

# Innovation and Commercialization

UNIVERSITY OF TEXAS  ARLINGTON

## Improving Compressive Strength of Fiber-Reinforced Polymeric Composites by Comingling Fibers with Varying Moduli

Tech ID: UTA 19-17

**INVENTOR:** Andrew Makeev

### TECHNOLOGY NEED

High-modulus (HM) carbon fiber composites have growing demand in the aircraft industries to manufacture light weight aircraft structures. But extremely low fiber - direction compressive strength of HM composite makes it unfit for aircraft industries. This drawback of HM carbon fiber provides scope for improvement of compressive strength.

### INVENTION DESCRIPTION/SOLUTION

The present invention proposes a method for enhancing the compressive strength of low fiber direction HM Composites. For improving the compressive strength of HM composites it is blended with Intermediate- Modulus (IM) and nano-silica. Comingling IM and HM fibers at the filament level in addition to the matrix nano-sized structural reinforcement throughout the composites provides additional support to the HM fiber, thereby improving the shear modulus to axial modulus ratio of the composite material.

### APPLICATIONS

- Aerospace Industry
- Automobile Industry
- Robotics
- Mountain Bikes

### KEY BENEFITS

- Light Weight
- High Compressive Strength
- Improved Shear Modulus

### STAGE OF DEVELOPMENT

Component Validation/ TRL= 4

### INTELLECTUAL PROPERTY STATUS

Patent Pending



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