

MOVING CARBON NANOTUBES TO INDUSTRY

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As carbon nanotubes (CNTs) enter the fourth decade since its structural elucidation, the field has matured greatly from the discovery of fundamental properties at the nanometer-scale to the commercialization of real CNT-based products. However, many aspects of this multifunctional fibrous nanomaterial remain unclear, such as the technology for the transfer of phenomena across length-scales to low-cost synthesis. This is precisely the work which is undertaken by the CNT-Application Research Center, AIST. Our Center has been working with industry to support the establishment of a carbon nanotube-based industry in Japan by developing scaled-up synthesis and processing technologies to transition directly into industry. We have teams working on various topics which are fundamental to the development of applications, such as synthesis, processing, and evaluation at each step. In this way, our center works to connect scientific discoveries and bring them to industry. I will present an introduction to our core synthetic technology, the unique properties of our carbon nanotube material, such as length, surface area, and conductivity, our efforts to develop large scale industrialization, and some applications utilizing its unique properties, spanning composite materials, energy storage, and MEMS devices.