

Mechanical and Aerospace Engineering Seminar

**Dr. Oliver J. Meyers
Smart Materials Adaptive Response Technology
Laboratory @ Clemson University**

Will present a talk titled:

Functionalizing Bistable/Multi-stable CFRP Laminate Structures

Abstract: An emerging research area in the field of composite materials focuses on Bistable/Multi-stable Composites. These composites, as the name suggests, have two stable shapes, which include snap through/snap back phenomenon between the two shapes, which makes it a suitable material for using in “Adaptive Structures”. Bistable composites are unsymmetric laminated CFRP that exhibits bistability because of the unsymmetric laminate stacking sequence about the middle surface. In the combination of symmetric and unsymmetric laminates, various standard geometries are split into smaller geometries, each of those smaller geometries are made into symmetric or unsymmetric laminates and different combinations of those symmetric and unsymmetric laminates are studied, to find out the various bistable shapes that are possible in each standard geometry. Numerical simulations and experiments are conducted to determine design constraints for sizes and alternative geometries of bistable laminates. Additionally, much study is necessary to functionlize bistable laminates for morphing structures, particularly incorporating mounting fixtures (boundary conditions) and thicker bistable structures for strength and impact mitigation.

Date: April 1, 2022

Location: CAMP 176

Time: 11:00 am

ZOOM Link for virtual attendance

<https://clarkson.zoom.us/j/94333678632?pwd=b25DRlY3STRkak9iNGFmMUY1UjNPZz09>

Meeting ID: 943 3367 8632

Passcode: 743721

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Bio: Dr. Oliver J. Myers serves as the Associate Dean for Inclusive Excellence Undergraduate Studies and is an Associate Professor of Mechanical Engineering at Clemson University. Dr. Myers is a graduate of the University of Maryland Baltimore County for all three degrees of Bachelors, Masters and Doctorate in Mechanical Engineering. Prior to joining Clemson, Dr. Myers was an Associate Professor at Mississippi State University and prior to that, he worked as a Senior Mechanical Engineer at Northrop Grumman Corporation Electronic Systems Division in Baltimore Maryland as an Integrated Product Team Lead and lead engineer on composite material chassis and module designs, micro systems integration, micro-fabrication and manufacturing of electronic assemblies. He has also worked as a design and analysis engineer at the Naval Air Warfare Center working on several military aircraft platforms and as an engineer with the Maryland Department of the Environment developing the analysis code for the vehicle emission inspection program. He has the honor of being selected in the inaugural class of the prestigious Meyerhoff Scholarship Program at UMBC under the mentorship of Dr. Freeman Hrabowski. He conducts research in smart material and smart system applications for multi-scale systems, interdisciplinary computational models of mechanical systems, SHM/NDE and integrated design/analysis/prototyping of mechanical devices and systems. Dr. Myers is an ASME Fellow.