

CAIIAC

Consortium for Accelerated Innovation and Insertion of Advanced Composites (CAIIAC)



In May 2014, the National Institute of Standards and Technology (NIST) awarded the Consortium for Accelerated Innovation and Insertion of Advanced Composites (CAIIAC). The Georgia Tech Manufacturing Institute (GTMI), in collaboration with Advanced Materials Professional Services, Florida State University, and the University of Dayton, created the Consortium to work on issues that hinder bridging the gap between research and commercialization.

The U.S. composite industry faces several system-wide challenges, including developing:

- Affordable, scalable, predictable and reproducible composite manufacturing capabilities;
- Methods for quick and reliable repair and joining;
- Standardized approaches and tools to composite design and testing; and
- More effective means of recycling and reuse.

Road-mapping Process

Starting with an industry-led road-mapping process, the new consortium aims to identify and validate emerging crosscutting lightweight composite technologies that offer benefits across multiple industries. The Consortium will generate and prioritize major technical projects to address these technical gaps and challenges, as well as others to be included in the Consortium's technology road map. In order to effectively evaluate technical projects, the Consortium will incorporate and institutionalize an "xRL" scheme that will include Technology Readiness Levels (TRL), Manufacturing Readiness Levels (MRL), Business Case Readiness Levels (BcRL) and Eco-system Readiness Levels (ERL) across all project teams.

Market Segments

There are possibilities in several markets, including aerospace, automotive, energy and medical devices. The Consortium will focus research on:

- Ways to make composites lighter in weight while enhancing performance, such as using lightweight materials with sensors for custom made orthotics and prosthetics;
- Fast, low-cost manufacturing;
- Improved design and testing tools for a faster qualification process to use new materials in the aerospace market;
- Finding reliable and affordable ways to join composites with other materials, such as metal in the automotive industry;
- New recycling and reuse tactics; and
- Composites with multiple functions would allow for higher energy generation efficiency in the energy market.



Why CAIIAC is the Answer

Through an industry-led conceptualization and development process, the CAIIAC road map will serve U.S. industry in meeting the challenges associated with rapid innovation and deployment of advanced composites in the manufacturing process.

The CAIIAC vision will result in the transfer of low cost, rapid production cycle composite technologies along the entire value chain from consumable vendors to the fabricator and, ultimately, to the end user (i.e., aerospace, automotive, energy and medical device).

The CAIIAC team has selected compelling technical challenges to address that provide value to vendors, fabricators, and end users in all target market segments.

The CAIIAC approach addresses composite technology readiness, manufacturing readiness, business case readiness, and manufacturing ecosystem readiness across all target market segments.

Get Involved. Become a Partner.

There will be a number of opportunities to learn more about CAIIAC and participate in the process. Workshops, conference sessions and other meetings will be scheduled. To check on upcoming events, go to <http://www.manufacturing.gatech.edu/caiiac>.

You can also contact Georgia Tech Manufacturing Institute Executive Director Ben Wang at 404-385-2068 or ben.wang@gatech.edu.

Industry Interest in CAIIAC

The following companies and government laboratories representing the aerospace, automotive, energy, and medical device sectors have indicated an interest in participating in CAIIAC. More than 60 percent of these partners are small- or medium-sized enterprises that play a critical role in the U.S. supplier network.

Acellent Technologies, Inc., Sunnyvale, CA
Air Force Office of Scientific Research, Arlington, VA
Altair Engineering, Inc., Troy, MI
American Chemistry Council, Washington, DC
American Composites Manufacturers Association, Arlington, VA
ATK Aerospace Structures, Clearfield, UT
Autodesk, Inc., Waltham, MA
Baker Hughes, Houston, TX
Bell Helicopter Textron Inc., Fort Worth, TX
Chasm Technologies, Canton, MA
CMC, Inc., Jacksonville, FL
Criterion Composites, Inc., Garden Grove, CA
Cytac Aerospace Materials, Tempe, AZ
Generation Orbit Launch Services, Inc., Atlanta, GA
Genesis Engineering Solutions, Inc., Lanham, MD
Georgia Aerospace Inc., Atlanta, GA
Georgia Automotive Manufacturers Association, Alpharetta, GA
Georgia Center of Innovation for Aerospace, Atlanta, GA
Georgia Manufacturing Extension Partnership, Atlanta, GA
MADE, LLC, Chicago, IL
Manufacturing Extension Partnership of Louisiana, Lafayette, LA
Middle Georgia State College, Eastman, GA
NASA Langley Research Center, Hampton, VA
National Composites Center, Kettering, OH
NRI, Inc., River Beach, FL
Oak Ridge National Laboratory, Oak Ridge, TN
Optomec, Inc., Albuquerque, NM
Ossur hf, Foothill Ranch, CA
Owen Corning, Granville, OH
Prosthetic and Orthotic Associates, Orlando, FL
Raytheon, Tewksbury, MA
San Diego Composites, San Diego, CA
SGL Carbon, Charlotte, NC
Sikorsky Aircraft Corporation, Stratford, CT
SoftWear Automation, Inc., Atlanta, GA
Southwest Nanotechnologies, Inc., Norman, OK
Spirit AeroSystems, Wichita, KS
Swan Chemical, Inc., Lyndhurst, NJ
TA Instruments, New Castle, DE
ThyssenKrupp Elevator Corp., Alpharetta, GA
United Technologies Research Center, East Hartford, CT