

Defense Research at Historically Black Colleges and Universities and Other Minority Institutions

Committee

Eugene M. DeLoatch

Chair

Prior to beginning his service as Professor and Inaugural Dean of the Clarence M. Mitchell, Jr. School of Engineering at Morgan State University (1984–2016), Dr. Eugene M. DeLoatch completed twenty-four years of affiliation with Howard University in Washington, D.C. During his last nine years at Howard, he led a department that granted baccalaureate degrees to more African American engineers than any school in the country. He has a baccalaureate degree in Mathematics and Electrical Engineering (E.E.) from Tougaloo College and Lafayette College respectively. He also holds a M.S.E.E. and Ph.D. in Bioengineering from the New York Polytechnic University. In recognition of his many years of effective service to engineering education, Dr. DeLoatch has been awarded Honorary Doctorates by Lafayette College (1984), Binghamton University (2004) and Tougaloo College (2017).

Dr. DeLoatch became the first African American to serve as President of the American Society of Engineering Education (ASEE), the world's most prestigious engineering education organization, during the ASEE's 2002-2003 activity year. He is a Life Member and Fellow of the Society which was founded in 1893. Of his most cherished recognitions, Dr. DeLoatch lists the 2017 Black Engineer of the Year Award, the 2016 Tau Beta Pi Distinguished Alumnus Award, the 2015 AMIE Lifetime Achievement Award and the 2014 ABET Claire L. Felbinger Award for Diversity. In 2017, Dr. DeLoatch became a 2017 National Black College Alumni Hall of Fame Inductee. On June 22, 2019, he was selected as one of the inaugural recipients of the NSBE/BMAC Legacy Achievement Award at the Reginald F. Lewis Museum - (National Society of Black Engineers (NSBE) Baltimore Metropolitan Area Chapter (BMAC). The 14th of August 2019, Dr. DeLoatch will hosting the Master's in Engineering in Cyber Engineering (MECE) Cohort III Completion Ceremony at Morgan State University

Aliecia McClain

Vice Chair

Dr. McClain is an Associate Professor and Chair of the Department of Chemistry and Director of Dozoretz Institute for Mathematics and Applied Sciences (DNIMAS) Scholarship Program at Norfolk State University, Norfolk, VA. DNIMAS is a rigorous honor program for students majoring in science, engineering, and mathematics to help prepare them for success in their graduate or medical school pursuits. Dr. McClain is a native of Florence, South Carolina. She attended Benedict College where she received her B.S. degree in Chemistry. Upon graduation, she obtained a M.S. degree in Inorganic Polymer Chemistry from Clark Atlanta University in Atlanta, GA. She joined the Department of Chemistry at the University of California Davis in Davis, CA, where she received her Ph.D. in Agriculture and Environmental Chemistry in the Division of Fiber and Polymer Science. Dr. McClain is a member of the American Chemical Society, American Association for the Advancement of Sciences and the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers. She is also a Diamond Life member of Delta Sigma Theta Sorority, Inc.

Farrukh Alvi

Member

Dr. Alvi is the Associate Dean for Research and Graduate Studies at the FAMU-FSU College of Engineering. He earned his BS in Nuclear Engineering from UC Berkeley and PhD in Mechanical Engineering from Pennsylvania State University. He holds the Don Fuqua Eminent Scholar Chair and is a Professor of Mechanical Engineering at the Florida A&M University - Florida State University College of Engineering. He is the Founding Director of the Florida Center for Advanced Aero-Propulsion (FCAAP), a multiuniversity, state-wide research, technology and education center he helped establish in 2008. He is one of the founding leaders of the FAA Center of Excellence in Commercial Space Transportation (FAA COE CST), a consortium of nine universities established in 2010 by the FAA to address the broad range of issues in the emerging commercial space transportation sector. His research has recently focused on developing and implementing active flow and noise control technologies to reduce noise from and increase the efficiency of high speed aircraft, automobiles and turbomachinery (compressors, turbines) using advanced actuators, especially micro-fluidic actuators, an area where he holds ten patents, to date. The development and use of advanced diagnostics, especially optical techniques is also an active area of research. Over the last decade he has attracted over \$25 million in external funding for research, development and STEM education. The research has been funded by government agencies, such as the Air Force Office of Scientific Research (AFOSR), NASA, National Science Foundation (NSF), Office of Naval Research (ONR), DARPA, Army Research Office (ARO) and industry, such as Boeing, Northrup Grumman, Danfoss Turbocor, among others. To date, he has mentored over 50 PhD and MS students, postdoctoral researchers and scientists, and published more than 200 technical papers, articles and abstracts. He is an Associate Fellow of AIAA (American Institute of Aeronautics and Astronautics) and a Fellow of the ASME (American Society of Mechanical Engineers).

Carrie L. Billy

Member

Ms. Billy is an enrolled member of the Navajo Nation and attorney from Arizona, is the President and CEO of the American Indian Higher Education Consortium (AIHEC). Through AIHEC, the nation's 37 Tribal Colleges and Universities share a common vision: Strong Sovereign Nations Through Excellence in TRIBAL Higher Education. Ms. Billy has undergraduate degrees from the University of Arizona and Salish Kootenai College (a tribal college) and she earned a Juris Doctorate from Georgetown University Law Center. Ms. Billy was appointed by former President William J. Clinton as the inaugural Executive Director of the White House Initiative on Tribal Colleges and Universities, and she worked in the U.S. Senate for 10 years. Ms. Billy has been the principal investigator on numerous federal and private sector grants, including research and programmatic awards from the National Science Foundation, the National Institutes of Health, NASA, the U.S. Departments of Education and Agriculture, Bill and Melinda Gates Foundation, the Lumina Foundation and more. Ms. Billy's accomplishments include designing and implementing strategic initiatives and developing innovative policies and programs and tribally-directed research initiatives, including AIHEC AIMS, a comprehensive data collection system for TCU's, and the Indigenous Evaluation Framework, which incorporates Indigenous epistemology and core tribal values into a framework that integrates place, community, individual gifts and sovereignty with Western evaluation practice. She has worked to forge partnerships and coalitions and drafted legislation to designate TCU's as 1994 Land-grant institutions and to create a federal designation for Hispanic Serving Institutions. Her career reflects a commitment to public service -- to protecting and promoting the cultures, rights and well-being of American Indians and Alaska Natives and improving the quality of life and educational status of all Americans.

Robin N. Cogger

Member

Dr. Cogger is the Dean of the College of Engineering and a Professor of Mechanical Engineering at North Carolina Agricultural and Technical State University (N.C. A&T) located in Greensboro, NC (see www.ncat.edu/coe). The College offers baccalaureate, master's, and doctoral degrees through its 7 academic departments; and as such the COE offers its corporate and government collaborators ample opportunities to partner on research and educational endeavors compelled by the shared goal of preparing a globally competitive workforce. Under Dr. Cogger's leadership, the College continues to advance its strategic agenda of cultivating engineering and computer science leaders who excel in academics, innovation, and research. The COE's strategic priorities are designed to ensure that the College of Engineering is a strong technical epicenter for its regional, national, and international partners. Prior to joining N.C. A&T's faculty in July 2011, Dr. Cogger served as a Professor and Center Director at the University of North Carolina at Charlotte. Her career at UNC-Charlotte spanned over 15 years, where she served as a dedicated educator, researcher, and administrator. Dr. Cogger's research expertise is in solving design and performance problems related to tissue engineered organs, with special emphasis on liver replacement devices and their safe storage for off-the-shelf availability. Her work has been supported by grants from the National Institutes of Health, the National Science Foundation, and the Whitaker Foundation; and has resulted in numerous publications in the areas of liver tissue engineering and cryopreservation, one patent, and two patent applications. Dr. Cogger has been awarded for her excellence in research, teaching, and mentoring over her career, and is actively engaged in collaborations that advance faculty, innovative ventures, and student competitiveness. Dr. Cogger is a fellow of the American Society of Mechanical Engineers and of the American Institute for Medical and Biological Engineering. She is also a current member of the Board of Advancing Minorities Interest in Engineering (AMIEpartnerships.org); and on the Board of Directors of FIRST – an organization founded to inspire the interest and participation of young people in engineering, science and technology (see firstinspires.org). Dr. Robin Cogger is also a member of the Executive Council of Innovate GSO (see innovategso.org), which is part of a cross-city initiative that engages 5 cities in North Carolina focused on expanding the innovation economy across the state. Dr. Robin Cogger earned a Bachelor of Science from Cornell University, and her Master of Science and Doctoral degrees from the University of California – Berkeley, all in Mechanical Engineering. Dr. Cogger also completed her post-doctoral research as a fellow at Harvard Medical School and the Department of Surgery at Massachusetts General Hospital in Boston.

Lester A. Foster, III

Member

Lester Foster is the Chief Technology Officer of Electronic Warfare Associates (EWA) Government Systems, Inc. He has over 30 years of system engineering and management experience for the development of advanced technologies and systems in both government program management and as a contractor developer. His technical background is broad to cover sea, land, air and space vehicle platforms, computing technology and electronic subsystems including radio frequency and optical sensing and communications systems. His current position responsibilities include the assessment of technology both inside and outside the EWA Inc. to expand the intellectual property of EWA and to identify technologies and partners that are in line with EWA's business objectives. He performs business development to expand or bolster the technological capabilities of EWA. He leads the Small Business Innovative Research (SBIR) business process for the company. He performs duties of Program Manager and Principal Investigator for SBIRs and technology development contracts as required. Dr. Foster supports the business development and proposal development processes including authoring, and red and gold team review. Dr. Foster provides consulting support to EWA customers and partner corporations. He also aids senior management with business decisions by providing input from a technical and engineering perspective. He received his Ph.D. in mechanical engineering from the North Carolina State University in 1989.

Paul G. Gaffney, II

Member

Vice Admiral Paul G. Gaffney II, U.S. Navy (Ret.) served as the seventh president of Monmouth University from 2003 to 2013; he is President Emeritus and a fellow in Monmouth's Urban Coast Institute. He is counselor to the Dean of Engineering at the University of South Carolina as its first Fellow. He was president of the National Defense University from 2000 to 2003. Prior to that, he was the Chief of Naval. He was appointed to the statutory U.S. Ocean Policy Commission and served during its full tenure from 2001 to 2004. In his military career he headed the Navy's worldwide operational meteorology and oceanography program and he commanded the Naval Research Laboratory. He is a Member of the National Academy of Engineering and is a fellow of the American Meteorological Society. He was a member of the National Research Council's Ocean Studies Board and The National Academies Gulf Research Program Advisory Board. He chaired the Federal Ocean Research Advisory Panel and was the first chair of the Federal Ocean Exploitation Advisory Board. He co-chaired the NOAA Decadal Ocean Exploration Study in 2013. He is a director of Diamond Offshore Drilling Inc. He is a graduate of the U.S. Naval Academy and holds an M.S. in Ocean Engineering from Catholic University. He graduated from the Naval War College with Highest Distinction. He earned an M.B.A. from Jacksonville University.

Mark L. McKelvin, Jr.

Member

Dr. McKelvin is a Senior Project Leader in Digital Engineering at The Aerospace Corporation. In this role, he serves as the technical authority and the Aerospace team lead for the digital engineering implementation of Enterprise System Engineering for United States Space Force portfolio architect. Prior to joining the Aerospace Corporation, he led the development of model-based engineering technology and techniques for space system development at the National Aeronautics Space Administration Jet Propulsion Laboratory as a software systems engineer and fault protection engineer on major flight systems. He is also a Lecturer in the System Architecting and Engineering graduate program at the University of Southern California, Viterbi School of Engineering where he teaches courses in Model Based Systems Engineering and Systems Engineering Theory and Practice. He is a Senior Member of the American Institute of Aeronautics and Astronautics, and he serves as President of the International Council on Systems Engineering, Los Angeles Chapter. In February 2020, he was awarded the Most Promising Engineer in the Industry Award at the 34th Annual Black Engineer of the Year Award STEM Conference. He holds a Bachelor of Science in Electrical Engineering from Clark Atlanta University and a Ph.D. in Electrical Engineering and Computer Sciences from the University of California, Berkeley.

Richard M. Murray

Member

Richard M. Murray, Ph.D. received his B.S. degree in Electrical Engineering from California Institute of Technology in 1985 and the M.S. and Ph.D. degrees in Electrical Engineering and Computer Sciences from the University of California, Berkeley, in 1988 and 1991, respectively. Murray's Ph.D. research focused on nonlinear dynamics and control of multi-fingered robot hands and robotic locomotion systems. He is a recipient of the Eliahu Jury prize, awarded by the Department of Electrical Engineering and Computer Sciences for outstanding PhD research in systems theory. Professor Murray returned to Caltech in 1991 as a member of the Mechanical Engineering faculty and was a co-founder of the Control and Dynamical Systems program. His early research interests included nonlinear control of mechanical systems with applications to aerospace vehicles and robotic locomotion, active control of fluids with applications to propulsion systems, dynamics and control of thin film growth, and nonlinear dynamical systems theory. Murray served as the principal investigator for an AFOSR-sponsored PRET (Partnerships for Research, Excellence, and Transition) Center in "Nonlinear Robust Control Theory with Applications to Aerospace Vehicles" and was a co-PI for a second PRET Center on Robust Nonlinear Control of Stall and Flutter in Aeroengines. His group's research during this period included development of theoretical tools for dynamics and control of Lagrangian systems, development of computational tractable algorithms for real-time trajectory generation and tracking for unmanned vehicles, and demonstration of active control techniques to control of rotating stall and surge in compression systems. In 1998-99, Murray took a sabbatical in industry and was the Director of Mechatronic Systems at the United Technologies Research Center, where he managed a group of 80 engineers and scientists engaged in research on active control, sensing and actuation technology, embedded communications and computation, and harsh environment electronics. At United Technologies Corporation (UTC), Murray was a member of the Steering Committee for the Modeling, Analysis, Simulation and Computation (MASC) Initiative, a corporate-wide activity aimed at competitive differentiation of UTC's products and processes through effective use of modeling.

In June, 2000, Professor Murray was appointed as the Chair of the Division and Applied Science at Caltech. The Division of Engineering and Applied Science is one of the six academic divisions at Caltech. At the time of his appointment, the division has 85 faculty, 330 undergraduates, and 458 graduate students, making it the largest on campus. In addition to his Caltech responsibilities, Professor Murray was the chair of an AFOSR-sponsored panel on Future Directions in Control and Dynamical

Systems, a member of the United Technologies Corporate Advisory Group for Modeling, Analysis, Simulation and Computation, and a member of the DARPA Information Science and Technology Study Group (ISAT). He also served as a member of the Air Force Scientific Advisory Board from 2002-2006.

Ellen M. Pawlikowski

Member

Dr. Pawlikowski is an independent consultant, corporate board director and adjunct professor who formerly served as Commander, Air Force Materiel Command, Wright-Patterson Air Force Base, Ohio. The command employs some 80,000 people and manages \$60 billion annually, executing the critical mission of warfighter support through leading-edge science and technology, cradle-to-grave life cycle weapon systems management, world-class developmental test and evaluation, and world-class depot maintenance and supply chain management. General Pawlikowski entered the Air Force in 1978 through the ROTC program at the New Jersey Institute of Technology. She then attended the University of California at Berkeley and received a Doctorate in chemical engineering in December 1981, entering active duty at McClellan AFB, California, in April 1982. General Pawlikowski's career has spanned a wide variety of technical management, leadership and staff positions including command at the wing and center levels. She has served as Director of the Acquisition Management Office for the Assistant to the Secretary of Defense for Atomic Energy and as Deputy Assistant to the Secretary of Defense for Counterproliferation, Office of the Secretary of Defense. Her leadership assignments included Program Director of the Airborne Laser Program; Commander of the Military Satellite Communications Systems Wing; Deputy Director of the National Reconnaissance Office; Commander of the Air Force Research Laboratory; and most recently Commander of the Space and Missile Systems Center. General Pawlikowski is nationally recognized for her leadership in the US science and technology community. She is a Fellow of the American Institute of Aeronautics and Astronautics and a member of the National Academy of Engineers.

Deborah Santiago

Member

Deborah A. Santiago is the co-founder and Chief Executive Officer of Excelencia in Education, America's premier authority on efforts accelerating Latino student success in higher education. As an innovator and thought leader, she has researched and advanced evidence-based practices and strategies for more than 20 years at local and national levels to improve educational opportunities and success to better SERVE Latino, and all, students in higher education. Among her many contributions, she has worked in federal government addressing legislative issues in higher education at the Congressional Research Service and informed program and budget efforts in the Office of Postsecondary Education at the U.S. Department of Education. She also worked with federal agencies and communities across the nation to improve awareness and education opportunities for Latinos as the Deputy Director of the White House Initiative on Educational Excellence for Hispanic Americans. Among Deborah's community efforts, she has provided program design and implementation for dropout prevention and parental engagement and translated data for community engagement. Deborah earned a bachelor's degree in Economics from the University of Mary Washington in 1990, a master's degree in Urban Affairs and Planning from Virginia Tech. Her current research focuses on higher education policy on financial aid, workforce, and transfer, evaluation of effective institutional practices, Hispanic-Serving Institutions, and student success in higher education. In 2016, she contributed to the National Academy of Science's Committee on Developing Indicators for Undergraduate STEM Education.

Deepak K. Tosh

Member

Dr. Tosh is an assistant professor in Computer Science at the University of Texas at El Paso. His research interests include Blockchain technology, cybersecurity, data provenance mechanisms, security of Internet of Battlefield Things (IoBT) environments, distributed system security, cyber-threat information sharing, cyber-insurance, cyber-risk assessment, game theory and mechanism design, and nature-inspired optimization techniques. He has been actively working with researchers from Air Force

Research Lab (AFRL), Rome, NY and Army Research Lab (ARL), Adelphi, MD on the cybersecurity and blockchain research. Although the traditional centralized computing paradigm works well at present, the trust, privacy, and security issues are the main bottlenecks, which were overlooked. With a growing connectedness in our communities and increasing standards of cyber-crimes, security challenges are the must things to be addressed. With these motivations, Dr. Tosh has aligned his research focus in

designing secure, decentralized, and scalable solutions for both civilian application (e.g. Internet of Things, Cloud and Edge computing platforms) and military/battlefield environments.

Chad Womack

Member

Dr. Chad Womack is the National Director of STEM Initiatives at the UNCF headquartered in Washington, D.C. Dr. Womack's work portfolio includes the UNCF Merck Fellowship Program, UNCF STEM Scholars Program and the HBCU Innovation, Commercialization and Entrepreneurship (ICE) Initiative. More recently, Dr. Womack led the sourcing, development and

implementation of the UNCF STEM Scholars Program representing a \$48M+ and 10-year commitment to support 500 academically talented African-American high school students pursuing STEM as majors in college and careers in the tech-industry. Prior to joining the UNCF, Dr. Womack co-founded The America21 Project and DC Innovates, both innovation-based community and economic development nonprofit organizations dedicated to empowering metro-centers and underserved communities through STEM education, tech entrepreneurship and access to capital. Dr. Womack also founded the Philadelphia Biotechnology and Life Sciences Institute as a nonprofit initiative dedicated to addressing unmet educational and workforce development needs of the City of Philadelphia, and is a Co-Founder of 3GEN Vaccines a nano-biotechnology company. Prior to his entrepreneurial ventures, Dr. Womack completed several research fellowships at the National Institutes of Health (NIH), in the National Institutes for Allergy and Infectious Diseases (NIAID) Vaccine Research Center (VRC) and at the Harvard AIDS Institute and the Harvard School of Public Health in the Department of Immunology and Infectious Diseases. Dr. Womack earned his Ph.D. in Biomedical Sciences from the Morehouse School of Medicine, and is a proud graduate of Morehouse College where he was a Biology and Chemistry major. Dr. Womack resides with his family in his home city of Philadelphia, PA.