EML WEBINAR

ZOOM DISCUSSION 271 079 684
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WEDNESDAY, 18 NOVEMBER 2020
6:30 AM CALIFORNIA, 9:30 AM BOSTON
2:30 PM LONDON, 10:30 PM BEIJING

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BALLISTIC AND BLAST RESPONSE OF STRUCTURAL MATERIALS: LESSONS FROM ARCHITECTING MATERIALS

The design of lightweight structures to mitigate against dynamic loads such as explosive blasts and impacts of projectiles has received widespread attention. The focus of research has been on designing new materials including alloys for enhancing the dynamic performance of protection structures. Most dynamic loading events involve complex phenomena such as fluid-structure interactions and dynamic instabilities. An understanding of the mechanics of these phenomena provides insights into designs of new material architectures and systems for dynamic applications.

The seminar shall elucidate, via both laboratory-scale experiments and numerical calculations, some critical phenomena involved in blast and ballistic loading. These include Richtmyer-Meshkov instabilities in the high velocity impact of granular media against structures and instabilities in composites with extreme anisotropy that enhance ballistic protection capability. This understanding will be used to discuss the design of architected materials and structures for enhanced dynamic performance.

Professor Vikram Deshpande joined the faculty of Engineering at the University of Cambridge as a lecturer in 2001 and was promoted to a professorship in Materials Engineering in 2010. He has written in excess of 270 journal articles in the experimental and theoretical solid mechanics. He serves on the editorial boards of a number of journals in mechanics and biomechanics including Journal of the Mechanics and Physics of Solids, Modelling and Simulation in Materials Science and Engineering and the Proceedings of the Royal Society, London. He has been awarded the Philip Leverhulme Prize, the William Hopkins medal, the 2020 Rodney Hill Prize in Solid Mechanics and elected Fellow of the Royal Society, London.

Discussion Leader: Professor Lihua Jin, University of California, Los Angeles

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