Ph.D. Dissertation Defense Announcement
Mechanical and Aerospace Engineering Department
University of Texas at Arlington

THEORETICAL PREDICTION OF MECHANICAL BEHAVIOR OF REGULAR AND CHIRAL HONEYCOMBS BASED ON LOADING OF SINGLE CELL.

By

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Abstract

Cellular solids are both naturally-occurring and man-made materials depending on the characteristic length or Stochastic manner, these materials exhibit low-relative density usually 30% than the constituent solid material. Low-density cellular solids have been demonstrating superior mechanical properties in various applications from marine to aerospace and light weight sandwich structures, which has intrigued in development of novel structured materials.

Cellular solids offer great design flexibility and shows path for the targeted geometric for application-based industry. These materials are used in sandwich structure and come in the shape of hexagonal. An additional aspect of determining the properties and behavior is by studying on single cells which can be incorporated into sandwich panel.

It has been difficult to determine the exact shape or geometry to be used based on the application, we investigate the chiral and standard hexagonal honeycomb to design of the novel macrostructural and the topology of the chiral shapes to control both the static and dynamic behavior phenomena. This particular cellular structure exploits the high stiffness of the honeycomb core and also absorb energy on impact. The present research being addressed shows the comparison and the suitable geometry based on the application.