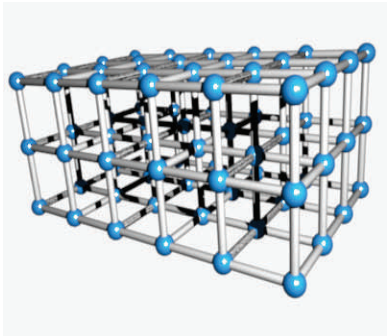


DISTINGUISHED LECTURER SERIES

*VCU
MECHANICAL ENGINEERING*

Revolutionary Structures and Materials in the U.S. Army



*Dr. Bruce LaMattina
U.S. Army Research Office*

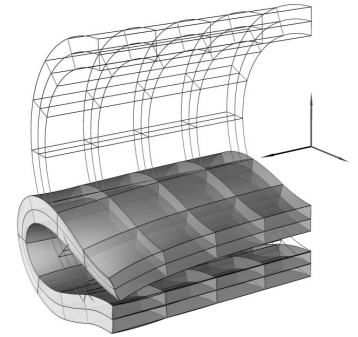
*10 November 2008
Social Hour: 11:30-12:00 noon
Seminar: 12:00-1:00 pm
Room E2214
Engineering East Hall*

ABSTRACT

This presentation and discussion will focus on the basic research needs of the Army and the promising new breakthroughs that may lead to revolutionary advances with respect to solids and structures. Through the ARO Solid Mechanics and Structures programs, the university community is addressing essential long-term research needs of the Army. The programs develop physically-based mechanics tools (theory, experiments, computations) for the quantitative prediction and optimization of Army systems subjected to extreme battlefield environments. Army systems are frequently limited by material strength and failure. Our research plays a crucial role in the prediction of strength, damage, and failure of Army material systems and structures under extreme loading conditions such as impact or blast. Another important aspect of the programs involves the transmission of mechanical loads to humans and the link between mechanics and biology to provide a fundamental understanding of injury mechanisms for increased survivability or a reduction of injury severity. Research in computational mechanics results in reduced development cost by minimizing the need for expensive testing. Solid and structural mechanics approaches form the foundation of optimization tools to enhance performance while minimizing weight and volume, and their theories provide a strong link between the underlying physics of solids and the design of actual systems

Bio

Dr. Bruce LaMattina has over 15 years experience in private industry, academia, and government. Prior to joining ARO, he worked as an engineer in manufacturing and engineering design at the Okonite Company and in corporate research and development at ABB. In 2001, Dr. LaMattina joined ARO as a Program Manager for Solid Mechanics in the Mechanical Sciences Division of the Engineering Sciences Directorate. During his tenure, the Solid Mechanics Program has steadily grown tripling in size during the period. Dr. LaMattina has successfully developed externally-funded basic research projects in excess of \$15M to address ballistic and blast loading effects on individual Soldiers and vehicles. In addition to maintaining its strong portfolio in Armor and Anti-Armor related research, under Dr. LaMattina's direction the Solid Mechanics Program has expanded into interdisciplinary areas to address Army issues related to molecular biology and Micro-Electro-Mechanical Systems (MEMS). He has 20 peer-reviewed publications, has given numerous invited presentations, and has organized many workshops and symposia. He is an active member of the American Society of Mechanical Engineers (ASME) and is a member of several professional committees. He received his PhD in Mechanical Engineering with minors in Civil Engineering and Mathematics from North Carolina State University in 1997 and is a Professionally Licensed Engineer in the State of North Carolina.



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