Nanotechnology Networking in Japanese Industry

October 12, 2003

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Nanotechnology Networking in MRI

Our missions

- MRI bridges science to industry: Frontier Science Program (1990~)
- Research & Consulting (R&C) of Nanotechnology

Our outputs

- Lab. Research of nanomaterials
- Technology forecasting
- Assessment of S&T policy
- R&D consulting
- Business marketing

Definition of Nanotechnology

Nanotechnology : The key technology in 21C

	Top-Down	Bottom-Up
Nano Materials	• C60, CNT • Nano capsules / particles • Quantum dots / wires	• Mechanical alloys • Amorphous materials
Fabrication	• Self-assembling • Self-organization • Nano layering	• Lithography • FIB • Nano printing
Devices	• Molecular device • Bio-chips • DDS	• MEMS / NEMS • Comb. chemistry

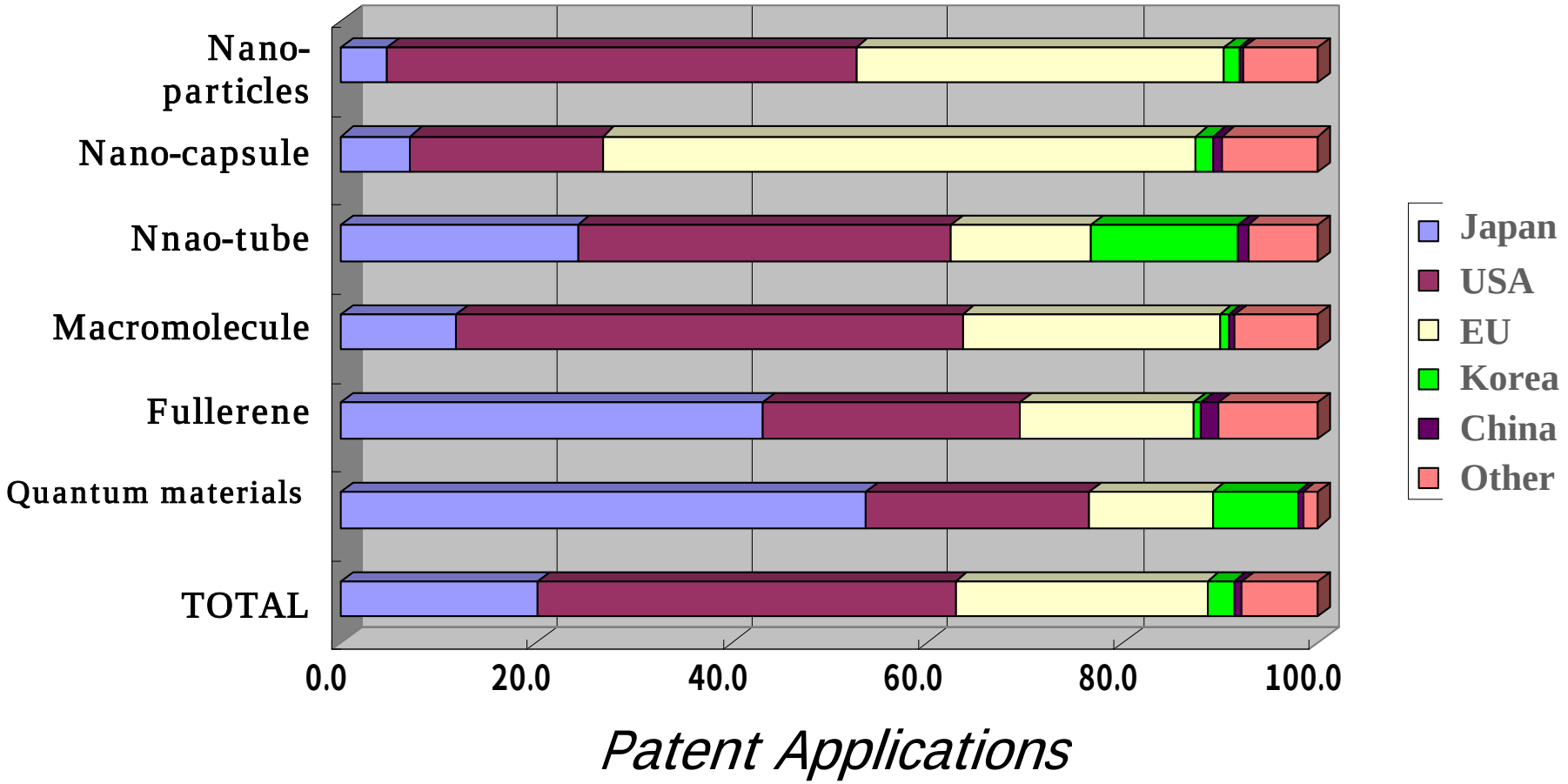
Marketing of NanoTech (2015, in Japan)

Products	Market	Types	Market
IT / Electronics **Storage medias、Displays, FPD**	106 B$	**Top-Down Nano Tech.**	63.8 B$ (44%)
Biotech. / Medicals DDS, Pharmaceuticals, Tissue engineering	18.3 B$		
Energy / Environment Fuel cells, Solar cells, Thin films	19.3 B$	**Bottom-Up Nano Tech.**	82.1 B$ (56%)
Mechatronics Super-small actuators	2.3 B$		

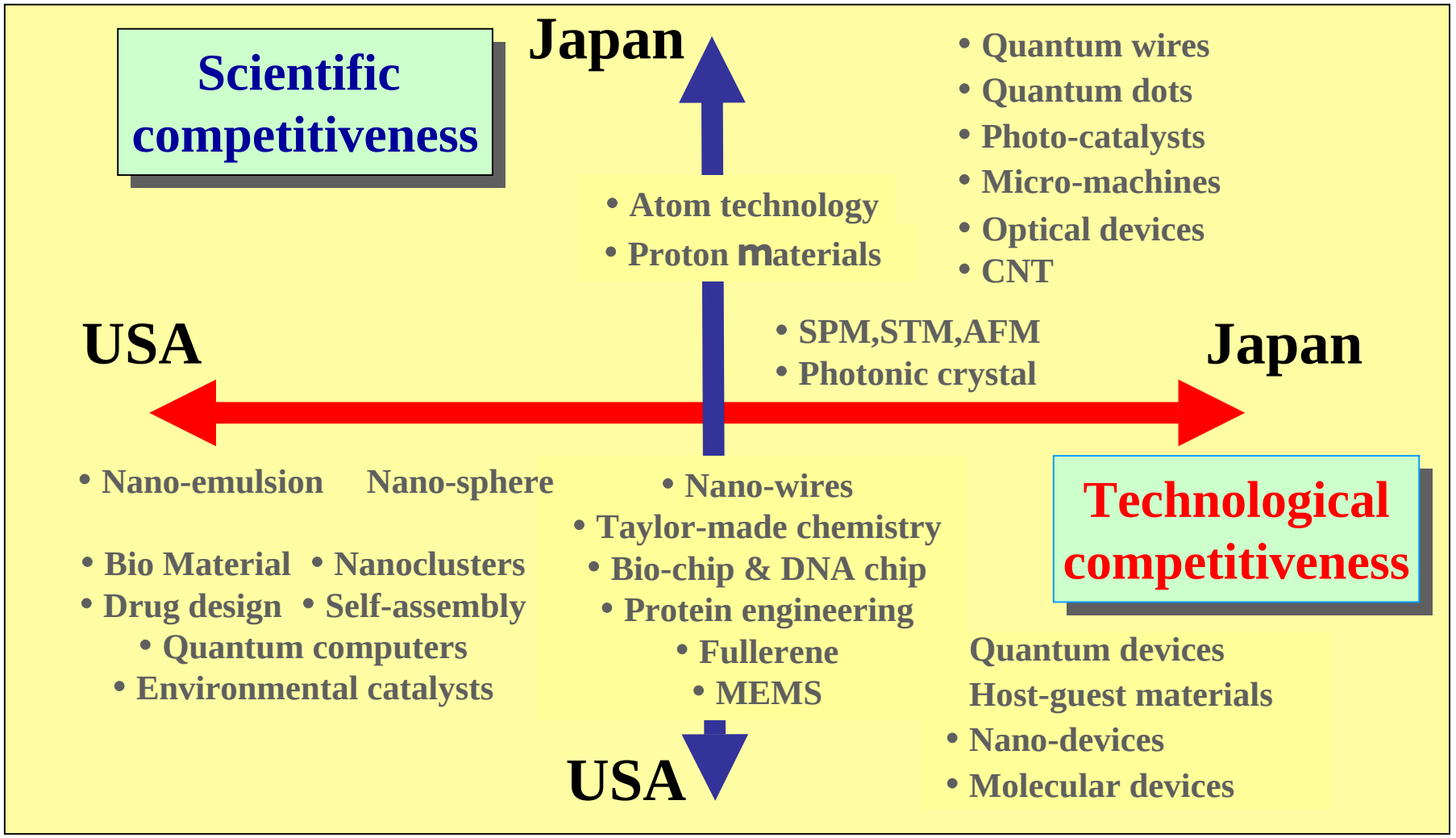
Total：145.9 B$

Assessment of Nanotech Competitiveness

Nanotechnology competitiveness between Japan and other countries was evaluated under the sponsorship of the Prime Minister's Council.



Nanotech Competitiveness: US vs. Japan



R&D Consulting for Industries

Nanotechnology is a big concern of Japanese industries, because Nanotechnology enables completely new R&D scenarios for future business. (2001~3: 60 projects)

Industries	Targets of R&D Consulting
Electronics	Nanoparticles, Bioelectronics, Molecular Electronics, High-speed computing
Automobile	Conducting polymer, Green polymers, Carbon materials, Bio-inspired engineering
Machinery	Carbon nanotube, MEMS / NEMS
Energy	Nanomaterials, Sensors, Nanocomposites, Catalysts, Nanobiotechnology

Nano-Ventures in the World

Technology Areas	No. of Firms
Nanomaterials（CNT, Particles, etc.）	28
NanoBio / Medicine	13
Nano Processing	11
Nano Electronics	11
Nano Manipulation / Measurements	10
MEMS & Applied Devices	7
Photonics	6
Consulting	6
Nano Designing / Softwares	4

The 1st NanoTech Business Plan Contest

Date&Place - In: “nano tech 2003 + Future” under support of NEDO (Makuhari, Japna)

Objectives - To establish a business model for nanotech ventre firms and improve business sense of young rseearchers

Participants - Japan (3), USA (2), Korea (1), China (1), Singapore (1), Inia (1), England (1) ; Total 10 firms

Winners

(1) Grand Prize (¥1,000,000)
Self-organized carbon-carbon composites materials, called Quasam™

（Atomic-Scale Design Incorporated, USA）

(2)Gold Prize (¥500,000)
Scanning Probe Microscope
（PSIA Corp., Korea）

Poster Presentation

Discussions for Nanotechnology Business

- We can believe that we are facing the most fascinating era to create the great economical progress by use of Nanotechnology.
- Venture firms are highly expected to appeal a new key technology thanks to Nanotechnology.
- The technology should be clearly presented to clients that their products are remarkably valued by the utilization of the technology with reasonable cost.
- In the place of no competition, there is no big market.
- There are “Early adapter” companies who buy new technologies before the technologies become acquainted and they are good partners for venture firms.

Summary

- We need roadmaps for Nanotechnology
- Bottom-up Nanotechnology is key for the industrial tech-breakthrough
- Japanese industry very much concerns “Life-mimic” Nanotechnology
- Bridging between academic research and industrial research is key problems
- Venture business creates new business models of Nanotechnology