

Nanoelectronics in Japan and TIA Part 6 of 7

October 17 2013 Shigeo Okaya AIST



Tsukuba Innovation Arena

Carbon Nanotubes



Promoting the development of carbon nanotube application

technology

TIAnano





Mass production technology developed by the AIST (super-growth method) Mass production (0.6kg/day) and Distributions of single-wall

carbon nanotubes Innovation Arena

Carbon nanotube mass production pilot plant and Application



Application and industrialization of Single walled carbon nanotube (SWNT) are accelerated by sample distribution. Companies and universities are provided with SWNTs on the kg –level produced by a SWCNT mass production pilot plant.



Nano-Green







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Nano Green: Major Research Themes



Control of Electric Energy Flow

TC Technology committee

Research themes in Open Lab.

TC-A : Materials for b Materials for Secondary Battery

* Enhancement of performance and reliability of Lithium battery

* Development of Lithium air rechargeable battery

Materials for Fuel Cells

* Enhancement of performance and reliability of fuel cells

Common Fundamental Technology for Battery Materials

* In-situ observation and control of interface structure and chemical reaction

* Modeling and simulation for interface structure and chemical reaction

Control of Thermal Energy Flow

TC-B : Materials for thermal energy

Materials for Thermoelectric Conversion

*Development of methods to enhance ZT

Thermal Management Technology

*Development of heat-resistance & thermal insulation materials and their coating technology.

*Development of analytical methods for thermal properties

Energy Saving Technology

TC-C : Energy-saving magnetic

*Fundamental Technology for Magnetic Materials *Spintronics Materials for Electronic and Magnetic Applications



N-MEMS



Formulation of a center for manufacturing technology development of N-MEMS, and support for development and practical application of devices



Nano-Material Safety



Establishment of nanomaterial safety

In the OECD Working Party on Manufactured Nanomaterials (WPMN), the AIST conducts research on typical industrial nanomaterials such as fullerenes, single layer CNT and multilayer CNT.

Information-intensive centering

on nanomaterial safety

In August 2011, we compiled the final report and released the results of the evaluated risk regarding CNT, titanium dioxide and fullerene.



Risk evaluation report (Final report version 8.17.2011)



School of nanotechnology





Conclusion



- Japanese semiconductor industry in a downfall
- TIA, open R&D center for new nanotech innovation
- Super Low Power IT technology will create various new value for future society
- Innovation for Super Low Power IT technology requires integration of diverse industry players
- Collaboration among corporations in pre-competitive phase at the innovation hub.
- Collaboration between innovation hub and academia for new seed technology and human resources





Recent Advertisement!

- Open and easy utilization method for the SCR and other AIST/TIA facilities!
- 1) Web based application method (faster process)
- 2) No joint R&D agreement necessary
- 3) IP belonging primarily on the user
- 4) Strict confidentiality regime to guard user information
- 5) AIST technical assistance/guidance service available



Starting from November 1!





Thank you



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