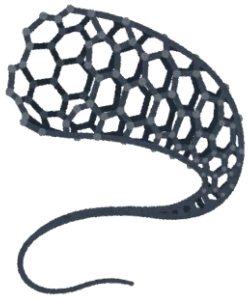
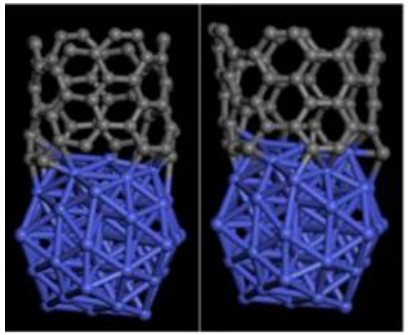
Tohoku Univ. Technology

Carbon nanotube production catalyst, carbon nanotube and its production method

Able to product high purity single chirality CNT at low cost





Reference [1]

Overview

Carbon nanotube (CNT) is a graphene cylindrical sheet consisting of six-membered ring of carbon. It is known that the CNT axial winding of graphene (chirality) determines the electronic state, such as metallicity, semiconductivity and band gap (BG).

The production of CNT with high chiral purity requires a complex process that includes the wet process such as separation and impurity removal.

This invention is about a simple method for synthesizing semiconductor type (BG>1eV) single layer CNT with extremely high chiral purity (over 90%), which does not require a process to increase chiral purity and which has low production cost.

Product Application

- Transistor, sensor, etc.
  / Electronic device and nano electronic material
- Coating type semiconductor, CNT ink, etc.
  / Printed electronic material
- Bio imaging / Medical field

IP Data

IP No.	:	PCT/JP2021/035526
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Admin No.	:	T21-002

Comparison of the invention with already reported example

*BG: band gap

CNT property	Semiconductor type	Metal type
> 90% purity Ultra-high purity synthesis	BG < 1eV 1 type	3 types
	BG > 1eV **Only this invention**	

CNT water-dispersion solution is now available!

Since the application has not yet been published, the information can be disclosed after concluding a fee-based contract that includes a confidentiality clause.

Related Works

[1] B. Xu, T. Kaneko, Y. Shibuta, T. Kato, Scientific Reports 7, 11149-1-9 (2017).

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