

Physical Properties of Fiber Reinforced Composites Incorporated with Graphene Nanoflakes

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Abstract



Recent studies have been continuously increasing on fiber reinforced composite materials due to their amazing mechanical, electrical, and thermal properties. They are considered to be the next generation of lighter and stronger aircraft and wind turbines, faster cars, and stronger materials for structural applications. Lately, many research studies have been focused on the fabrication, characterization and modeling of fiber reinforced composites to determine their unique physical properties in the presence of graphene nanoflakes, and to take advantage of these properties for the future advancement in the field. In this presentation, we will talk about the mechanical, thermal and electrical properties of various fiber reinforced polymeric composites incorporated with graphene inclusions under different testing conditions. Our test results indicated that many of the physical properties of these strategic materials could be substantially enhanced for many industrial applications. ABAQUS modeling studies greatly support our findings on the composite structures. The aircraft and composite wind energy companies can significantly benefit from the present studies to further develop new and exciting products using graphene and fiber reinforced composites.

Dr. Ramazan Asmatulu received his Ph.D. degree from the Department of Materials Science and Engineering at Virginia Tech in 2001 and had postdoc experiences at the University of Connecticut and Yale University. He joined the Department of Mechanical Engineering at Wichita State University as an assistant professor in 2006, and became an associate professor in 2012 and full professor in 2017 in the same department. His current research mainly focuses on the theoretical and experimental understanding of the mechanical properties of various nanomaterials, composite materials and biomaterials for primarily aerospace, energy, and biomedical applications. Through his studies, he has published 117 journal papers and 226 conference proceedings, edited three books, authored 36 book chapters and three laboratory manuals, received 13 patents and 40 honors/awards, presented 115 presentations, chaired many international conferences and reviewed several manuscripts in international journals and conference proceedings. So far, 15 PhD, 105 MS and 62 BS students have already graduated under his supervision and started working in different locations worldwide. As a PI and co-PI, more than \$5,000,000 of internal and external grants have been received from different sources. To date, his scholarly activities have been cited more than 2290 times, according to the Google Scholar.