

**Lecture:**

**POROSITY EFFECT ON FUNCTIONALLY GRADED SANDWICH BEAMS ON ELASTIC FOUNDATIONS**

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**ABSTRACT**

Functionally graded porous structures represent a new generation of lightweight materials characterized by continuous spatial gradients in both porosity and material properties. Their lightweight nature, high strength, enhanced energy absorption capabilities, and improved thermal and acoustic insulation properties have driven the development of functionally graded sandwich structures with porous cores. These structures have demonstrated superior mechanical properties and durability compared to traditional homogeneous structures across various engineering fields over the past decade. As a result, extensive studies on their mechanical behaviors have been conducted utilizing a range of displacement-based theories and computational methods. This lecture presents the effects of core porosity on the mechanical characteristics of functionally graded sandwich beams with porous cores resting on a two-parameter Winkler-Pasternak elastic foundation.