

## **Exhibitors:**

Next Generation Metal Additive Manufacturing Processes [Intelligent Manufacturing](#)

Infrastructure Materials for Mobility, Resilience, and Sustainability [Center for Infrastructure Engineering Studies](#)

Structural Ceramics For Extreme Environment Applications [Enabling materials for Extreme Environment](#)

Rapid prototyping, Virtual reality, CAD/CAM, robotics, mechatronics, automatic control [Intelligent Systems Center](#).

Wound healing glass nanofibers [Center for Biomedical Research](#)

Building Trusted Cyber-Physical Systems from Untrusted Components [Smart Living](#)

Lightweight and Advanced High strength steels, [Kent D. Peaslee Steel Manufacturing Research Center](#)

Battling Traumatic Brain Injury

Active sensing, nondestructive evaluation, and robot-assisted inspection and maintenance for intelligent infrastructure management. [Center for Intelligent Infrastructure](#) and [INSPIRE University Transportation Center](#)

Electromagnetic Compatibility: Resilient Electronics, Interference, High-Speed Digital/RF Design [Electromagnetic Compatibility Laboratory](#)

## **Research Poster Presentations:**

### **Additive Manufacturing**

Remanufacturing: On-site and automated from scrap metal

Additive manufacturing with 2D/1D nanomaterials for multi-functional coating, sensors, and devices

Additive Manufacturing of Energetic Materials

Resilient 3D Printed Structures through High-fidelity CFD Simulations

Additive Manufacturing of Transparent Armor

Robust 3D Printing of Concrete Military Structures with Blast Resilience

3D printing for conformal Li-ion batteries

Bioglass 3D Printing Technology for Burn Wound Healing with Minimal Scarring

Additive Manufacturing of Ceramic Components w/Multiple and Functionally Graded Materials

Additive Manufacturing of High-Strength Amorphous & Crystalline Metal Parts by Laser Foil Printing

Modeling, Control, Characterization, and Optimization of Selective Laser Melting for Metal Additive Manufacturing

### **Materials & Explosive Engineering focus**

Advanced Alloys and Composites for Extreme Environments

High-strength nanostructure alloys

High-entropy alloys

Materials for armor applications

Additive Manufacturing of Transparent Armor

Shape-memory metamaterial shells for impact protection of structures

Resilient Structures from Recycled Materials

Environmentally-Friendly Corrosion Protection Coatings

Advanced infrastructure materials: ultra/high-performance, self-consolidating, fiber-reinforced recycled

Smart Helmets to prevent Traumatic Brain Injury

Viscoelastic materials for helmet liners  
Plasma Science and Engineering: From Space Exploration to CBRN Mitigation  
Material Testing in Low-Temperature Atmospheric Plasmas  
Coatings and Structures Resilient to Explosions  
Post-blast forensics Virtual Reality environment  
Novel Impulse Instrumentation for Buried Explosive Charges  
Study of Blast Wave-Induced Traumatic Brain Injury

### **Smart Systems**

Optimal adaptive control for guidance of missile and rockets  
Drone platform mechanics for demining and aggressive surveillance  
Autonomous systems with dynamic networks and uncertain boundaries  
Clustering, neural networks, adaptive dynamic programming  
Dynamic modeling and control of micro- and nano-positioning systems  
Managing Risky Decisions in Human-Machine Teams  
Physical Human-Robot Interaction laboratory  
Design and Operation of Heavy Machinery for Decreased User Stress and Increased Service Life  
Safety of Autonomous Vehicles  
Wearable Motion Sensors to Enhance Soldier Health  
Waves and Vibrations for communications, evaluation, and cleaning  
Wireless Visible Light Networks  
Securing Artificial Intelligence and Internet of Things  
Mobile Machine Learning for Effective Tracking, Survival and Recovery of Isolated Persons  
Secure Information Forwarding through Fragmentation in Delay-tolerant Networks  
Secure Information Forwarding -Fragmentation for Collaborative Mission in a Battlefield Environment  
Machine Learning for Targeted Content Dissemination in a Battlefield  
Complex adaptive system modeling of autonomous systems  
Situational awareness and pattern recognition in autonomous systems  
Decision Making, Data Analytics, and Secure Control  
Sensors with Ultrahigh Sensitivity and Resolution  
Reinforcement Learning in Autonomous Systems  
Investigate the Performance of Small UAVs Using CFD simulations

### **Infrastructure for Mobility, Resilience, & Sustainability focus**

Robust 3D Printing of Concrete Military Structures with Blast Resilience  
In situ Repair and Rehabilitation of infrastructure materials  
Hydrologic remote sensing and geophysics  
Phytoforensics for detection of environmental hazards  
3D printing for conformal Li-ion batteries  
Rapid charge of batteries  
Training Needs for modular nuclear reactors  
Thermal imaging for assessment of levee stability for flood mitigation  
Improving the Lithium Ion Battery  
Flood Prediction and Mitigation with Deep Learning  
Water reuse in a one-step bioreactor  
Structural Inspection with Autonomous Vehicles  
Rapid trace detection of nitroaromatic and hexogen vapors  
Engineering Composite materials for toxic gas detection and removal