

Our Directorate ...

- develops and manages a high quality, balanced research portfolio that is aligned with AFRL's portfolio and that supports current and future USAF requirements
- implements value-added, defined, documented, transparent, measurable, and accessible processes for conducting day to day business
- fosters a culture of innovation, collaboration, creativity, and risk taking with shared leadership, shared accountability and an empowered workforce
- strives for shared leadership, balanced between the military and civilians

Our Mission is . . .

to plan and execute the USAF program on materials and manufacturing in the areas of basic research, exploratory development, advanced development and industrial preparedness. Provide responsive support to Air Force product centers, logistics centers, and operating commands to solve system and deployment related problems and to transfer expertise.

Air Force Research Laboratory

The Air Force Research Laboratory is made up of a diverse team of incredible people dedicated to turning the impossible into reality. With a workforce of approximately 5,800 people, the laboratory's wealth of talented individuals help AFRL lead science and technology development through in-house and contractual programs. Additionally, the laboratory out-sources approximately 75 percent of its budget to industry, academia, and the international community—leveraging the world's knowledge to provide the most innovative science and technology to the Air Force.

AFRL maintains a diverse portfolio of science and technology ranging from basic research to advanced technology development, focusing on three specific products: targeted research to shape the future battle space, integrated technology options to satisfy identified Air Force requirements, and rapid technology solutions to meet urgent operational needs. The laboratory also plays an important role in ensuring timely, reliable, and economical production and sustainment of Air Force systems as the manager of the Air Force Industrial Preparedness Programs in manufacturing technology and industrial base analysis.

For more information on AFRL, visit www.afrl.af.mil, email techinfo@afrl.af.mil or call (937) 255-6469



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Materials & Manufacturing Directorate



The Materials and Manufacturing Directorate

mission was officially activated in December 1917, as the Materials Section of the US Army Signal Corps at McCook Field in Dayton, Ohio. From those early years of plywood and cloth to current initiatives in technologies such as self healing structures, the Materials and Manufacturing Directorate's dedicated team of scientists and engineers continue to advance the technologies of flight.

Today, the directorate leads a comprehensive research and development program with over 1,000 full time scientists and engineers operating over 300 laboratory modules (encompassing over 466,000 square feet) located at Wright-Patterson AFB, OH and Tyndall AFB, FL. This is a world class workforce ensuring the Air Force leadership in the discovery and development of needed Materials Applications and Manufacturing Processes to defend the United States in Air/Space/Cyberspace against all adversaries today and tomorrow.

Aerospace Materials and Manufacturing Leadership for the Air Force and the Nation

Our Operating Principles

Application Portfolios

- Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance
- Directed Energy
- Sustainment
- Manufacturing
- Airbase Operations
- Air and Space
- Chemical, Biological, Radiological and Nuclear/Overseas Contingency Operation
- Research & Development Support, Pervasive, Innovation, Nascent
- Propulsion
- Survivability

Materials & Processes

- Ceramics
- Hybrids
- High Temperature Metals
- Optical and Infrared Materials
- Radio Frequency and Electronic Materials

Materials Applications

- Electromagnetic Materials Integration
- Thermal Sciences and Materials
- Materials Biotechnology
- Nanomaterials
- Nondestructive Evaluation

Support for Operations

- Agile Airbase Engineering
- Systems Support

Manufacturing Technology

- Industrial Readiness
- Manufacturing Readiness

Our Major Programs and Research Areas

- Advanced Materials for Thermal Protection Systems & Structures
- AESA Radar Producibility
- Agile Protection (Sensors/Personnel)
- Air Base Security Technology
- Advanced Propulsion Manufacturing
- Biotechnology
- Datalink Component Affordability
- Electromagnetic Hardening Materials
- Electronic Fault Detection
- Energy Harvesting Materials and Devices
- Engine Systems Prognosis
- High Energy Laser (HEL) Source Materials
- Integrated Defense
- Liquid Rocket Engine Materials
- Manufacturing Readiness Assessments
- Material State Awareness (Structures/Propulsion)
- Materials for Hypersonic Glide Vehicles
- Microbiology and Applied Biochemistry
- Nanomaterials Technology
- Optical Technology
- Persistent Air ISR
- Proactive Threat Defeat - Laser Source Materials
- Quick Turn Warm Structures
- Root Cause Analysis & Solutions for Material Failures (Electronic/Structural)
- Sensor Hardening (Space/Airborne)
- Solid State Beam Steering Materials
- Spacecraft Propulsion Materials
- Structural Hardening Assessment
- Turbine Engine Rotor and Blade Life Prediction/Extension S&T