

第124回 GMSI公開セミナー

**Rational Catalyst Design for Enhanced and
Controlled Growth of Carbon Nanotube Carpets
via Chemical Vapor Deposition****Dr. Placidus B. Amama****Research Scientist, University of Dayton Research Institute (UDRI)
& Air Force Research Laboratory (AFRL) Dayton, Ohio, USA****日時: 2012年11月22日(木) 15:30-17:00
会場: 東京大学工学部2号館3F 232号講義室****要旨**

There has been growing interest in densely packed, vertically aligned single-walled carbon nanotube (SWCNT) carpets because of their suitability in a growing number of important technological applications. Among the existing methods for the growth of SWCNT carpets, catalytic chemical vapor deposition (CVD) appears to be the most suitable. Using an alumina/Fe catalyst and a suitable carbon feedstock, SWCNT carpets of millimeter-scale heights can be grown via water-assisted CVD. However, for efficient and controlled growth of SWCNT carpets to be achieved, there are several challenges that need to be addressed, such as unexpected or early growth termination of carpets that limits yield, difficulty in performing carpet growth on metallic or non-alumina supporting layers, and the lack of proper understanding of the growth mechanisms of carpets including many important aspects of support-metal interactions. In my talk, I will discuss the secret role of water during carpet growth and show how the growth termination process can be explained on the basis of Ostwald ripening and subsurface diffusion of the catalyst. Further, I will discuss the relationship between the 3D evolution of Fe catalyst supported on different alumina types and the catalyst behavior (activity and lifetime). Finally, new strategies for improving the activity and lifetime of Fe catalysts during carpet growth 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」

共催: 日本学術振興会 外国人招へい研究者(短期)事業

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

Phone: 03-5841-6421

GCOE事務局

E-mail: gmsi-office@mechasys.jp

Phone: 03-5841-7437