

Research @ Clark Atlanta University



Marcus W. Shute, P.E., Ph.D.

Vice President

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www.cau.edu/research

Clark Atlanta University



Research and Sponsored Programs



Research @ CAU



"At Clark Atlanta University, we believe that research and education cannot be decoupled. Research at CAU is essential in providing a world-class educational experience for our students. We leverage the diverse skills and expertise of our faculty, researchers, staff and students to make significant discoveries and contributions to the knowledge of humankind."

-- Marcus W. Shute, P.E., Ph.D., Vice President

"Teaching without research is like confession without the sin..."



About CAU

- Formed in 1988 by the consolidation of two historic institutions, Atlanta University (1865) and Clark College (1869), Clark Atlanta University, a United Methodist School is the largest of the United Negro College Fund institutions
- Major, urban, private, co-educational institution of predominately African American heritage located on 75 acres in downtown Atlanta, GA; part of the Atlanta University Consortium
- Broadly comprehensive at BS and MS level; doctoral programs in biological sciences, chemistry, social work, arts and humanities, education, and political science
- About 4000 students and over 220 FTE faculty from diverse backgrounds
- Several research centers and centers of excellence; CAU houses one of the largest research facilities in the southeast
 - Science Research Center complex - ~200,000 sq. ft. research and core lab facility
 - Center for Computational Intelligence for National Security
 - Center for Cancer Research and Therapeutic Development
 - High Performance Polymers and Composite Center
 - Center for Functional Nanoscale Materials
 - Environmental Justice Resource Center
- Accredited by SACS, Clark Atlanta is among the top historically black colleges and universities receiving federal grants for science, prostate cancer and environmental justice, and currently has a Carnegie classification of Doctoral Research University



About Shute

- B.S., Mechanical Engineering, Tennessee State University, Nashville, TN
- S.M., Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA
- P.E., Mechanical Engineering, State of Georgia
- M.S., Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA
- Ph.D., Mechanical Engineering (Optics/Optical Fiber Technology), Georgia Institute of Technology, Atlanta, GA



About Shute

- Member of Technical Staff, Transmission Media Laboratory, Bell Laboratories, AT&T/Lucent Technologies, Norcross, GA
- Distinguished Member of Technical Staff, Wireless Networks Group, Bell Laboratories, Lucent Technologies, Naperville, IL
- Finalist, NASA Mission Specialist Astronaut Program, class of 2000
- VP, Engineering & VP, Advanced Technologies, Luxcore Networks, Inc., Atlanta, GA
- CEO, Shute Enterprises, Inc., Lithonia, GA
- Director & Founder, Aspire 2B, Inc., Lithonia, GA
- VP, Research and Sponsored Programs; Professor, College of Engr., Tennessee State University, Nashville, TN



About Shute

- 25+ yrs. R,D, E & manufacturing exp. in optical comm., wireless comm., and materials science
- Excellent technical breadth and depth; recognized SME in optical comm., wireless comm., polarization phenomena, and radiation effects in materials
- Experience moving ideas from “whiteboard” to product in compressed timescales (LOFA, lambdaXchange)
- Strong relationships with industry, academia and government; experience in collaborative R&D efforts

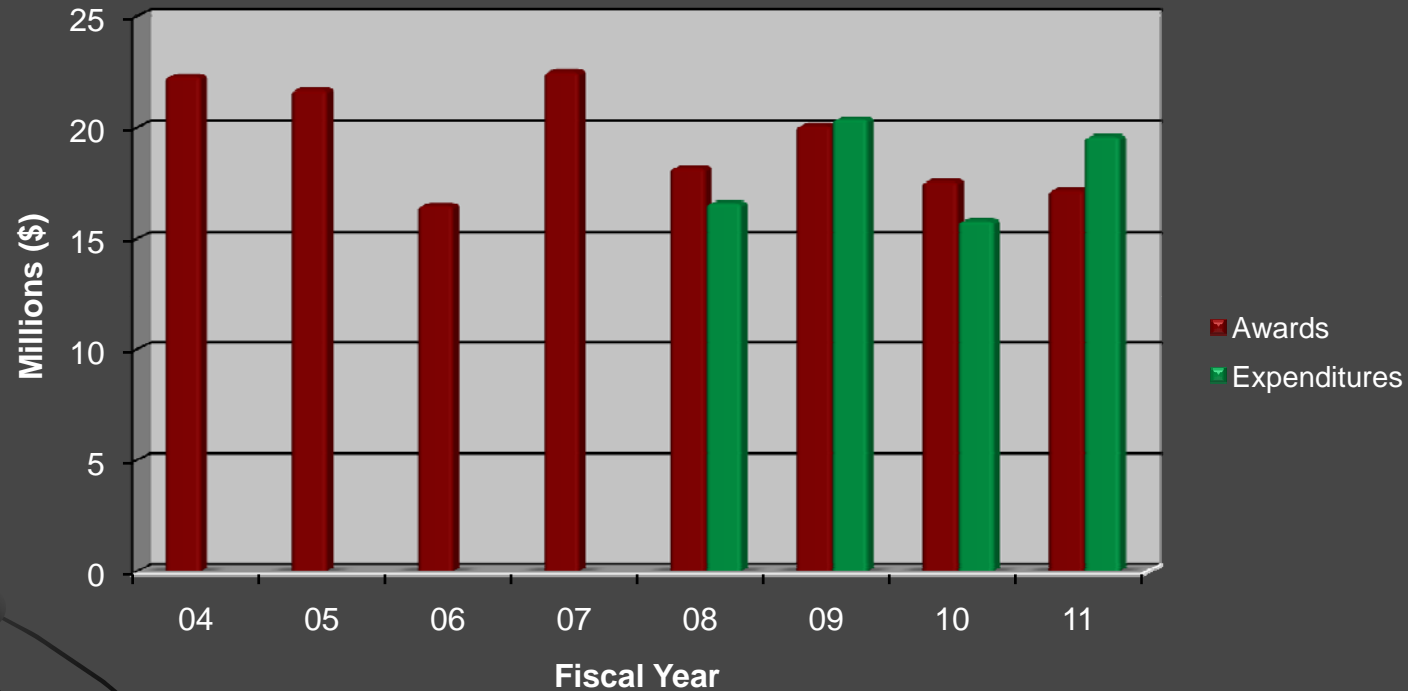


About Shute

- Experience leading R&D projects/product development as PI through sr. executive level
 - TFOCA (\$70M program; used in Patriot Missile System in Desert Storm)
 - FOG-V (part of \$2.9B NLOS program)
 - Radiation-hardened fibers and subsystems
 - lamdaXchange development effort (\$23M start-up)
- Managed high-performance cross-org., multi-location, interdisciplinary R&D teams (vision, strategic planning, P&L, budget and resource allocation, compliance)
- Experience in entrepreneurial environment and as an R&D “fundraiser” (venture capital, federal initiatives, etc.)
- Strong relationships with industry, academia and government; experience in collaborative R&D efforts
- Experience in tech transfer and licensing



Research & Sponsored Program Funding

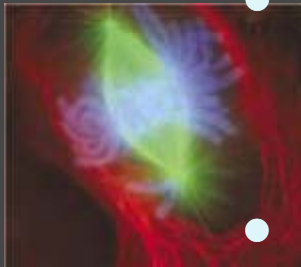


- CAU is one of six research institutions in GA and is part of the Georgia Research Alliance
- FY11: \$17.2M from 60 awards; \$19.6M in expenditures from 146 projects; 85 proposals submitted (\$84.8M)

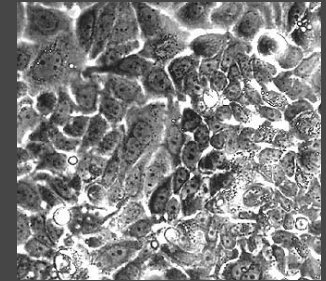


Research Efforts @ CAU

- Center for Cancer Research and Therapeutic Development (www.ccrtd.cau.edu)



- Preeminent interdisciplinary center for basic cancer research and outreach serving the African American community; initial focus is prostate cancer



- Led by Shafiq Khan, Georgia Research Alliance Eminent Scholar

- Obtained ~\$25M in funding since established from NIH, DOD, Georgia Research Alliance, and other agencies; ~\$3M annual research budget

- Community based cancer education and prevention effort



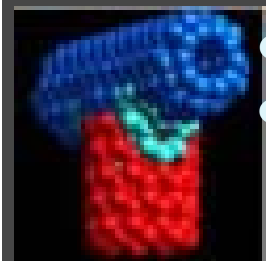
- Premier investigators in cancer research, cancer cell biology, and related biomedical research including health disparities, signal transduction mechanisms and drug delivery system development



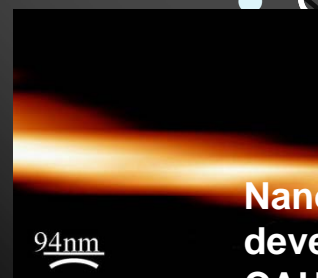
Research Efforts @ CAU



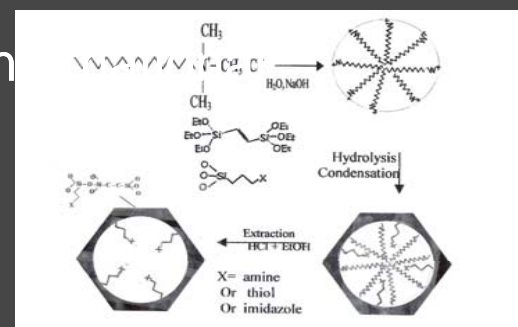
Center for Functional Nanoscale Materials



- NSF CREST Center; ~\$1M research funding annually
- Synthesis and study of polyimides-based single wall functional nanotube systems for thermal, electronic, optical and structural applications
- Research in nanoporous organosilicates for water purification, bio-separation, optical and electronic devices
- Bionanomaterials to study material-protein and material-cell interactions for development of therapeutics and biodiagnostics
- Partnerships with Cornell University, University of TX-Pan Am, and other institutions at undergraduate and graduate level
- Collaboration with institutions in S. Africa – in research experience for students



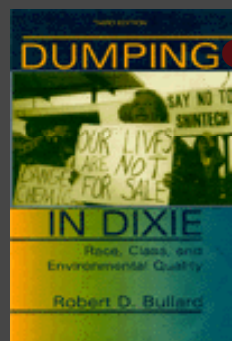
Nanoribbon developed by CAU scientists



Synthesis of nanoporous organosilicates

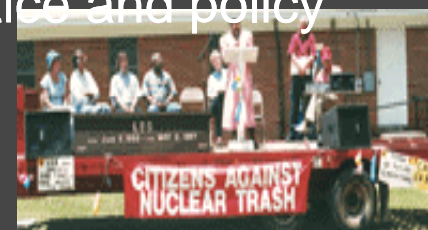
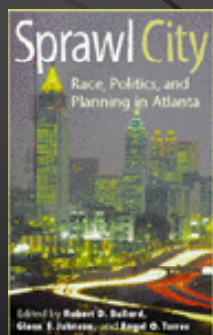


Research Efforts @ CAU



Environmental Justice Resource Center (www.ejrc.cau.edu)

- Nationally recognized leader in environmental justice research, policy, and information clearinghouse
- Interdisciplinary approach bridging social and behavioral sciences, natural and physical sciences, management and law
- Active collaborations around the country to examine issues in global climate change, energy justice, transportation equity, sprawl and smart growth, race and the environment, and civil rights and human rights
- Resource center to support, assist, and educate people of color in environmental justice and policy





Research Efforts @ CAU

School of Arts & Sciences

- NIH Minority Biomedical Research Support program – Ph.D. graduate student support in chemistry and biology



- NSF Partnerships for Research and Education in Materials program

- High Performance Polymers and Composites Center

- Collaboration with Center of Advanced Materials for the Purification of Water (UIUC) – water quality research, education and outreach; international collaboration in Africa

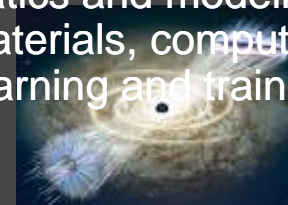


- Intelligence Community Center for Academic Excellence – CAENS pilot center



- NSF HBCU-UP program and LSAMP program supporting University's STEM initiative

- Expertise in biomolecular science, bioinformatics and modeling, environmental research, energy research, materials, computational science, use of digital media/interfaces for learning and training, theoretical physics, and nanoscience



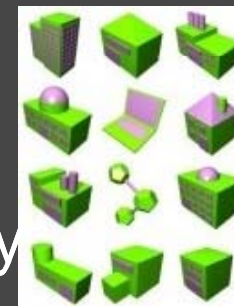


Research Efforts @ CAU

● School of Business



- Leadership development training capability
- Expertise in supply chain management and operations research
- National reputation as producer of top quality minority MBAs



● School of Education



- Teacher training and preparation in math and science
- Preparation of leading school administrators and counselors
- Workforce training and education





Research Efforts @ CAU

- Whitney M. Young, Jr. School of Social Work
 - One of a few Ph.D. programs in Social Work
 - Health and Aging (Gerontology)
 - Intimate Partner Violence
 - Youth Development and Healthy Lifestyles
 - Substance Abuse and Related Issues
 - Plans for Families and Children Welfare Research Center
 - Incarcerated Persons: Mental and Physical Health Related Issues





Promoting Research @ CAU

- Provide value-added, “one stop” support and management throughout the research process to PIs and research centers
 - Re-brand the organization: Division of Research and Sponsored Programs (RSP)
 - Pre- and post-award functions in house; strong coupling to grants acct.
 - Partnership with faculty, researchers, students, and admin. units
 - Streamline processes and improve efficiency w/o sacrificing compliance; remove administrative barriers
 - World class research \leftrightarrow world class research management, processes, and facilities
- Grow the research enterprise at CAU; attain Carnegie classification of Research Universities (high research activity) (RU/H)



Promoting Research @ CAU - 2

- Identify and pursue opportunities in “high growth” research areas across all disciplines
 - Info-, nano-, bio-technology, wireless comm., optical comm., learning sciences
 - Leverage existing research expertise in biological sciences, cancer, health, computational science, training, etc.
 - Increase level of basic and applied research funding/activities
 - Utilize RSP Advisory Council (Deans or designees, center directors, key faculty and industry advisors) to provide input in developing research initiatives, policies, etc.
- Collaborate with institutions with expertise in “high growth” areas



Promoting Research @ CAU - 3

- Establish and reevaluate existing research centers and capability in biomedical research/biotechnology, nanotechnology, computational science, materials, and learning sciences
- Non-profit research organization affiliated with CAU - CAURC
 - Vehicle for contract research and services; minimizes restrictive contracting and financial procedures
 - Facilitates collaboration with industry
 - Technology transfer/commercialization
 - Develop high tech incubator and “research park” @ CAU
- CAU Research Complex
 - Facilities for existing centers and sponsored programs
 - Initial buildings - ~200,000 nsf; site can accommodate add'l. ~27,000 nsf
 - core facilities to support research across disciplines
 - research facilities for cancer research, cell biology, computational science, bio-nanoscience, etc.
 - **2nd phase – additional ~27,000 nsf of research labs and facilities**
 - animal facility to enhance biomedical research effort



Clark Atlanta University Research and Sponsored Programs



- ~200,000 sq. ft. research facility; Phase II – add'l. 27,000 sq. ft.; efficient/effective space allocation
- Office of the Vice President
- Office of Research & Sponsored Programs
- Center for Cancer Research and Therapeutic Development
- Center for Functional Nanoscale Materials
- Environmental Justice Resource Center
- Core and research lab facilities
- High Performance Polymers and Composites Center
- Center for Academic Excellence in National Security



CAU SRC Facility



- State-of-the art central core user facilities and labs for biomedical/biotechnology and nanoscience research
 - collaborative R&D \Rightarrow technology breakthroughs \Rightarrow start-ups/entrepreneurial efforts
 - applications to human health, energy, defense, homeland security, environment, etc.
- Resource for high-tech industry and federal government \Rightarrow stimulate economic growth
- Resource for local schools, community colleges and universities \Rightarrow highly skilled STEM workforce in GA \Rightarrow stimulate economic growth
- Several examples of investment in research infrastructure \Rightarrow increased external funding \Rightarrow stimulate economic growth (GA, NC, KY, NV, etc.)



Promoting Research @ CAU - 4

- Develop and enhance IP portfolio and commercialization program
 - Licensing opportunities \Rightarrow revenue source
 - Technology transfer/product realization
 - Establish high-tech and business incubator to encourage entrepreneurial activities
- Develop/enhance processes, programs, and policies to facilitate research activities
 - Revise PI Handbook; establish RSP Academy
 - Research incentive award program; recovered F&A reallocation plan
 - Faculty research and creative works award program
 - Distinguished Researcher Award
 - Balance teaching vs. research; leverage research faculty track
 - Seminars and workshops for grant writing, showcase CAU research, PI certification, etc.
 - Benchmark other successful Tier I research-centric institutions



Partnership w/ CAU and Collaborators

- Mutually beneficial and rewarding partnership
- Lots of synergy and potential
 - Opportunity to expand our research scope and funding; leverage our unique positioning
 - Biomedical and cancer research
 - Nanoscale science and technology; materials research
 - Environmental research
 - Expertise in diverse issues involving environmental justice
 - Water quality and assessment
 - Fate and transport of contaminants
 - Chemical lab analysis/trace analysis
 - Computational sciences/modeling
 - Learning sciences and training
 - Homeland security (border security, sensors, intelligence, biosecurity, etc.)
- Possible partner in expanding research complex and research initiatives
- Support student, faculty, and infrastructure development
- Positioned as prime and sub-contractor for corporate and federal R&D opps.



Promoting Research @ CAU - 5

- Requires commitment and partnership from University, Board of Trustees, government and corporate partners
 - Funding for infrastructure, research initiatives, equipment, and personnel, i.e. expanding research complex @ CAU, etc.
 - Recruit and retain students, faculty, and researchers with expertise in high growth areas
- Enhanced research reputation @ CAU \Rightarrow intangible benefit to our students, the State of GA, our partners, and community
- Stimulate growth of “high-tech” industry and economic development in GA
- <http://www.cau.edu/research>
- Thank you for your continued support!

