

Philip Bradford

Development and Applications of Carbon Nanotube Textiles

Carbon nanotubes (CNT) have hundreds of potential applications but require innovative processing techniques to manipulate the microscopic carbon dust into useful devices and products. Traditionally this has been accomplished by individualizing the carbon nanotubes and dispersing them into various solutions and polymers. To harness maximum properties from the carbon nanotubes in final products, high volume fraction assemblies of CNTs are needed. Due to their high length-to-diameter ratios, assemblies of carbon nanotubes can resemble traditional textile materials. These materials have been produced and utilized in my research for applications including multi-functional composites, energy storage, air filtration and energy absorbing structures. Production, morphology and properties will be discussed along with anticipated future advances in the field.