R&D OPPORTUNITY
The Composite Structures and Nano Engineering Research Group (CSNERG) at the University of Mississippi is focused on utilizing nanoparticle enhanced and other advanced composites for various engineering applications.

INTRODUCTION
CSNERG is dedicated to fostering interdisciplinary research and education in advanced composite materials and structures, with an emphasis on nano composites and their application in infrastructure, mechanical, electrical, chemical and other engineering sectors. CSNERG has been built on the strengths of the multi-disciplinary members within the Research Group. These strengths include blast survivability and homeland security; composite/hybrid materials and structures; mechanics from nano, micro, on up to macro scales; impact and crash worthiness; electric power and telecommunications; chemical and biological systems; and simulations/modeling.

FUNDING
CSNERG was founded in 2004. It has since received funding from the US National Aeronautics and Space Administration (NASA), the Mississippi Space Grant Consortium, the Office of Naval Research, the Air Force Research Labs, the Mississippi Department of Transportation (MDOT) and the Department of Homeland Security (DHS).

DEVELOPMENT CAPABILITIES
As a multi-disciplinary group, the researchers at CSNERG have the knowledge, skills and ability to readily design and develop nanoparticle enhanced and other advanced composite systems for civil infrastructure, survivability and homeland security applications.

Through collaborative relationships with researchers at the US Army Corps of Engineers (ERDC), Applied Research Associates (ARA), Ensinger Co., Michigan State University, Wayne State University, University of Illinois Urbana-Champaign, University of New Orleans, North Carolina A & T State University and the University of Rhode Island, CSNERG has the ability to assemble research teams capable of solving problems and designing robust solutions pertaining to civil infrastructure, survivability and homeland security.
FACILITIES AND RESOURCES

Researchers at the CSNERG have access to resources which include software, hardware and data needed to conduct nano and composite structures research:

Testing Facilities
• HP modal and spectrum analysis equipment for dynamic property evaluation
• Dynatup 8250 HV instrumented impact test system with temperature chamber
• Transmission and reflective photoelastic experimental stress analysis
• TA Instruments Model Q800 Dynamic Mechanical Analyzer
• Digital Instruments Nanoscope IIIa Multimode Scanning Probe Atomic Force Microscope
• Enduratec Axial/Torsion Smart Test System
• Tenney CAS temperature and humidity controlled chamber
• Gamry Electrochemical Impedance Spectroscopy (EIS) equipment
• MTS 810 Axial Test System with Environmental Chamber
• Rapid Freeze-Thaw Cabinet

Computational Facilities
• 2-SGI Origin Dual-processors
• 5-SGI Workstations
• FEA softwares: ABAQUS, LS DYNA, ANSYS, AUTODYN
• Other softwares: MEScope Modal Analysis

Mississippi Center for Supercomputing Research (MCSR)
• SGI Origin 2000 64-processor system

CSNERG also has access to ERDC Labs in Vicksburg, MS and to facilities within the School of Engineering which include the Composite Materials Manufacturing and Mechanical Testing facilities.

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