

長崎大学第3期中期目標・中期計画重点研究課題「次世代エネルギー関連技術に向けた革新的物質科学研究拠点」第6回講演会

グリーンシステム創成科学専攻平成29年度国際セミナー

第687回化学・物質工学セミナー

この度、長崎大学第3期中期目標・中期計画重点研究課題の第6回講演会を、グリーンシステム創成科学専攻国際セミナーならびに第687回化学・物質工学セミナーも兼ねて企画いたしました。万障お繰り合わせの上、ご参加下さい。

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日時：平成30年1月19日（金） 10:30～12:00

場所：長崎大学文教キャンパス 総合教育研究棟2F 208番講義室

From Bench to the World: Our Efforts in Establishing a Carbon Nanotube Industry

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Abstract

More than two decades have passed since the discovery of the carbon nanotube (CNT) and single-wall carbon nanotube (SWCNT), however, applications utilizing their unique set of properties have yet to be realized in mainstream commercial products. With applications, such as transparent conducting films for touch panels, reinforced materials for transportation, sensors and drug delivery devices for health care, all on the foreseeable horizon, many aspects from the industrial availability, processing, to characterization remain to be resolved. This is precisely the work which is undertaken by the CNT-Application Research Center, AIST. The mission is to support the development of a CNT industry by developing low-cost, high yield mass production technologies, development of applications, and the development of characterization techniques. This is achieved through working in collaboration with companies to identify industrial problems and to help solve them.

This presentation will provide an overview of our recent progress in the synthesis and application of millimeter-scale, vertically-aligned single-walled carbon nanotubes using “Super-growth” CVD. In one section of my presentation, I will describe our efforts toward the economical mass-production of single-walled carbon nanotubes (SWCNT) based on the water-assisted chemical vapor deposition technique, from which highly efficient synthesis of vertically aligned SWCNTs grow from substrates (SWCNT forests). In particular, I will share the development of the Super-Growth method from its inception to the current industrial-scale mass production plant. In addition, I will present some of our work in developing the technology for the synthetic control of SWCNTs. Finally, I will present some examples of the application development which has been developed and/or is currently on-going.

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