Space Materials

4 Mar 04

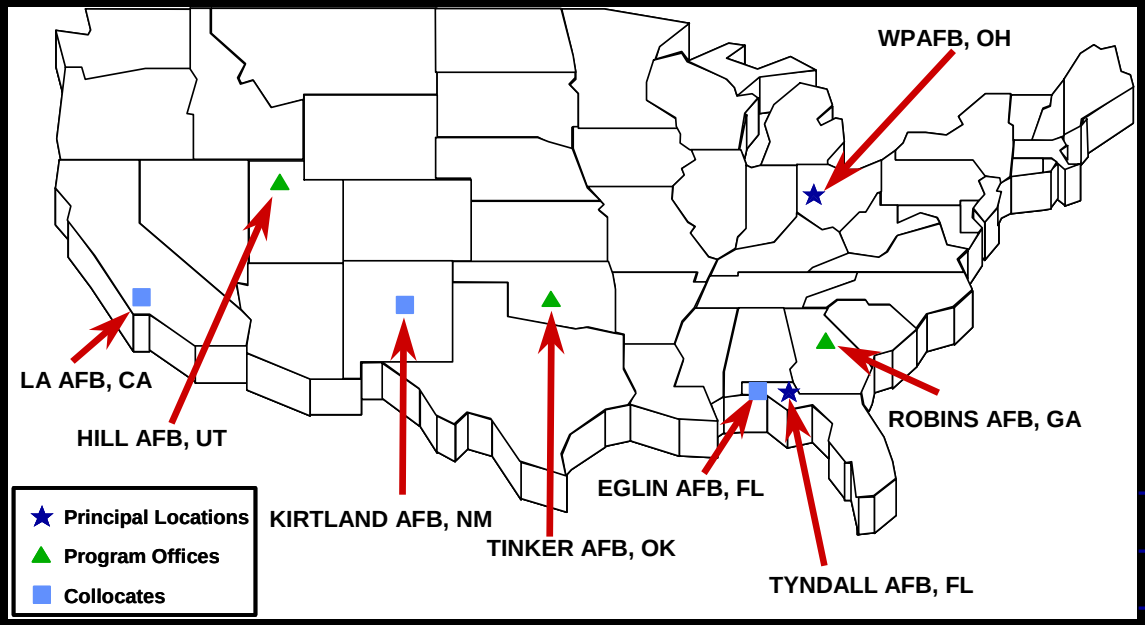
Dr. Charles Browning

Director, Materials & Manufacturing

Air Force Research Laboratory

Locations & Facilities

Aerospace materials & manufacturing leadership for the Air Force & the Nation



Wright-Patterson AFB

- 257,000 net square feet
- 200 Lab Modules
- Designed specifically for aerospace materials and processes R&D

Tyndall AFB

- 128,000 net square feet
- 15 Lab Modules
- Specialized test sites
- Designed specifically for airbase technologies R&D

Space Materials Technologies

Structures

Organic Composites
Metal Composites
Carbon-Carbon
Design Methods & Data
Joining Technology

Sensors/Electronics

Detector Materials
Microwave & Microelectronics
Semiconductors
Photonics

Launch/Reentry

Leading Edges
Acreage Surfaces
Nose Tips
Heat Shields
Repair
Antenna Windows

Thermal Control

Spacecraft Coatings
Multi-Layer Insulation
Radiators & Thermal Planes
High Conductivity Substrates

Manufacturing Technologies

Advanced Practices
Process Optimization

Systems Support

Failure Analysis
Consultation
Co-located Engineering

Space Environment

Space Environ Effects on Matls
Space Effects Simulation/Evaluation

Propulsion

Turbopumps
Thrust Chamber Jacket
Lines & Ducts
Turbomachinery
Solid Case & Insulation
Nozzles & Exit Cones
Spacecraft Engines

Tribology

Solid Film Lubricants
Adv. Liquid Lubricants
Life Prediction Methods
Bearings

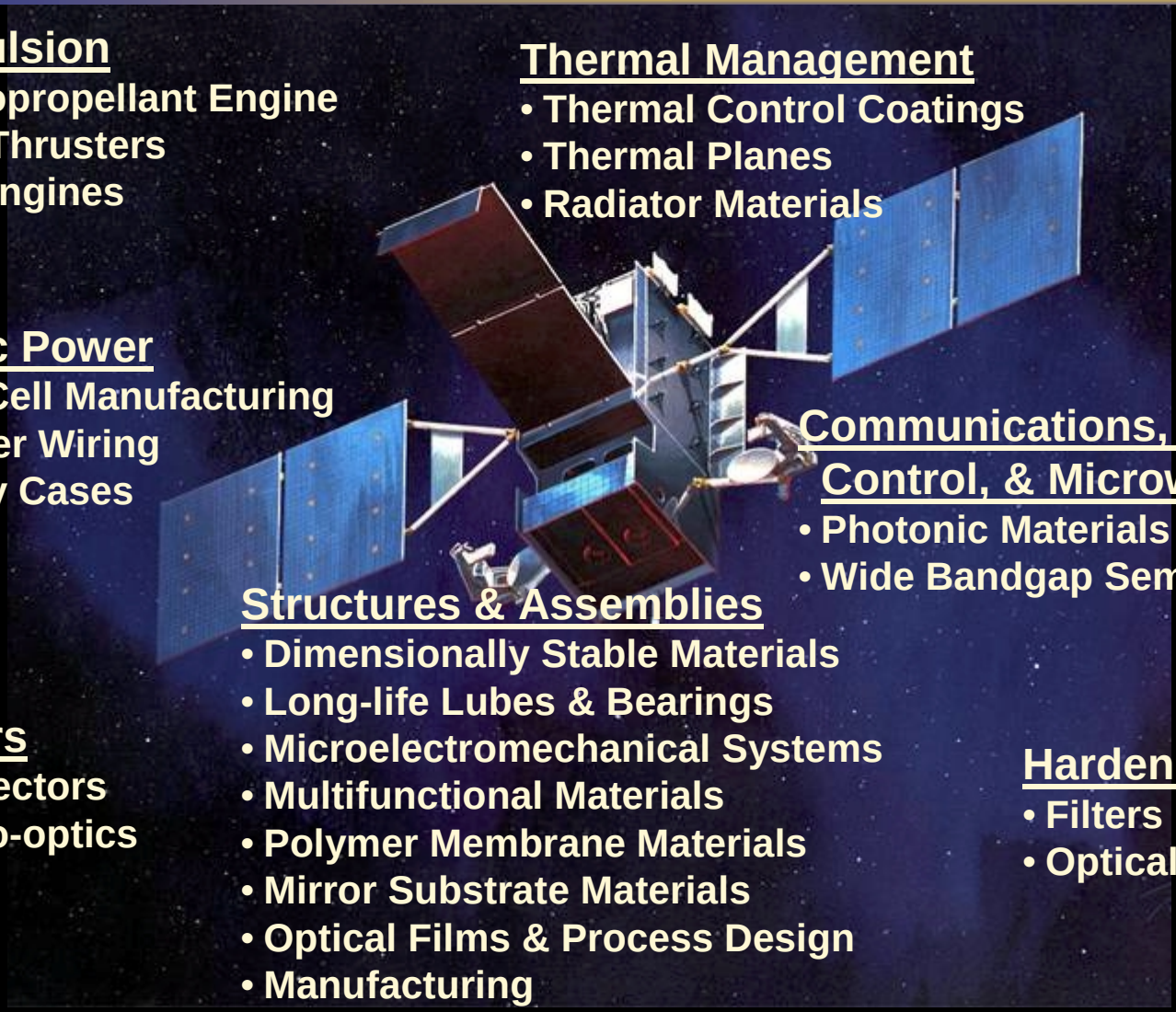
Hardening

Sensor Protection
Hardened Coatings

Spacecraft Materials Technologies

Propulsion
- Monopropellant Engine
- Hall Thrusters
- Ion Engines

Thermal Management
- Thermal Control Coatings
- Thermal Planes
- Radiator Materials



Electric Power
- Solar Cell Manufacturing
- Polymer Wiring
- Battery Cases

Communications, Power Control, & Microwave
- Photonic Materials
- Wide Bandgap Semiconductors

Structures & Assemblies
- Dimensionally Stable Materials
- Long-life Lubes & Bearings
- Microelectromechanical Systems
- Multifunctional Materials
- Polymer Membrane Materials
- Mirror Substrate Materials
- Optical Films & Process Design
- Manufacturing

Sensors
- IR Detectors
- Electro-optics

Hardening
- Filters
- Optical Limiters

Access Vehicle Materials Technologies

Thermal Protection Systems
- Hybrid & Cooled Leading Edges
- Highly Operable, Ceramic Acreage Panels
- Carbon-Carbon Nosetips & Aeroshells
- Gamma Titanium Aluminide for Acreage Panels
- High Temperature Ceramics for Control Surfaces

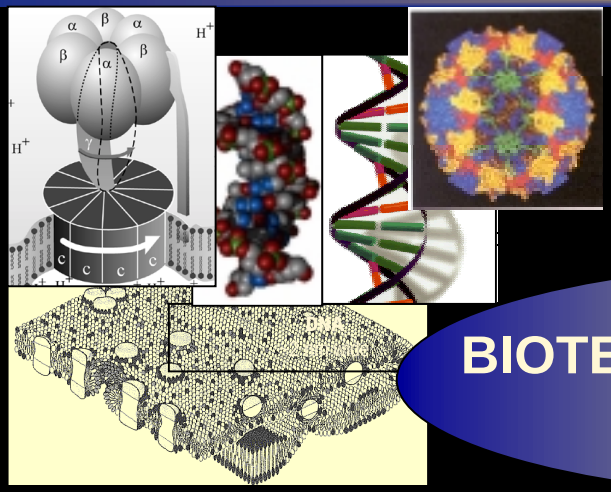
Rocket Engines
- Turbopump Housing
- Rotating Machinery
- Lines, Ducts, & Valves
- Nozzles

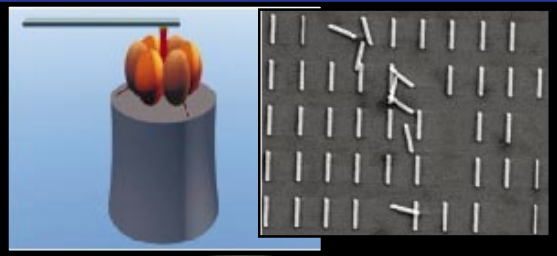
Airframe Structure & Subsystems
- Light Weight, High Temperature Polymer Matrix Composites
- Thermal Management
- Polymer Wiring

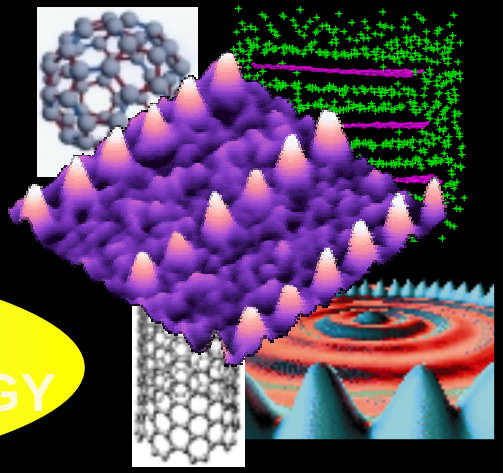
Vehicle Health Monitoring
- Non-Destructive Evaluation
- Materials Degradation

Cryotanks
- Composite Compatibility
- Test Standards Development
- Composite Processing
- Composite Repair Techniques
- Scale-up of Aluminum-Lithium

Transformational Opportunities





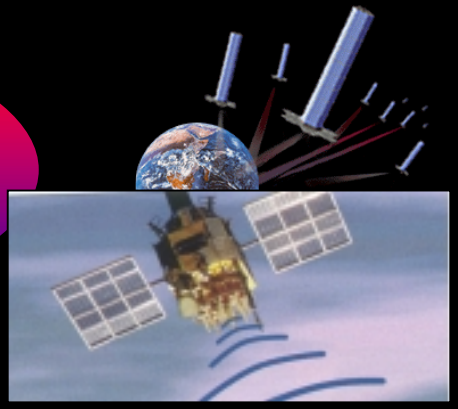


BIOTECHNOLOGY
NANOTECHNOLOGY

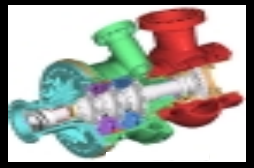
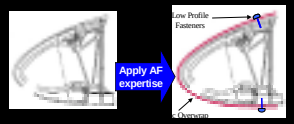
- Advanced Optics
- Adaptive, Lightweight Materials
- Ultra-Sensitive Room-Temperature Infrared Detectors

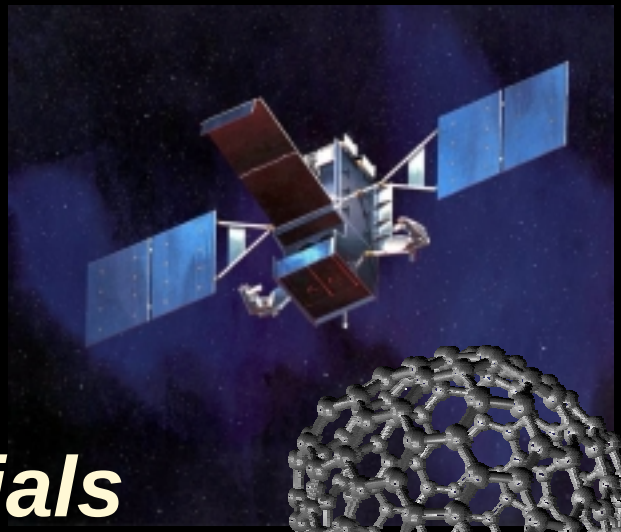
- Anti-Charging Panels
- Light Weight Polymer Wire
- Ultra High Performance Tethers
- Embedded Sensors
- EM Shielding

TRANSFORMATIONAL CAPABILITIES



Space Partnerships & Cooperative Activities

	ACTIVITY	COLLABORATIONS	FOCUS
	National Space & Missile Materials Symposium	NASA, DoD, DoE, DARPA, Industry, Academia	National Agenda on Critical Space & Missile Materials Technologies
	Rocket Propulsion Materials Working Group	NASA, Dod, Industry, Academia	Plan & Execute Rocket Propulsion Materials Efforts
	Thermal Protection Systems Working Group	NASA, DoD, DoE, DARPA, Industry, Academia	Planning for Advancement of TPS Technologies
	Materials on International Space Station Experiment	NASA, Industry, Academia	On-Orbit Space Environmental Effects
	Materials & Structures	NASA, Industry	Cooperative Work on CryoTanks & TPS
	Systems Support	NASA	Flight Components Repair & Failure Anal



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