

Capabilities Statement for

Clark Atlanta University

Clark Atlanta University (CAU) is a private, coeducational four-year university located in the historic heart of Atlanta. Established in 1988 by the consolidation of Atlanta University (1865) and Clark College (1869), CAU is designated by the Carnegie Foundation for the Advancement of Teaching as Doctoral Universities-High Research Activity. Our 3,884 students are engaged in 38 areas of study in our four schools: School of Arts and Sciences, School of Business Administration, School of Education, and the Whitney M. Young, Jr. School of Social Work. National business and consumer publications rank CAU “high among the best institutions in American higher education”. Clark Atlanta University is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) to award baccalaureate, master's, specialist and doctorate degrees.

CLARK ATLANTA UNIVERSITY MULTIDISCIPLINARY RESEARCH CENTERS AND CAPABILITIES

Below we have briefly described some of our centers that have the potential to support external contract research, development, and testing services. All research carried out at CAU is subject to export control as described in the CAU Export Control Policy.

CAU High Performance Polymers and Composites (HiPPAC) Center has made significant contributions in the synthesis and characterization of polyimides; synthesis and characterization of nonlinear optical polymeric materials; and fabrication and mechanical characterization of composites and increasing the participation of minority students in polymers and composites research. The center's research, development, and education activities focus on the development of high performance polymers and composites supporting the safety, environmental compatibility, and productivity of air transportation and space systems, and continue to provide an environment where undergraduate and graduate students can learn and participate in cutting edge polymers and composites research.

Center for Functional Nanoscale Materials (CFNM) is designed to meet the dual goals of advancing human understanding in the area of nanoscale materials and of increasing the capacity of Clark Atlanta University to train talented scientists in the physical sciences. The Center is multi-institutional and brings into a mutually beneficial and cooperative relationship two-year and four-year colleges, research universities and the K-12 community. Furthermore, the Center brings together researchers and educators from different disciplines with demonstrated and complementary strengths in quality research and training students. Included among the Center's expanding list of institutional partners are the Atlanta area school systems, Cornell University, Emory University, Perimeter College and iThemba Labs in South Africa.

Center for Cancer Research and Therapeutic Development (CCRTD) is one of the nation's leading prostate cancer research centers. The CCRTD is currently supported by the Research Center in Minority Institutions (RCMI) program of the National Center for Research Resources at the National Institutes of Health along with several other grants from NIH and DOD. The biomedical research projects range from studies on signal transduction mechanisms to the development of better drug delivery systems. In addition, the CCRTD recently established a Cancer Genomics Center working in collaboration with Georgia Tech and St. Joseph's Health System.

Center for Theoretical Studies of Physical Systems (CTSPS) conducts research through a dynamic clustering of researchers in the areas of atomic and molecular theory, and condensed matter, mathematical physics/applied mathematics, and wavelet analysis and multidimensional signal processing. Some of the strengths of this center include simulation and modeling, low-energy scattering theory, solid-state theory, image processing, and mathematical physics theory. CTSPS has extensive research partnerships and collaborations to conduct cutting edge research at CAU, and has established a mechanism to educate and produce African-American M.S. and Ph.D. students in STEM fields. CTSPS is an active member of the African Laser Centre which is a virtual center of excellence and one of the strongest combinations of human and physical infrastructure for science in Africa that links scientists and laser facilities in six African nations.

Center of Academic Excellence in National Security Studies (CAENS) is developing a new cadre of students capable of intelligence and cyber-security analysis with diverse backgrounds and ethnicities protecting the competitive interests of the U.S. Government and organizations. CAU was one of the first four centers funded in the Intelligence Community Centers of Academic Excellence (IC-CAE) Program. To fulfill this mission, CAENS has developed an innovative,

interdisciplinary program of study, research, and outreach. This program has attracted faculty from disciplines across CAU, encompassing multiple schools and departments.

Center of Excellence in Supply Chain Management The demand for professionals in Supply Chain Management (SCM) is rapidly growing as firms are realizing improved efficiency, lower costs and increased profitability, resulting from strong supply chain practices. With this in mind, the SCM program at CAU is designed to constantly challenge students by exposing them to knowledge and learning inside and outside of the classroom. CAU offers students business degrees in Supply Chain Management at both the undergraduate and graduate level (MBA).

The Center for Innovation and Entrepreneurial Development (CIED) was established to develop a campus-wide entrepreneurship and innovation ecosystem and INNOVATION LAB/MAKER SPACE. The center offers: 1) Innovation and Design Thinking Courses and Workshops; 2) Ideation, Lean Start-Up, and Small Business Mentoring; 3) 3D Printing & Prototyping; 4) Tech Transfer and Commercialization Support; 5) Hackathons; and 6) Business Pitch Competitions.

CLARK ATLANTA UNIVERSITY LABORATORY FACILITIES

The following laboratories are housed in the 200,000 sq. ft. Cole Research Center for Science & Technology and the adjacent 30,000 sq. ft. Environmental Science & Engineering Research building.

INNOVATION LAB 3D PRINTER/ADDITIVE MANUFACTURING (AM) The CAU innovation lab is designed to support students and faculty as well as facilitate technology transfer to the market place. As part of CAUs Innovation Lab we have developed a 3D printing/additive manufacturing laboratory (AM) with fifteen (15) 3D printers. This lab is designed with room for further expansion in the future. AM, is a key technology for rapid prototyping, new product development, and production of low volume parts for a variety of applications.

COMPOSITES PROCESSING capabilities include autoclave processing, Resin Transfer Molding (RTM), Vacuum Assisted Resin Transfer Molding (VARTM), Thermoforming and Compression Molding techniques. The labs also have polymer processing capabilities, including extrusion, batch mixing, blending and alloying.

THERMAL ANALYSIS LABORATORY provides Differential Scanning Calorimeter (DSC), Thermo-gravimetric Analysis (TGA), Dynamic Mechanical Analysis (DMA/DMS) and Thermo-mechanical Analysis (TMA). The Thermal Analysis Laboratory allows determination of degree of cure, heat of reaction, cure kinetics, and glass transition temperature (Tg).

MECHANICAL CHARACTERIZATION capabilities include ASTM, SACMA, CMC, and MIL-STD tensile, compression, torsion, flexural, and shear quasi-static as well as high cycle dynamic (fatigue) testing. Digitally controlled convection chambers (-129°C to 600°C) temperatures along with high temperature capacitance extensometers allow experiments to be conducted at extreme temperatures. Long focal length microscope allows for the observation and measurement of cracks and damage in monolithic and composite materials.

RHEOLOGY lab functions in parallel with the thermal analysis laboratory. The rheology equipment allows determination of the viscoelastic properties of polymeric materials as it relates to molecular structure, processibility, physical properties and end use performance. Thermal imaging equipment can be used to determine the thermal profiles of processing molds and polymer melts.

CHEMICAL ANALYSIS analyzes chemical compounds using Infrared spectroscopy, Raman spectroscopy and/or Nuclear Magnetic Resonance. These labs are important for allowing determination of the chemical make-up of polymer resins used in polymer matrix composites, the determination of side or by-products generated during cure, and miscellaneous trouble shooting into chemistry related problems.

GEOGRAPHIC INFORMATION SYSTEM (GIS) LABORATORY is designed to capture, store, manipulate, analyze, manage, and present spatial or geographical data and is administered through the Department of Sociology and Criminal Justice and a full-time GIS Coordinator. The laboratory is configured with a SmartBoard system, 14 stations, and a portable Wacom Cintiq tablet.

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