WEBINAR

How Engineered Volcanic Rocks Resist Bullets and Protect Man in Space Voyage: Cost and Performance Perspectives

08 June 2022, Wednesday
3.00pm - 5.00pm
Online Platform

CPD: 2.0
IEM22/HQ/154/T (w)

Speaker:
Dr. David N.V

REGISTRATION FEES
IEM Students: FOC
IEM Members: RM15 (Online)
RM20 (Offline)
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Engineering Education Technical Division (E2TD), IEM

SYNOPSIS

Ballistic fabrics made from high-performance fibers such as para-aramid (synthetic) and basalt (natural) fibers, and composites utilizing these fabrics, are among the leading materials for soft body armor systems. Basalt fibers, which are extracted from igneous volcanic rocks, are natural fibers with mechanical and thermophysical properties that are generally comparable or superior to glass and other synthetic fibers but at a lower cost. This gives basalt-based composites a performance edge over existing material systems for potential application as anti-ballistic body armor. Military and law enforcement operations need durable, lightweight, damage and moisture-resistant ballistic fabrics with superior energy absorbing capacity. Basalt fiber cannot only replace synthetic fibers, but it also has superior characteristics. It has a similar chemical composition as glass fiber but is stronger, and unlike most glass fibers is highly resistant to alkaline, acidic and salt. Compared to carbon and aramid fiber, it has the features of wider application temperature range -452° F to 1,200° F (-269° C to +650° C), higher oxidation resistance, higher radiation resistance, higher compression strength, and higher shear strength. This research tests the V50 ballistic performance and penetration resistance of unidirectional woven basalt fiber laminated composites with three different combinations of ply orientations.

ABOUT SPEAKER

David, N.V. earned his doctoral degree in Mechanical Engineering and Materials Science at Texas A&M University, USA under the auspices of Fulbright Fellowship, the Rice-Cullimore Scholarship – ASME Auxiliary, and the Malaysian Government. He obtained a Master of Science degree and a Bachelor of Engineering (Honors) degree in Mechanical and Materials Engineering from Universiti Kebangsaan Malaysia. He was the Head of International & Private Grants Acquisition Unit at the Research Management Center, Universiti Teknologi MARA (UiTM) in Shah Alam, Malaysia between 2011 and 2019. Inflow of research funding from external sources has increased 18 fold during his tenure with research funds granted by more than 30 private international organizations. The international and private grants registered the highest growth sector for grants acquisition across the UiTM system in 2017. He was honored with Excellent Service Award UiTM in 2004 and 2015. David authored/co-authored over 120 refereed scientific articles as of April 2022. He is also member of the Editorial Boards of and Technical Reviewer for various high impact journals. His research interests include bio-composite engineering, viscoelasticity, acoustics, brainwave entrainment, structural health monitoring and pedagogical innovations. He has developed and tested a new iso-strain state composite model to characterize the uniaxial viscoelastic behavior of a natural rubber coated ballistic fabric. David consults scientific journal publishers on indexing solutions in major databases including Scopus, PubMed, Crossref and CLOCKSS.