Royal Society of Chemistry and the Society of Plastics Engineers and a Member of the Connecticut Academy of Science and Engineering.



Earl Eugene Swartzlander, Jr. | *The University of Texas at Austin*

Earl E. Swartzlander, Jr., Ph.D., is a Professor of Electrical and Computer Engineering at the University of Texas at Austin. He is recognized for his extensive work in computer arithmetic involving specialized processors and the use of emerging technologies. He is the recipient of distinguished engineering alumni awards from Purdue University and the University of Colorado. He holds 21 U.S. patents and three foreign patents that have been licensed to four companies. He has published 91 journal papers, 316 conference papers, three books, 42 book chapters, and edited 11 books. He has been the Editor in Chief of the IEEE Transactions on Computers. He is a member of the Golden Core of the IEEE Computer Society, recipient of a third millennium medal from the IEEE Solid State Circuits Society, and a Life Fellow of the Institute of Electrical and Electronic Engineers for contributions to VLSI design of specialized signal processors.



Juming Tang | *Washington State University*

Juming Tang, Ph.D., is a Regents Professor and Distinguished Chair of Food Engineering in the Department of Biological Systems Engineering at Washington State University. Tang has trained over 50 Ph.D. students, 20 postdoctoral fellows and 50 visiting scholars, and published over 400 peer-reviewed scientific papers. He holds 13 U.S. and foreign patents licensed for global commercialization of 915 MHz microwave assisted thermal processing technologies for pathogen control in ready-to-eat meals. He has conducted pioneering research on pathogen controls in low moisture foods. Tang is a member of the NAE, Washington State Academy of Sciences, a Fellow of International Microwave Power Institute, American Society of Agricultural and Biological Engineers, and Institute of Food Technologists. He is a recipient of the International Food Engineering Award from ASABE/Nestle, R&D Award from IFT, and Frozen Food Research Award from the International Association of Food Protection.



Michael M. Thackeray | *Argonne National Laboratory*

Michael M. Thackeray, Ph.D., is an Emeritus Scientist and Distinguished Fellow at Argonne National Laboratory. Over the course of his career, Thackeray has contributed to the discovery and R&D of lithium-ion battery materials and products. He holds 61 U.S. and related foreign patents that have been licensed to companies worldwide. Thackeray has published 245 scientific articles and a book entitled Running with Lithium – Empowering the Earth – A personal journey. Thackeray is Honorary Chairman of the International Battery Association, having served previously as President and Chairman. His lifelong profession in lithium-ion battery research, materials engineering, commercialization and service have been recognized by the IBA, the U.S. Department of Energy, Argonne National Laboratory, the National Alliance for Advanced Transportation Batteries and the ACS. Thackeray is a Member of the NAE, and a Fellow of the ECSy and the Stellenbosch Institute for Advanced Study, South Africa.



Ganesh C. Thakur | *University of Houston*

Ganesh C. Thakur, Ph.D., MBA, NAE, is the Distinguished Professor of Petroleum Engineering and Director – Energy Industry Partnerships at the University of Houston, leading research with significant contributions in the field of integrated petroleum reservoir management, enhanced oil recovery, unconventional resources, and CCUS. His expertise covers both theoretical and practical aspects of these fields and he has worked in the industry for over 40 years, designing major capital projects involving billions of dollars of investments. He has published over 100 technical and management articles and patents, and authored three books, and two of them serve as textbooks in many universities. He is the former President of the Society of Petroleum Engineers and he currently serves as a Board Member and Treasurer of the Texas Academy of Medicine, Engineering, Science and Technology. He is a member of the NAE and currently serves as Chevron Fellow Emeritus and Chief Technology Advisor for GeoPark.



Bruce Jason Tromberg | *National Institutes of Health*

Bruce J. Tromberg, Ph.D., is the Director of the National Institute of Biomedical Imaging and Bioengineering (NIBIB) at the National Institutes of Health (NIH) and leads NIBIB's Rapid Acceleration of Diagnostic Technologies COVID-19 innovation initiative. Prior to joining NIH, he was a professor of biomedical engineering and surgery, and director of the Beckman Laser Institute and Medical Clinic at the University of California, Irvine. Tromberg has co-authored more than 450 publications and holds 24 patents in biophotonics methods and devices, many of which have been clinically translated and licensed to industry. Recent honors include the Michael S. Feld Award from Optica, the Britton Chance Award from the International Society for Optical Engineering, and the Horace Furumoto Innovator Award from the American Society for Laser Medicine and Surgery. Tromberg is a Fellow of Optica, SPIE, and AIMBE.



Mark Van Dyke | *The University of Arizona*

Mark Van Dyke, Ph.D., is the Associate Dean of Research and a Professor of Biomedical Engineering at the University of Arizona. He is an inventor on 41 issued U.S. patents, an author on more than 160 scientific publications and four book chapters, and a co-editor of five books. His inventions have been licensed or assigned to four startup companies that have raised more than \$90 million in capital and grants. Van Dyke is the recipient of the Dow Corning Fellowship, the Faculty Excellence Award at Wake Forest School of Medicine, and has been named a Leader in Research, Teaching and Scholarship at Virginia Tech. He is the co-founder of three startup companies and served as Chief Scientific Officer of one of these companies. He has held leadership positions in several scientific societies, including ASME, the Tissue Engineering Regenerative Medicine International Society, and The Society for Biomaterials.



T. Venky Venkatesan | *The University of Oklahoma*

T. Venky Venkatesan, Ph.D., FRS, is currently the Director of the Center for Quantum Research and Technology at University of Oklahoma, and Scientific affiliate at NIST Gaithersburg. Prior to this he was Director of the Nano Institute at the National University of Singapore where he was a Professor of ECE, Physics, MSE and NGS. As the inventor of the pulsed laser deposition (PLD) process, he has over 800 papers and 34 patents and is globally among the top one hundred physicists in terms of his citations with an H-index of 115. He is also the founder and Chairman of Neocera and Neocera Magma and co-founder of Blue Wave Semiconductors. He recently helped launch two healthcare companies in Singapore, Cellivate and Breathonix. He is a Fellow of the Royal Society, APS, Materials Research Society, and World Innovation Foundation. He has won the Bellcore Award of excellence, 2012 APS George E. Pake Prize, 2020 APS Distinguished Lectureship on the Applications of Physics Award, and President's Gold Medal of the Institute of Physics.



Binghe Wang | *Georgia State University*

Binghe Wang, Ph.D., is a Regents' Professor of Chemistry, Georgia Research Alliance Eminent Scholar, and Georgia Cancer Coalition Distinguished Cancer Scholar at Georgia State University. Wang is a synthetic medicinal chemist with current research interests in chemosensing, new diagnostics, drug design and delivery in the areas of cancer, infectious diseases and inflammation as well as click chemistry and carbohydrate recognition. He holds over 25 U.S. patents and has co-founded one startup company. He has published over 330 scientific papers, seven books and has given over 230 invited lectures. He has served over 20 years as Chief Editor of the Medicinal Research Reviews journal published by John Wiley and Sons. He is also the founding serial editor of "A Wiley Series in Drug Discovery and Development," which has published over 25 volumes.



Nien-Hwa (Linda) Wang | *Purdue University*

Nien-Hwa L. Wang, Ph.D., is the Maxine Spencer Nichols Professor in the Davidson School of Chemical Engineering at Purdue University. Wang is a leading expert in chemical and biochemical separations, multi-component chromatography, continuous chromatography, and purification of rare earth and other critical elements from waste magnets, waste batteries, and mineral ores. She is the recipient of the 2017 Gold Award from the Purdue Foundry, and the 2018 Silver Medal, Mobile World Congress Scholar Challenge Award, and a 2018 member of the Purdue's Innovators Hall of Fame. She holds five U.S. patents and five foreign patents, which have been licensed to three companies. Her simulation software tools have been licensed to ten companies and three national laboratories. She has published 148 articles and six book chapters. Wang is a Fellow of the AIMBE and American Institute of Chemical Engineers.



Jian-Ping Wang | *University of Minnesota*

Jian-Ping Wang, Ph.D., is a Distinguished McKnight University Professor and Robert Hartmann Chair in Electrical and Computer Engineering at the University of Minnesota. Wang is the inventor of the rare-earth-free iron nitride magnet, several magnetic recording media for HDD and spintronic devices for memory and computing, and high-moment magnetic nanoparticles and large-area magnetic biosensors for medicine applications. He received the INSIC Technical Achievement Award 2006 for the demonstration of the exchange coupled composite magnetic media. He received the 2019 Technical Excellence Award from Semiconductor Research Corporation for "Innovations and Discoveries in Nanomagnetism and Novel Materials that Accelerated the Production of Magnetic Random-access Memories". He holds 68 U.S. patents that have been licensed to six companies. He is the co-founder of Niron Magnetics Inc, Zepto Life Technology LLC, and Universal Magnetic Systems LLC. He has published 399 articles and seven book chapters. Wang is a Fellow of IEEE and APS.



Shan X. Wang | *Stanford University*

Shan X. Wang, Ph.D., is the Leland T. Edwards Professor in the School of Engineering, a Professor of Materials Science & Engineering and jointly of Electrical Engineering, and by courtesy, of Radiology at Stanford University. Wang is a leading expert in biosensors, information storage and spintronics. His research and inventions span across a variety of areas including magnetic biochips, in vitro diagnostics, cancer biomarkers, magnetic nanoparticles, magnetic sensors, magnetoresistive random access memory, and magnetic integrated inductors. He holds 38 U.S. patents and 17 foreign patents that have been licensed to five companies. He is the founder of MagArray Inc. and several other startups in Silicon Valley. He has published 320 articles, two books, and nine book chapters. Wang is a Fellow of IEEE and APS.



Bennett Ward | *Virginia Commonwealth University*

Bennett C. Ward, Ph.D., is a retired Affiliate Professor of Chemical Engineering at VCU. Ward has made important contributions to invention and innovation while working in the fields of high-performance polymers, (heat and chemical resistance), porous materials, filtration, wicking and liquid storage media. Innovations while working for Hoechst Celanese and Filtrona Porous Technologies have led to at least six ongoing product lines. Ward holds 35 U.S. patents, and a number of related foreign patents. While at VCU Ward established an industry-academic partnership which is the foundation of the VCU Senior Engineering Design program.



James J. Watkins | *University of Massachusetts Amherst*

James J. Watkins, Ph.D., is Professor of Polymer Science and Engineering and Director of the Institute for Hierarchical Manufacturing at the University of Massachusetts Amherst. Watkins has made significant advances in the scalable fabrication of nanostructured devices for applications in electronics, advanced optics, metamaterials and energy. He is a recipient of the Camille Dreyfus Teacher-Scholar Award and a David and Lucile Packard Foundation Fellowship for Science and Engineering. He holds fifteen U.S. and six foreign patents that have been licensed to three companies. He recently founded Myrias Optics, Inc. Watkins has guided the research of more than 40 Ph.D. students, has authored more than 150 papers, and has presented more than 200 invited lectures. He is a Fellow of the APS.



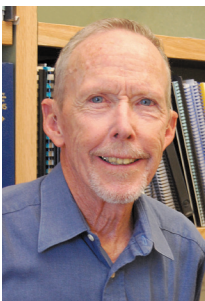
Anthony S. Weiss | *The University of Sydney*

Anthony S. Weiss, Ph.D., is the McCaughey Chair and Professor of Biochemistry and Molecular Biotechnology, NHMRC Leadership Fellow, and leads Tissue Engineering & Regenerative Medicine in the Charles Perkins Centre at the University of Sydney. Weiss founded the clinical stage company Elastagen Pty Ltd which was acquired by Allergan. Weiss is on 13 Editorial Boards, has authored over 300 publications, and holds 163 international patents covering human tropoelastin, which gives tissue its elasticity and enhances the repair of scars and wounds. Awards include Prime Minister's Prize for Innovation, Premier's Prize for Science & Engineering Leadership in Innovation, Clunies Ross Medal, Eureka Prize, Fulbright Scholar, and the Order of Australia. Weiss is Fellow of the Royal Society of Chemistry, Australian Academy of Technology and Engineering, Royal Australian Chemical Institute, Royal Society of NSW, Tissue Engineering and Regenerative Medicine, Biomaterials Science and Engineering, and AIMBE.



Gregory Francis Welch | *University of Central Florida*

Gregory Francis Welch, Ph.D., is a Pegasus Professor and the AdventHealth Endowed Chair in Healthcare Simulation at the University of Central Florida. Welch has made important contributions in areas such as human-computer interaction, human motion tracking, virtual and augmented reality, computer graphics and vision, and training related applications. He is the recipient of awards including the 2018 IEEE Virtual Reality Technical Achievement Award in 2018, and the 2016 Long Lasting Impact Paper Award at the 15th IEEE International Symposium on Mixed and Augmented Reality. He holds 18 U.S. patents. He has published over 150 articles and multiple book chapters, and serves as an Associate Editor for the journals PRESENCE: Virtual and Augmented Reality and Frontiers in Virtual Reality. Welch is a Fellow of IEEE and a member of the World Economic Forum Global Future Council on Virtual/Augmented Reality.



David George Whitten | *The University of New Mexico*

David G Whitten, Ph.D., is University Distinguished Professor at the University of New Mexico. Whitten has made important contributions in the development of new polymers and oligomers that act as highly efficient antimicrobials against a variety of pathogens, including viruses, bacteria and fungi. He has received awards including the NSF Pioneer Award, the Japanese Photochemistry Association Award for basic and applied research in photochemistry, and the George S. Hammond Award for “Lifetime Contributions to Photochemistry”. He has been selected as an ACS Fellow, named as Special Visiting Fellow – Ciencia sem Fronteiras, Brazil, and named 2020 Innovation Fellow - Rainforest Innovations, UNM. He holds 21 U.S. patents and ten foreign patents that have been licensed to three companies. He is a Founder of two startup companies. He has published over 400 articles and book chapters and has served as Editor-in-Chief of the ACS journal *Langmuir* and has been Associate Editor of ACS Applied Materials and Interfaces.



David Rives Williams | *University of Rochester*

David R. Williams, Ph.D., is the William G. Allyn Professor of Medical Optics in the Institute of Optics at the University of Rochester. He received his PhD. in psychology from the University of California, San Diego in 1979. Williams’ research team demonstrated the first closed loop adaptive optics ophthalmoscope, which could measure and correct the eye’s aberrations with unprecedented accuracy, providing cellular-scale resolution in images of the living retina. Awards include the 1998 Edgar G. Tillyer Award, the 2006 Friedenwald Award, the 2007 Bressler Prize, the 2012 Champalimaud Vision Award, the 2014 Stein Innovation Award, the 2015 Beckman Argyros Award, and the 2020 RPB David F. Weeks Award for Outstanding Vision Research Award. Williams was elected to the NAS in 2014.



Darren Woodside | *Texas Heart Institute*

Darren Woodside, Ph.D., is a visionary scientist and inventor, and he is a highly respected member of the Texas Heart Institute and the broader Texas Medical Center. His many discoveries, along with his research focus, well represent the mission and vision of the NAI and highlight the value of patents and commercialization to universities and non-profit research institutions, both nationally and internationally. At the Texas Heart Institute, Woodside’s myriad roles include leading 12 departments, of which there are eight research programs and labs that have been awarded over \$12 million in federal and sponsored research funding in the last three years. Woodside has four U.S. patents – alongside three pending patent applications – which are licensed or optioned to two companies (including 32 patent applications in foreign jurisdictions).



Hong Yan | *City University of Hong Kong*

Hong Yan, Ph.D., is Wong Chun Hong Professor of Data Engineering and Chair Professor of Computer Engineering at City University of Hong Kong and Director of Center for Intelligent Multidimensional Data Analysis Limited. Yan has made seminal contributions to image processing, pattern recognition and bioinformatics. He received the Best Mobile Entertainment Software Award from Hong Kong Productivity Council in 2005, Excellent Product Award at China Hi-Tech Fair in 2013, and the Norbert Wiener Award from IEEE SMC Society in 2016. Yan holds ten U.S. patents (five granted and five pending) and two Chinese patents pending that have been licensed to ten companies. He has published two books and over 600 papers in peer-reviewed journals and conferences. He is the founder of General Imaging Limited and Center for Intelligent Multidimensional Data Analysis Limited. He is an IAPR Fellow, IEEE Fellow, and Member of European Academy of Sciences and Arts.



Paul Gordon Yock | *Stanford University*

Paul G Yock, M.D., is the Weiland Professor Emeritus of Bioengineering and Medicine at Stanford University. Yock invented some of the basic tools of interventional cardiology, including the Rapid Exchange™ angioplasty and stenting system, intravascular ultrasound (the mechanical approach) and the Smart Needle™. He founded and directed Stanford Biodesign, a postgraduate training program for medical technology inventors. Yock also co-founded the Stanford Department of Bioengineering. He has published over 300 papers (250 peer reviewed) and two books. Major honors include the 2008 American College of Cardiology Distinguished Scientist Award, the 2018 NAE Gordon Prize “for innovation in engineering and technology education” and the 2019 NAE Russ Prize “for outstanding bioengineering achievement that improves the human condition”. He is a member of the NAE and the Association of American Physicians.



Richard A. Yost | *University of Florida*

Richard A. Yost, Ph.D., is University Professor and Head of Analytical Chemistry at the University of Florida. He is also a Professor of Pathology, Immunology, and Laboratory Medicine and Professor of Natural Resources and the Environment. Yost is recognized as an innovator in analytical chemistry. He holds 15 U.S. and five foreign patents that have been licensed to over a dozen companies in the U.S. and worldwide. He is best known for his invention of the triple quadrupole mass spectrometer, a groundbreaking analytical instrument that is used daily in drug development, disease testing, food safety, and environmental studies. He has supervised the research of 110 Ph.D. students and has published 235 articles and book chapters. Yost has received the ASMS Award for Distinguished Contribution in Mass Spectrometry, the MSACL Award for Distinguished Contribution to Clinical Mass Spectrometry, the Florida Academy of Sciences Medal, and the Pittsburgh Analytical Chemistry Award.



Habib Zaghouani | *University of Missouri-Columbia*

Habib Zaghouani, Ph.D., is a Professor at the University of Missouri School of Medicine. Zaghouani is the lead inventor of innovative biotherapeutics for autoimmune diseases with a special emphasis on type 1 diabetes and multiple sclerosis. He is the recipient of the J. Lavenia Chair endowment from the University of Missouri and the principal investigator on several grant awards from the NIH. He currently holds 23 U.S. and foreign patents and some of these are under licensing. He is the founder of one startup company and is currently forming another company for the treatment of type 1 diabetes. He has published more than one hundred research articles, review and book chapters. Zaghouani is a member the AAAS and the American Association of Immunologists.



Ya-Qin Zhang | *Tsinghua University*

Ya-Qin Zhang, Ph.D., is currently the Chair Professor of AI Science at Tsinghua University, and the founding Dean of Tsinghua Institute for AI Industry Research. Zhang is a world-renowned scientist and a leading business executive who has made significant contributions to the software and Internet industry. He has authored 12 books, over 500 papers and 60 U.S. patents in digital video, mobile communications, networking and artificial intelligence. He was elected to the China Academy of Engineering, AAA&S, and Australia Academy of Engineering. He became the youngest IEEE Fellow in the organization's 100+ year history, and received the prestigious industry pioneer award from IEEE. He serves on the Board of Directors of four public companies and holds board membership and adjunct professorship in eight prestigious universities. Zhang is an active member of Committee 100, a non-profit organization to promote cultural exchanges between China and the U.S.



Ming-Ming Zhou | *Mount Sinai Health System*

Ming-Ming Zhou, Ph.D., is Dr. Harold and Golden Lampert Professor and Chairman of the Department of Pharmacological Sciences at Icahn School of Medicine at Mount Sinai. Zhou made the seminal discovery of the bromodomain as the first histone reader in gene transcription and as novel drug target for human cancer and inflammation. He is the recipient of GlaxoSmithKline Drug Discovery Research Award and The Jacobi Medallion. He holds 26 U.S. patents and two foreign patents licensed to companies. He is a Founder and Director of Parkside Scientific Inc. He has published 190 research articles, book and book chapters, and serves on the Board of Directors at New York Structural Biology Center and the editorial boards of ACS Medicinal Chemistry Letters, Cancer Research, Journal of Cancer Immunology, Journal of Molecular Cell Biology, and Molecular Cancer Therapeutics. Zhou is the Fellow of AAAS.

IN MEMORIAM



1930-2021
2019 NAI Fellow

Israel Kleinberg | *Stony Brook University*

Israel Kleinberg, D.D.S., Ph.D., D.S.c., F.R.C.D(C), retired, after 45 years at Stony Brook University where he was the founding chair of the Department of Oral Biology and Pathology and Director of Translational Oral Biology. Kleinberg developed multiple products with the potential for the enhancement of human health and wellbeing. He was recognized for his work in many areas; especially the biochemistry and physiology of complex mixed bacterial populations. His Inventions included PerioTron, Smartmouth™, BasicBites®, dentifrice products manufactured and distributed by a leading oral care product company and FDA approved the Ortek ECD which is ready for commercialization this year. He was the recipient of numerous academic honors and awards, including the 2014 IADR Distinguished Scientist Award for Research in Dental Caries, the ADA's ADEA Gies Award for Innovation as a dental educator, the Outstanding Inventor Award from State University of New York, an Honorary Doctor of Science degree from the University of Manitoba, the Canada Centennial Medal for contributions to the development of dental research in the nation. He was named a State University of New York Distinguished Professor. Kleinberg held 21 patents and numerous foreign patents. His research led to the start-up company of "Ortek Therapeutics". He mentored 24 Ph.D. students, 10 post-doctoral trainees and 10 senior scientists. He had more than 300 scientific publications and over 60 years of continuous research funding.



1933-2022
2021 NAI Fellow

Morton M. Mower | *University of Colorado Denver*

Morton M. Mower, M.D., was a Distinguished Clinical Professor of Medicine at the University of Colorado, a Professor of Physiology and Biophysics at Howard University College of Medicine, and a Professor of Medicine at The Johns Hopkins University School of Medicine. Mower was an Electrophysiologist and co-inventor of Implantable Cardioverter-Defibrillator and inventor of Cardiac Resynchronization Therapy for heart failure. He held 78 U.S. patents in addition to foreign counterparts widely licensed in the medical device field. He published 133 peer-reviewed original communications and 231 abstracts and other papers. Mower was a member of AHA, American College of Cardiology, American College of Physicians, American College of Chest Physicians, received the Prince Mahidol Award in Medicine, the University of Maryland Honor and Gold Key Award, the Distinguished Alumnus Award from the Johns Hopkins University, and was a 2015 inductee of The National Inventors Hall of Fame in Akron, Ohio.



1952-2021
2020 NAI Fellow

Ralph J. Portier | *Louisiana State University*

Ralph J. Portier, Ph.D., was a Distinguished Professor emeritus in Environmental Sciences at Louisiana State University. Portier's research involves evaluation of fate and effect of carcinogens in aquatic/marine environments, the evaluation of microorganisms for detoxification of contaminated soils and sediments and the development of new technologies using immobilized biofilms for the continuous detoxification of contaminated industrial effluent/groundwater. He is the recipient of George W. Goethals Medal, (Society of American Military Engineers), Best Innovative Technology in Pollution Engineering Award (Pollution Engineering), Construction Man of The Year Award Finalist (Engineering News Record), LSU Distinguished Faculty Award and the Joseph D. Martinez Environmental Achievement Award. (Air & Waste Management). He held 9 U.S. patents that have been licensed to 4 companies. He published 176 articles, 9 book chapters, and served on the editorial board for the journal Remediation. Portier was a member of the Society of Environmental Toxicology and Chemistry, AAAS, ACS, and ASM.



1939-2019
2013 NAI Fellow

Joseph C. Salamone | *University of Massachusetts Lowell*

Joseph C. Salamone, Ph.D., was Professor Emeritus of the University of Massachusetts Lowell, Adjunct Professor of Biomedical Engineering at the University of Texas at Austin and at San Antonio, Chief Scientific Officer of Rochal Industries LLP, and former VP of Research at Bausch & Lomb. He is a member of the National Academy of Engineering and a Fellow of AIMBE, ACS, SBE, and POLY. His patents include 206 U.S. Patents and (non-duplicative) U.S. Patent Applications and 764 international patents and applications. He is a leading pioneer in the development of novel biomaterials for ophthalmology and for wound care, having commercialized 45 products in rigid and soft contact lenses, silicone hydrogel contact lenses, contact lens care solutions and cleaners, intraocular lens materials, controlled drug delivery, and spray-on, non-stinging liquid bandages for human and veterinary use. He is actively involved in the development of cell-compatible substrates for wound healing.



1943-2021
2014 NAI Fellow

George E. Seidel, Jr. | *Colorado State University*

George E. Seidel, Jr., Ph.D., was University Distinguished Professor Emeritus of Biomedical Sciences at Colorado State University. He received his bachelor's degree from Pennsylvania State University and his M.S. and Ph.D. from Cornell University. He studied bull semen and endocrinology of superovulating calves and the development of resulting embryos. His postdoctoral research at Harvard Medical School evaluated oocytes with electron microscopy. Since 1971 he was at Colorado State University and between 1973 and 1983 more than 6000 bovine embryos were collected from donor cows and transferred to the uteri of less valuable recipients. Fees for these services funded teaching and development of nonsurgical recovery and transfer techniques for bovine and equine embryos, cryopreservation of embryos, and a simple procedure for bisecting embryos to produce identical twins. Seidel was elected to the U.S. National Academy of Sciences in 1992. In the late 1990s, his laboratory made sexing sperm by flow cytometry/cell sorting practical for artificial insemination.



1930-2021
2017 NAI Fellow

Thomas A. Waldmann | *National Institutes of Health*

Thomas A. Waldmann, M.D. received his M.D. from Harvard Medical School. He joined the NCI in 1956, and has been Chief of the Lymphoid Malignancies Branch since 1973. Over his 60-year career he defined IL-2 receptor subunits, IL-2R beta and IL-2R alpha using first-ever reported anti-cytokine receptor monoclonal antibody (anti-Tac, daclizumab). These studies culminated in the definition of the IL-2 receptor as an exceptionally valuable target for monoclonal antibody therapy of leukemia, and multiple sclerosis. He co-discovered IL-15, elucidated its role in persistence of NK and CD8 memory T-cells and completed a first in-human trial of IL-15 in patients with metastatic malignancy. His honors include: Ehrlich Medal, Abbott Laboratories Prize, Bristol-Myers Squibb Award, Milken Family Medical Foundation Award, Artois-Baillet Latour Health Prize, Ralph Steinman Award, and election to National Academy of Sciences, American Academy of Arts and Sciences, and National Academy of Medicine.

2021 FELLOWS SELECTION COMMITTEE*



Norman R. Augustine | *Retired Chairman and CEO of the Board, Lockheed Martin Corporation, National Medal of Technology and Innovation Recipient, National Academy of Science Member*

Norm Augustine is retired Chairman and CEO of the Board of the Lockheed Martin Corporation. Prior to joining Martin Marietta, he served as Assistant Secretary of the Army (R&D) from 1973-75 and Undersecretary from 1975-77. He was a Professor at Princeton, his alma mater, from 1997-99. Mr. Augustine has been presented the National Medal of Technology by the President of the United States and received the Joint Chiefs of Staff Distinguished Public Service Award. He has five times received the Department of Defense's highest civilian decoration, the Distinguished Service Medal. He has been elected to membership in the American Philosophical Society, the National Academy of Science, the American Academy of Arts & Sciences, the Explorers Club, Tau Beta Pi, Phi Beta Kappa and Sigma Xi.



Betsy Boyle | *Director of Operations and Prize Programs, Lemelson-MIT Program Director of Operations and Prize Programs*

Betsy Boyle manages operations for the Lemelson-MIT Program, and previously oversaw the LMIT inventor prize programs. She has more than 25 years of experience in non-profit management and higher education, and has managed programs focusing on green building and energy efficiency. Betsy received a Bachelor of Science from the University of Massachusetts, Amherst, and a Master of Public Administration from the Harvard Kennedy School.



Karen J.L. Burg | *Vice President for Research, Harbor Lights Endowed Chair, College of Veterinary Medicine, University of Georgia, AAAS-Lemelson Invention Ambassador and NAI Board Member, NAI Fellow*

Karen J.L. Burg, Ph.D., FNAI, was named Vice President for Research in 2021. She holds the Harbor Lights Chair in Small Animal Studies in the College of Veterinary Medicine at the University of Georgia (UGA). Prior to joining UGA, she served as vice president for research and professor of chemical engineering at Kansas State University. Honors to Karen include the Presidential Early Career Award for Scientists and Engineers, the inaugural Swiss AO Research Prize, recognition as an American Association for the Advancement of Science-Lemelson Invention Ambassador, an American Association for the Advancement of Science Fellow, an American Council on Education Fellow, an American Institute for Medical and Biological Engineering Fellow, a Biomedical Engineering Society Fellow, an International Union of Societies for Biomaterials Science and Engineering Fellow, a Massachusetts Institute of Technology TR Young Innovator, a National Academy of Inventors Fellow, and a U.S. Department of Defense Era of Hope Scholar. Karen is the inventor of record of eight issued patents, with licenses serving as the foundation for a thriving diagnostics company. Karen served as a member of the United States delegation for the 2017 Global Entrepreneurship Summit (GES) in Hyderabad, India and as alumna ambassador for the 2019 GES in The Hague, The Netherlands. 2017 Global Entrepreneurship Summit (GES) in Hyderabad, India and as alumna ambassador for the 2019 GES in The Hague, The Netherlands.



Anne H. Chasser | *Former Commissioner for Trademark, U.S. Patent and Trademark Office*

Anne H. Chasser is an Author and Intellectual Property Strategist and Expert. From 1999-2004 Anne served as the Commissioner for Trademarks at the United States Patent and Trademark Office. Appointed by the President Clinton Administration and confirmed by the United States Senate. She served in both the Clinton and Bush administrations, where she oversaw the trademark operations at the USPTO. During her term at the USPTO, the trademark operations implemented full electronic processing of trademark applications and examination and implemented the Madrid Protocol. She was recognized by Managing Intellectual Property Magazine as one of the Fifty Most Influential People in Global Intellectual Property. Anne co-authored two books: Brand Rewired and Domain Rewired, published by John Wiley. In 2014, Anne was awarded the Distinguished Career Award by The Ohio State University, John Glenn School of Public Affairs.



Elizabeth Lea Dougherty | *Eastern Regional Outreach Director, U.S. Patent and Trademark Office*

(See Fellow speaker bio)



Andrew H. Hirshfeld | *Commissioner for Patents, U.S. Patent and Trademark Office*

As Commissioner for Patents, Drew Hirshfeld manages and leads the patent organization as its chief operating officer. He is responsible for managing and directing all aspects of the organization which affect administration of patent operations, examination policy, patent quality management, international patent cooperation, resources and planning, and budget administration. During his time as Commissioner, Mr. Hirshfeld has led the Patent business unit by emphasizing both transparency and collaboration. He has managed efforts to ensure the consistency and reliability of patent grants. Mr. Hirshfeld has further played a lead role to ensure that the examining corps is provided with updated examination guidance and training.

Prior to serving as Commissioner for Patents, Mr. Hirshfeld held the positions of Deputy Commissioner for Patent Examination Policy and Chief of Staff to the Under Secretary of Commerce for Intellectual Property and Director of the USPTO. Mr. Hirshfeld began his career in 1994 as a Patent Examiner, he became a Supervisory Patent Examiner in 2001, and was promoted to the Senior Executive Service in 2008 as a Group Director in Technology Center 2010. Hirshfeld received a Bachelor of Science from the University of Vermont, and a J.D. from Western New England College School of Law.



Bethany Johns | *Assistant Director, Research Policy, Association of Public and Land-grant Universities (APLU)*

Dr. Bethany R. Johns is the Assistant Director of Research Policy at Association of Public and Land-grant Universities (APLU). She works on research policy and regulatory issues related to sustaining the excellence of public research universities, as well as staff the Council on Research. Before joining APLU, Dr. Johns worked in Government Relations for the American Institute of Physics (AIP) managing the government relations advocacy services and administering tailored, nuanced strategies to educate, inform and constructively influence policy and policymakers. Dr. Johns has worked on a broad spectrum of issues regarded science and innovation including: Agriculture, energy, and environmental science for American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America; Science policy consultant to the Commercial Spaceflight Federation, the premier trade association of over 40 businesses at the forefront of commercial aerospace; and at the American Astronomical Society's public policy office successfully in securing millions of federal dollars appropriated for the space sciences. Dr. Johns obtained her Ph.D. and Masters in Physics from Clemson University with an emphasis in policy studies and a B.A. in Physics from Kenyon College.



Robert S. Langer | *David H. Koch Institute Professor at Massachusetts Institute of Technology, National Medal of Technology and Innovation Recipient, National Medal of Science Recipient, National Inventors Hall of Fame Inductee, David H. Koch Institute Professor, Massachusetts Institute of Technology, NAI Fellow*

Robert S. Langer, Sc.D., FNAI, is the David H. Koch Institute Professor at MIT (there are 13 Institute Professors at MIT; being an Institute Professor is the highest honor that can be awarded to a faculty member). He has written more than 1,400 articles. He also has over 1,300 issued and pending patents worldwide. His many awards include the United States National Medal of Science, the United States National Medal of Technology and Innovation, the Charles Stark Draper Prize (considered the engineering Nobel Prize), Albany Medical Center Prize (largest U.S. medical prize), the Wolf Prize for Chemistry and the Lemelson-MIT prize, for being "one of history's most prolific inventors in medicine." Langer is one of the very few individuals ever elected to the National Academy of Medicine, the National Academy of Engineering, the National Academy of Inventors and the National Academy of Sciences.



Cato T. Laurencin | *University Professor & Albert and Wilda Van Dusen, Distinguished Professor of Orthopaedic Surgery, University of Connecticut, NAI Board Member, NAI Fellow*

Cato T. Laurencin, M.D., Ph.D., FNAI, is the University Professor and Albert and Wilda Van Dusen Distinguished Endowed Professor of Orthopaedic Surgery at the University of Connecticut. A surgeon-engineer-scientist, he is Professor of Chemical, Materials, and Biomedical Engineering at UConn. He serves as Chief Executive Officer of the Connecticut Convergence Institute for Translation in Regenerative Engineering, at UConn Health. He earned his B.S.E. in Chemical Engineering from Princeton University, his M.D., Magna Cum Laude, from the Harvard Medical School, and his Ph.D. in Biochemical Engineering/Biotechnology from the Massachusetts Institute of Technology. Dr. Laurencin has produced seminal research and technologies on nanotechnology and tissue regeneration, polymer/ceramic systems for bone regeneration, and biomaterials for soft tissue regeneration. Dr. Laurencin is a pioneer of the field of Regenerative Engineering. He received the NIH Director's Pioneer Award, and the National Science Foundation's Emerging Frontiers in Research and Innovation Grant Award for this field. For his work he has received singular honors including the American Association for the Advancement of Science Philip Hauge Abelson Prize given 'for signal contributions to the advancement of science in the United States', the Simon Ramo Founder's Award from the National Academy of Engineering and the Walsh McDermott Prize from the National Academy of Medicine. He is the first in history to win all three of these awards. Dr. Laurencin is a world leader in invention and innovation, and he is the recipient of the National Medal of Technology and Innovation, America's highest award for technological achievement, award by President Barack Obama in ceremonies at the White House.



Arthur Molella | *Director Emeritus, Smithsonian Lemelson Center for the Study of Invention & Innovation*

Arthur P. Molella, Ph.D., was the founding director, now emeritus, of the Smithsonian Institution's Lemelson Center for the Study of Invention and Innovation at the National Museum of American History. He received his Ph.D. in the history of science from Cornell University and a Doctor of Science, honoris causa, from Westminster University, U.K (2005). At the National Museum of American History, he served variously as curator of electricity, chairman of the Department of History of Science and Technology, and assistant director for History. At Johns Hopkins University, he has served as Senior Lecturer, Dept. History of Science, and currently Lecturer M.A. in Museum Studies, On-Line, Advanced Academic Programs. He was head curator of the Smithsonian's Science in American Life exhibition, co-curator of the international exhibition, Nobel Voices. He has published and lectured widely on the history of science, invention, technology, and modern technological culture. His most recent books include Places of Invention (Smithsonian, 2015), World's Fairs on the Eve of War (Pittsburgh, 2015), World's Fairs in the Cold War (Pittsburgh, 2019). In addition to serving on the Executive Advisory Board of the National Academy of Inventors, he is on the board of the Florida Inventors Hall of Fame. He received the 2020 Leonardo da Vinci Medal of the Society for the History of Technology, the international society's highest award.



Rini Paiva | *Executive Vice President for Selection and Recognition, National Inventors Hall of Fame*

Rini Paiva is the Executive Vice President for Selection and Recognition, National Inventors Hall of Fame (NIHF). In this role, she oversees the annual Inductee Selection process for the NIHF, working with a wide-ranging group of experts in science, technology, engineering, intellectual property, and history to ultimately recognize the world's foremost patented inventors for their life-changing and innovative work. In addition, Paiva facilitates the Collegiate Inventors Competition (CIC), which brings recognition to the country's outstanding college students who create the technologies that shape the future. Both the NIHF and the CIC are dedicated to recognizing and fostering invention, creativity, and entrepreneurship. Paiva also provides oversight for the NIHF Museum in Alexandria, Virginia, which features the life-changing Inductees of the NIHF and demonstrates the power of intellectual property and innovation. Also integral to her work is encouraging NIHF Inductees to be involved in the organization's education programs, Camp Invention and Invention Project, so that they may serve as inspiration, encouragement, and examples to younger generations. With the National Inventors Hall of Fame since 1995, Paiva is an authority on the topic of U.S. invention.



Laura Savatki | *Board Member, AUTM*

Laura is the Technology Transfer Officer for the non-profit organization Versiti | Blood Research Institute. In this role, she is responsible for technology protection, commercialization, and partnership development. Laura has a diverse background as a research scientist, entrepreneur, and startup advisor, and broad experience bringing inventions to market. Laura's early career in medical research focused on vaccine trials, molecular virology, stem cell biology, transplant/oncology, and cellular assays. Her past roles include Vice President and Chief Operating Officer for Prodesse, a company she co-founded, which make molecular infectious disease diagnostic products and is now part of Hologic. Laura currently serves as the Association of University Technology Managers (AUTM) Board representative for the Alliance of Technology Transfer Professionals (ATTP).



Phillip Singerman | *Associate Director for Innovation and Industry Services, National Institute of Standards and Technology (NIST)*

Phillip Singerman is the Senior Advisor on Technology Transfer and Commercialization to the Montgomery County Economic Development Corporation and Elected Fellow of the National Academy of Public Administration. From 2011-2020 he served as the Associate Director for Innovation and Industry Services at the National Institute of Standards and Technology (NIST). In this capacity he was responsible for the NIST suite of external partnership programs, including the Hollings Manufacturing Extension Partnership, the Baldrige Performance Excellence Program, the Office of Advanced Manufacturing, NIST technology transfer, economic analysis, and small business innovation research awards.

Singerman has more than 40 years of experience in tech based economic development; he was the first chief executive of two of the best known and longest lasting private-public partnerships; the Ben Franklin Technology Center of Southeastern Pennsylvania and the Maryland Technology Development Corporation. During the Clinton Administration he served as U.S. Assistant Secretary of Commerce for Economic Development, a Presidential appointment requiring Senate confirmation.



James K. Woodell | *Association of Public and Land-grant Universities (APLU)*

James K. (Jim) Woodell, Ph.D., helps to realize the economic and societal impact of higher education. He provides professional services to institutions of higher education, and to their current and prospective partners in the private, civic, and government sectors. Spanning multiple areas of impact, his expertise includes: community development and improved quality of life in regions through higher education engagement, outreach, and public service; education, training, and workforce development, including strategies for design and delivery of programs; and R&D and innovation, including technological advancement, entrepreneurship, and regional technology-based economic development.

Woodell recently served as Vice President for Economic Development and Community Engagement at the Association of Public and Land-grant Universities (APLU), where he worked closely with member institutions to develop tools and resources to enhance their regional engagement and economic development efforts. He served as the staff director for APLU's Commission on Innovation, Competitiveness and Economic Prosperity (CICEP), and also the organization's Council on Engagement and Outreach (CEO), advancing APLU's economic and community engagement agenda. Woodell maintains APLU's strong presence in national issues related to the economic and social impacts of public research universities.



Denise Zannino | *Science Policy and Communications Analyst, National Science Foundation (NSF)*

Denise Zannino, Ph.D., is a Science Policy and Communications Analyst at the National Science Foundation in the Office of Legislative and Public Affairs. In this capacity she is responsible for internal communications and strategic visioning, project management for special events such as press conferences and symposiums, and general science outreach and communications projects. Prior to this role Denise was a AAAS Science & Technology Policy Fellow in the same office.

Denise earned her Ph.D. in neuroscience from Vanderbilt University, and a B.S. in biology and psychology from James Madison University. She is passionate about utilizing her scientific background and experience in biomedical research to communicate science to a varied range of audiences including the public, media, and other scientists, and to promote scientific programs, outreach, and awareness.

*The Fellows Selection Committee provides a final vote on recommendations from the Fellows Advisory Committee

— COMPLETE LIST OF CURRENT NAI FELLOWS —

A full list of NAI Fellows can be found on our website at
<https://academyofinventors.org/fellows-list/>

COMMON ABBREVIATIONS

American Academy.....	American Academy of Arts and Sciences
AAAS	American Association for the Advancement of Science
AACR.....	American Association for Cancer Research
AAM.....	American Academy of Microbiology
AAP	Association of American Physicians
AAU.....	American Association of Universities
ACerS.....	American Ceramic Society
ACM.....	Association for Computing Machinery
ACNP	American College of Neuropsychopharmacology
ACS.....	American Chemical Society
AHA	American Heart Association
AIC	American Institute of Chemists
AIChE	American Institute of Chemical Engineers
AIMBE.....	American Institute for Medical and Biological Engineering
APA	American Psychological Association
APLU.....	Association of Public and Land-grant Universities
APMI.....	American Powder Metallurgy Institute
APS.....	American Physical Society
APhils	American Philosophical Society
ASCE.....	American Society of Civil Engineers
ASCI	American Society for Clinical Investigation
ASEE.....	American Society for Engineering Education
ASM.....	American Society for Microbiology
ASM International.....	American Society for Metals International
ASME	American Society of Mechanical Engineers
AUTM.....	Association of University Technology Managers
BMES	Biomedical Engineering Society
DARPA.....	Defense Advanced Research Projects Agency
FDA	U.S. Food and Drug Administration
HHMI	Howard Hughes Medical Institute
IAPR.....	International Association of Pattern Recognition
IEEE.....	Institute of Electrical and Electronics Engineers
IET	Institution of Engineering and Technology
ISD	International Society for Differentiation
MRS.....	Materials Research Society
NAE.....	National Academy of Engineering
NAEd.....	National Academy of Education
NAI.....	National Academy of Inventors
NAM.....	National Academy of Medicine
NAS	National Academy of Sciences
NCI	National Cancer Institute
NIH	National Institutes of Health
NIHF.....	National Inventors Hall of Fame
NIST	National Institute of Standards and Technology
NSF.....	National Science Foundation
OSA	Optical Society of America
PAS	Pontifical Academy of Sciences
PECASE	Presidential Early Career Award for Scientist and Engineers
RSC.....	Royal Society of Chemistry
SDB.....	Society for Developmental Biology
SFB.....	Society for Biomaterials
SPIE	International Society for Optics and Photonics
TMS.....	The Minerals, Metals and Materials Society
U.S. DoD.....	United States Department of Defense
U.S. DOE.....	United States Department of Energy
USPTO.....	United States Patent and Trademark Office



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