The collaboration research for the Dual Graduate School between VNU and JAIST

[Title of collaboration research]:

Novel composite materials with carbon nanotubes

[The members of collaboration research]:

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[Reference home-page address]: http://www.jaist.ac.jp/~fujiwara/index.html

[Other references]:

[Contents]

For the development of novel materials for electronic devices, mechanical parts etc., composite materials including carbon nanotubes and related materials is one of the most potential materials. We can expect high mechanical strength, flexibility, and high electrical and thermal conductivity in such carbon-nanotube composite materials.

In this research we will first fabricate single wall carbon nanotubes with various morphology by alcohol catalytic chemical vapor deposition (fig. 1), and optimization of growth condition. We will also try to clarify the growth mechanism by computer simulation. This part can be performed both by VNU and JAIST. Longer single wall carbon nanotubes are better not only as additives for composite materials but also as strong fiber for space elevator etc. We are also now trying the growth of single wall carbon nanotubes with macroscopic length. This topics will also developed with research on composite materials.

Next, selection of matrix materials and design of composite materials with single wall carbon nanotubes will be performed. The original concept will be presented by Prof. Nguyen Dinh Duc at VNU, and research will developed by collaboration of VNU and JAIST.

We will focus on improvement of mechanical properties with light weight of these materials which will be applied for the airplane, rockets, satellites etc.

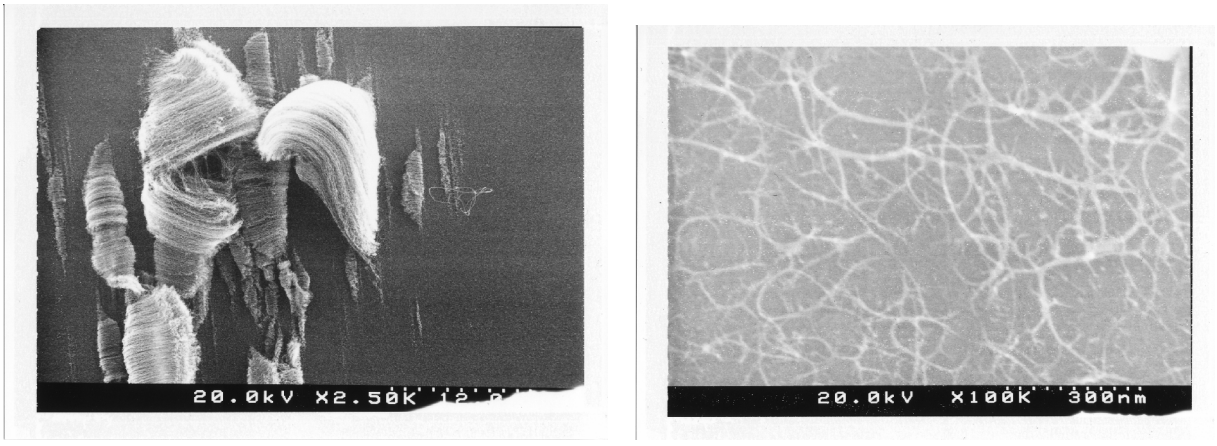

Fig. 1. SEM images of sigle wall carbon nanotube samples with various morphology.