

Structural Carbon Nanotube Development

Emilie J. Siochi

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Mechanical properties of carbon nanotubes (CNTs) at the nanoscale suggest their potential to enable significantly lighter structures of interest in aerospace applications. As different formats of the material became available over the last 20 years, understanding of how CNTs contribute to improvements in mechanical properties of structural composites has evolved. Although the material is now available in large quantities that permit the development of composite fabrication processes, the retention of properties that make these materials attractive on the nanoscale remains a challenge in large assemblies of CNTs. The work to be presented will summarize lessons learned in our efforts to produce carbon nanotube composites with tensile properties that begin to rival those of carbon fiber reinforced polymer composites. Challenges that need to be overcome for practical adoption of this emerging material system will be considered.