Mr. Steven Cox
MANTECH
Research Area Lead

SBIR/STTR Innovation Summit

Embracing Innovation, Science, and Technology to Outpace the Threat

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Industrial Manufacturing and Technology

• Coordinate ManTech efforts to support the MDA portfolio
  – Identify, initiate, and monitor manufacturing technology projects to support economical and timely acquisition and sustainment of weapon systems
  – Advance the maturity of manufacturing processes to accelerate their progression from research and development to implementation
  – Partner with OSD and other DoD services and agencies on ManTech projects via the Joint Defense Manufacturing Technology Panel (JDMTP)

• Manage Industrial Base investments for MDA
  – Responsible for Title 3 and IBAS activities for the command
  – Coordinates with OSD on Industrial Base analysis and shortfall prioritization

• MDA ManTech Council facilitates project identification and prioritization via engagement with internal and external stakeholders
  – Collaborate with program offices to identify critical manufacturing technology needs, prioritize projects, and submit for approval
  – Coordinate with MDA’s Science and Technology Council to identify manufacturing requirements needed to enable future capabilities
  – Coordinate with Services and National Labs for synergies
Missile Defense mission presents unique manufacturing challenges

- **Long service life**
  - ManTech opportunities for new O-rings, new capacitors without electrolytes, less corrosive metals, polymer encapsulations new conformal coatings
- **Extreme operating environments**
  - ManTech Opportunities for higher temperature metals, flexible electronics to withstand greater vibrations
- **Limited pre-launch system testing capability**
  - ManTech opportunities for neutron radiography and CT of one-shot devices
- **Limited payload sizes**
  - ManTech opportunities for Additive Manufactured lighter weight metals and structures
- **Limited system quantities**
  - ManTech opportunities for Robotics to optimize manufacturing

Manufacturing Excellence Helps Mitigate Operational Challenges
Current ManTech Topic Areas

- **3D Printing of TPS structures and Aeroshells**
  - Demonstrate 3D printing of C-103 and C/C continuous fiber structures

- **High temperature ceramics/materials for hypersonic seeker windows:**
  - Develop materials and production processes for high temperature ceramic windows that can withstand thermal extremes while maintaining signal transmissivity

- **High Temperature High Modulus Materials:**
  - Develop manufacturing capability and capacity for PAN alternatives, C-SiC fibers, toughened 2D C/C laminates and high char yield resins to meet requirements for Hypersonic Missile and Missile Defense Systems

- **Manufacturing and packaging of directed energy components**
  - Manufacturing integration and automation for increased yield of advanced laser diode assemblies

- **State-of-the-Art Heterogeneous Integrated Packaging (SHIP)**
  - Demonstrate enhanced fabrication and packaging of heterogeneous electronics for MDA

- **Green supercapacitors for reduced life cycle costs**
  - Improve supercapacitor energy capacity while removing toxic electrolytes and rare earth elements
Additional ManTech Interest Areas

• Transition of additive manufacturing to production for flight hardware
  - Statistical variation of metal AM parts
  - Cyber security of print files and machines
  - Certification of large scale printing factories
  - Certification of production parts

• Increase MRL of advanced chip processes
  - Integration of multiple chemistries on a single chip or package
  - Production of next generation MMIC technologies
  - Quilted die integration

• High Temperature AM metals:
  - Development of new refractory alloys optimized for 3D printing