

## “Literally Big Nano: Bulk Nanostructured Materials for Aerospace and Infrastructure Applications”

Professor **Brian L. Wardle**

Director, Nano-Engineered Composite aerospace Structures (NECST) Consortium  
Technology Laboratory for Advanced Materials and Structures (TELAMS)  
Dept. of Aeronautics and Astronautics  
Massachusetts Institute of Technology  
wardle@mit.edu

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### 要旨

Bulk nanostructured materials pose many challenges both in terms of characterization, design, processing, and scaling. This presentation will focus on recent work developing nano-engineered advanced composites for aerospace applications. These hybrid composites employ aligned carbon nanotubes (CNTs) to enhance laminate-level multifunctional properties of existing aerospace-grade advanced composites. Intrinsic and scale-dependent characteristics of the CNTs are used to engineer laminate-level property improvements: interlaminar shear strength, toughness, and electrical conductivity results will be discussed and the underlying mechanisms elucidated. Fundamental studies on polymer-CNT interactions led to the development of a combined top-down and bottom-up fabrication methodology that addresses several of the key issues (agglomeration, viscosity, CNT wetting, scale, alignment) that have frustrated the use of CNTs in nanocomposites and nano-engineered composites. Current research to answer key outstanding “questions of the day” related to CNT contributions to composite properties are discussed, including a novel experimental platform to investigate nanoscale interactions in a well-controlled manner. New research results and directions stemming from ongoing work will be discussed.



主催: 東京大学グローバルCOEプログラム「機械システム・イノベーション国際拠点」  
本件連絡先: 東京大学大学院工学系研究科機械工学専攻 教授 丸山 茂夫  
E-mail: [maruyama@photon.t.u-tokyo.ac.jp](mailto:maruyama@photon.t.u-tokyo.ac.jp) Phone: 03-5841-6421  
GCOE事務局 E-mail: [gmsi-office@mechasys.jp](mailto:gmsi-office@mechasys.jp) Phone: 03-5841-7437