

Advances in Rational Catalyst Design for Controlled CVD Growth of Carbon Nanotube Carpets

(カーボンナノチューブ・カーペットの成長のための触媒デザインの進展)

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Date & Time: December 20 (Thu) ,16:00-16:45

Place: Room 211, Building A (south), Chikushi Campus

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There has been growing interest in densely packed, vertically aligned carbon nanotube (CNT) carpets because of their suitability in a growing number of important technological applications. Among the existing methods for the growth of CNT carpets, water-assisted catalytic chemical vapor deposition (CVD) appears to be the most suitable. In my talk, I will discuss the secret role of water during carpet growth and show how the CNT 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.

