

# Structural Mechanics & Materials

In the School of Aerospace Engineering at Georgia Tech, research in structural mechanics and materials (SMM) behavior is led by world-class researchers who investigate, characterize, test and design materials and material systems for aerospace vehicles and components. The investigations span a broad range of length and time scales, and cover analytical, numerical and experimental aspects. The research is conducted through collaborations with and funding from government agencies, and all major aerospace industries have a presence and regularly seek the advice of SMM faculty.

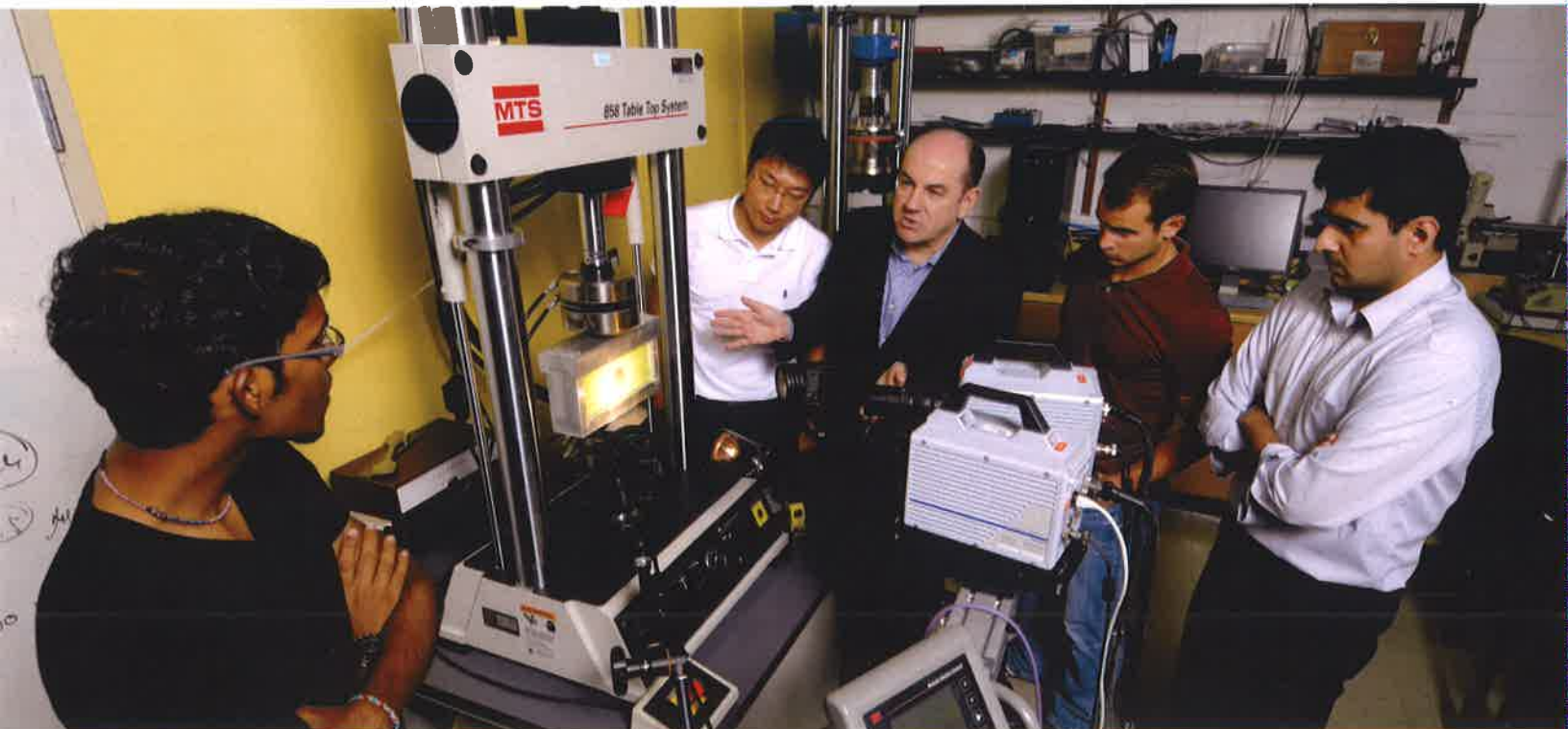
SMM research at AE covers traditional areas of structural mechanics dealing with stress analysis, failure analysis, fracture mechanics and durability of metallic, composite and hybrid structural components, including sandwich construction. In addition, significant emphasis is placed in the development of non-destructive techniques (NDE) and structural health monitoring (SHM) systems for the assessment of structural integrity through thermal and acoustic techniques.

SMM at AE is also addressing the needs for multi-functional materials and structures with embedded sensing

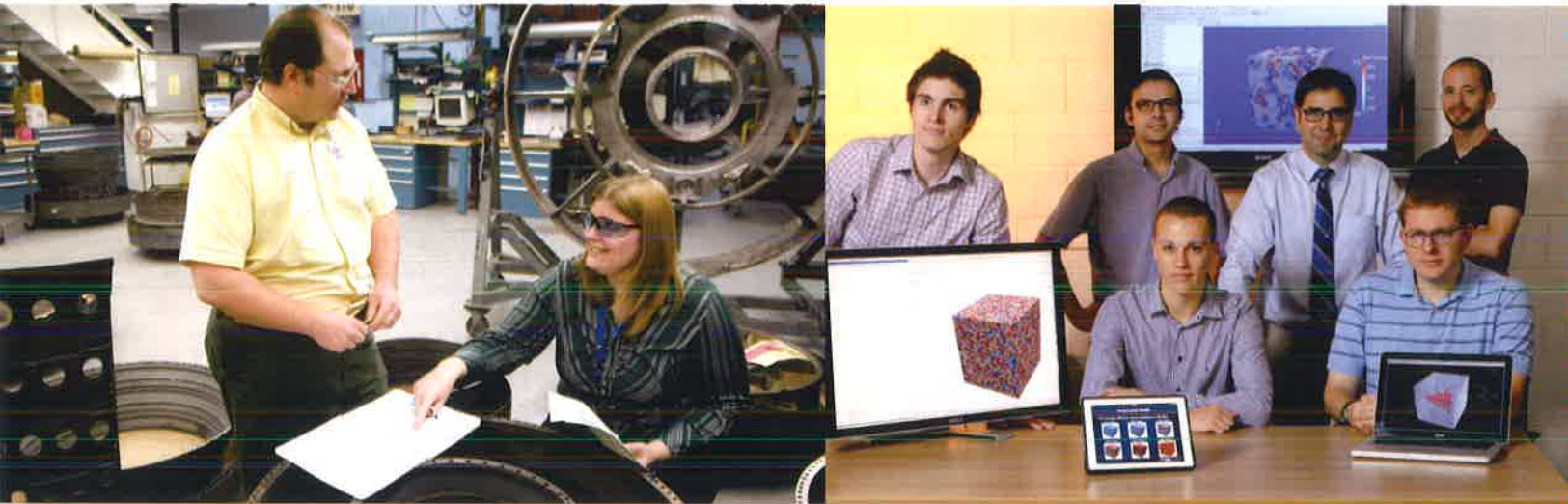
and energy harvesting capabilities. On the experimental side, the group has unique capabilities for testing materials under extreme environment, such as high temperatures and high velocity impacts, and combined loads.

The SMM group is renowned for its manufacturing at the micro and nano scale of complex conductive structures which can be used as sensors and transducers for the micro/nano scale characterization of material behavior, or which find applications well beyond aerospace such as in biomedical engineering.

The computational expertise of the SMM group includes knowledge in all leading FE commercial packages, along with the ability to develop innovative user defined routines or element formulations that provide improved accuracy without adding to the computational costs. In addition, expertise in ad-hoc, in-house developments of codes with unique capabilities is an area of growth for the SMM group. Multi-scale, multi-physics computations performed by our faculty investigate fracture phenomena, fatigue and embrittlement of materials and structures due to exposure to static and dynamic loads, as well as to extreme thermal, acoustic and chemical environments.



# STRUCTURAL MECHANICS & MATERIALS



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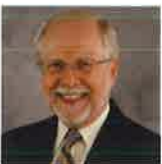
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