

Improved material alternatives are always in demand for aircrafts and spacecrafts, so that the systems are light-weight, multi-functional, and stable in the extreme environments for long duration. To achieve realistic, bulk application of these novel materials, we need to develop scalable manufacturing and understand multi-scale material behaviors. These critical research topics will be addressed, using some examples based on Yamamoto's current and former research: CNT-polymer nanocomposites, nano-porous ceramics, and bi-metallic micro-lattices.