



Overview of the Korea-US Nanoforums during the Last Decade

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Background of the Korea-US Nanoforum (I)

➤ Fifth Meeting of Joint Commission for Scientific and Technological Cooperation (JCSTC, Oct. 31, 2002)

● Discussions on Nanotechnology

- Nanotechnology is one of the most promising technology fields of mutual interest in the 21st century
- To facilitate cooperation in nanotechnology, **Ministry of Science and Technology** (renamed as Ministry of Science, ICT and Future Planning, MSIP) of Korea and **National Science Foundation** of US *jointly hold forums* starting from 2003

Background of the Korea-US Nanoforum (II)

➤ Execution of agreement from 5th JCSTC meeting

● 1st Nanoforum (Seoul, Korea, March 10, 2003)

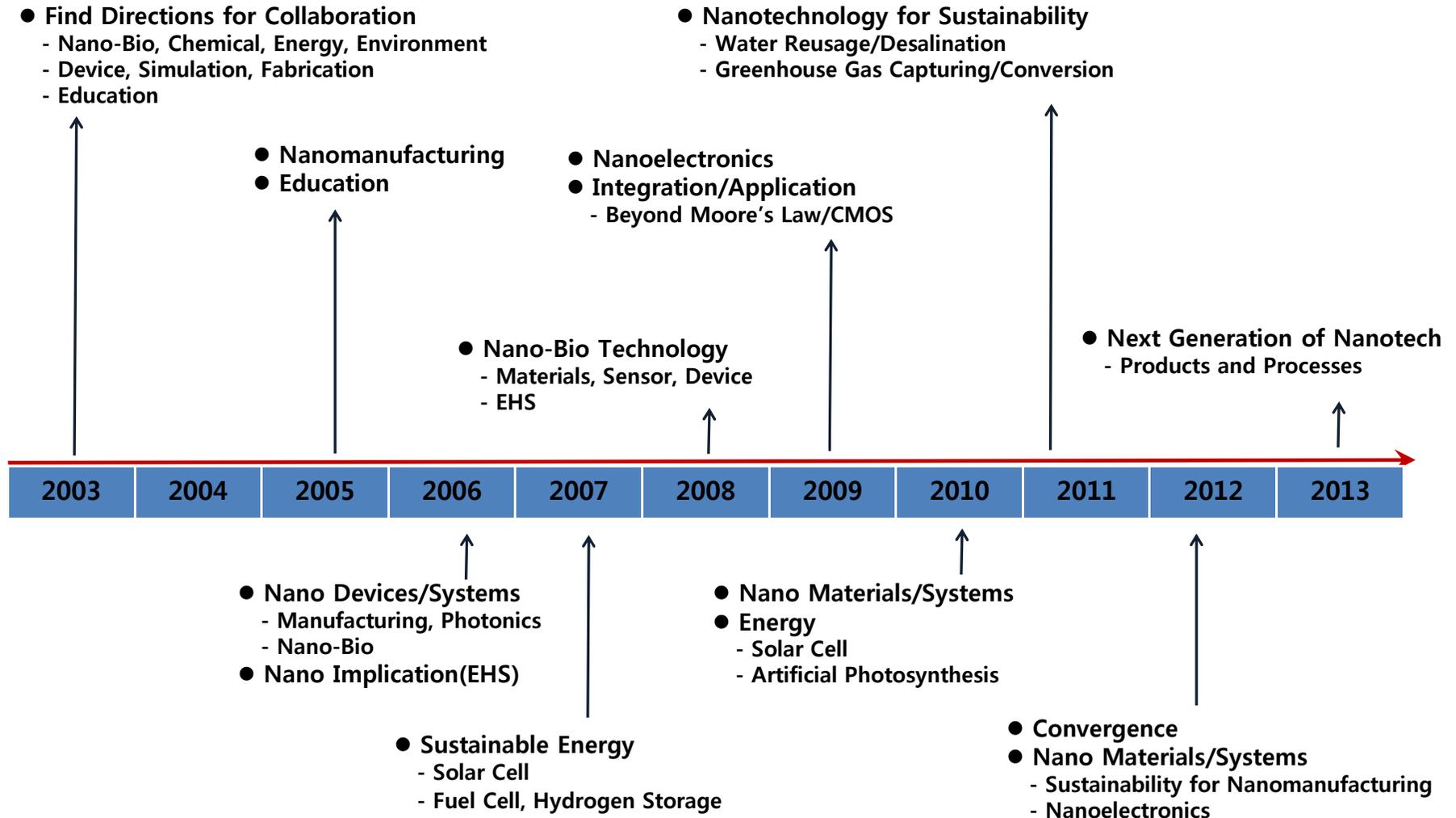
- Provide an ideal venue for exchanging nanotechnological information, status, research & development among experts of both countries
- Experts in nanotechnology form professional networks for deeper collaboration, practices, mutual understanding, and policy making



Overview of Forum for a Decade

	Date	Place	Presenters	Participants
1st	'03.10.14~15	Seoul, Korea	32	250
2nd	'05.02.17~18	Los Angeles, USA	32	37
3rd	'06.04.03~04	Seoul, Korea	34	150
4th	'07.04.26~27	Honolulu, USA	36	41
5th	'08.04.17~18	Jeju, Korea	37	50
6th	'09.04.28~29	Las Vegas, USA	33	39
7th	'10.04.05~06	Seoul, Korea	35	150
8th	'11.04.04~05	Pasadena, USA	35	61
9th	'12.06.04~05	Seoul, Korea	36	76
10th	'13.10.15~16	Boston, USA	34	-

Evolution of Themes



From 1st~10th Korea-US Nanoforums

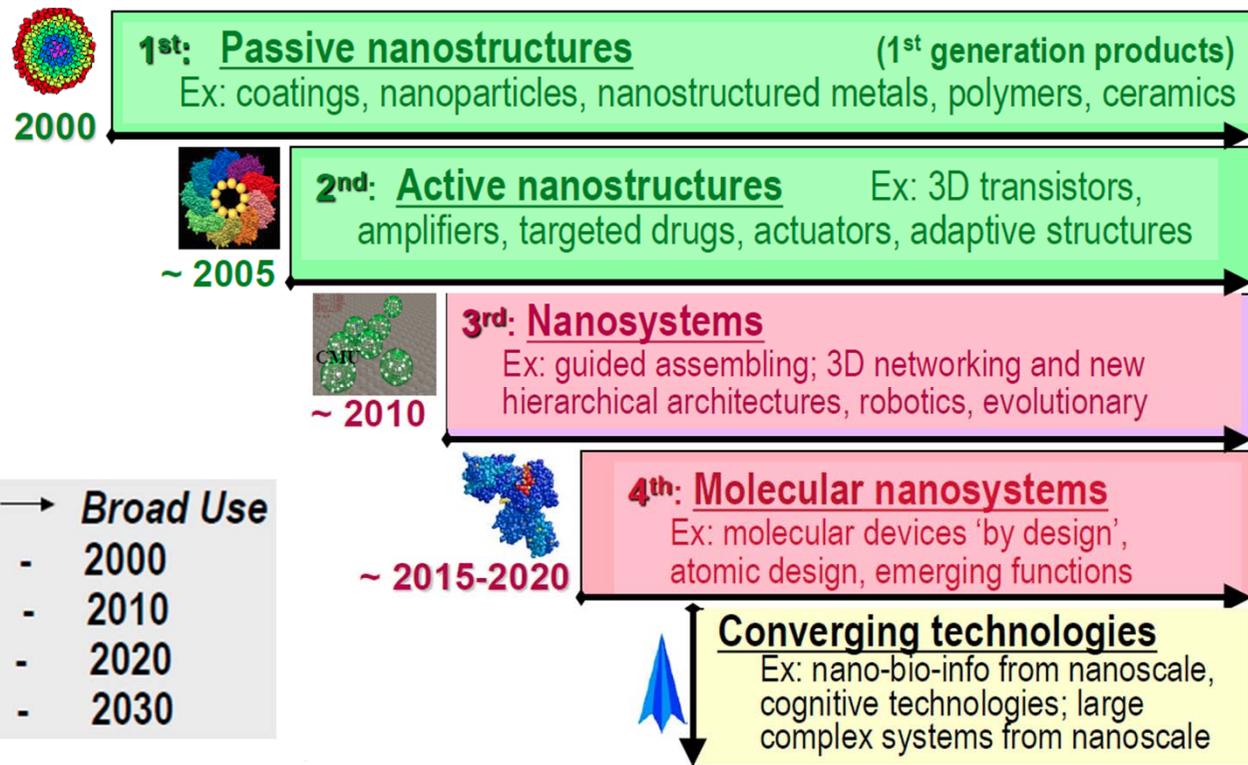
Major Outcomes from Recommendations

- **Provide Shared Platform for Collaboration**
 - Establish advisory board (1)
 - Construct website for forum (2)
 - Build common ground to share experience, expertise, and partnership (7)
 - Expand workshops (3)

- **Provide a role model for other Forums (e.g., US-UK Forum)**

Shared Ground Platform for Collaboration Nano2 & NBIC

"The forum will provide common ground for researchers, educators, and administrators at all levels in both countries to share their experiences and expertise to enhance partnership in the area of NANO2"
- From 9th Korea-US Nanoforum -



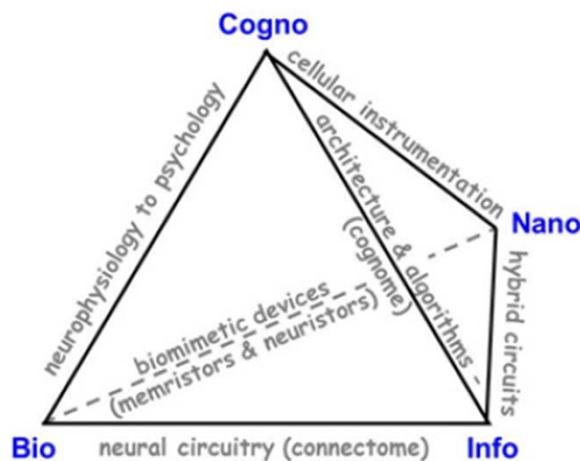
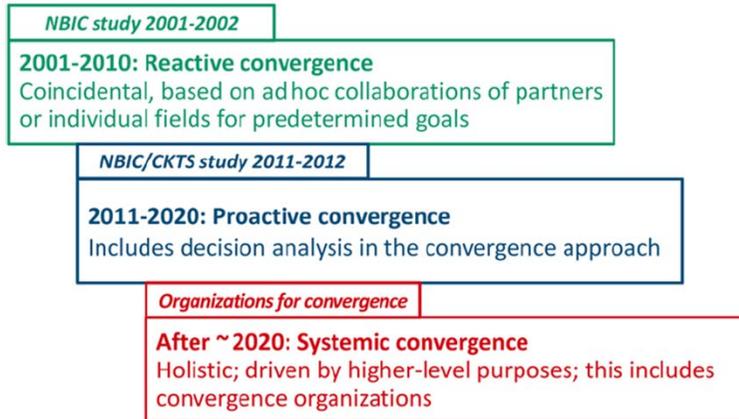
	R&D	→	Broad Use
IT	1960 -		2000
BIO	1980 -		2010
NANO	2000 -		2020
NBIC	2010 -		2030

M. C. Roco, AIChE Journal, 50, 890(2004)
M. C. Roco, Euronanoforum(2013)

Expansion of Workshop

NBIC2 Korea Workshop on Oct 15~16, 2012

Discussions on future direction of convergence technology & policy



Establishment of Advisory Board

USA		
Myung S. Jhon	Professor	Carnegie Mellon University
Mihail C. Roco	Senior Advisor	National Science Foundation
Donald R. Baer	Laboratory Fellow	Pacific Northwest National Laboratory
Richard Siegel	Professor & Director	Rensselaer Polytechnic Institute
Ahmed Busnaina	Professor & Director	Northeastern University
David K. Ferry	Professor	Arizona State University

Korea		
Jo-Won Lee	Professor	Hanyang University
Chang-Woo Kim	Director General	National Nanotechnology Policy Center
Hak-Min Kim	Chairman	Korea Nano Technology Research Society
Ho-Seong Lee	R&D Program Director	Korea Science and Engineering Foundation
Hee Chul Lee	President	National Nanofab Center
Sung-Tae Kim	Director	LG Electronics Institute of Technology
Dae-Sup So	Team Manager	Korea Institute of Science & Technology Information
Sang-Hee Suh	Director	Korea Nanotechnology Research Society
Sang-Rok Lee	Director	Center for Nanoscale Mechatronics & Manufacturing



<http://www.andrew.cmu.edu/org/nanotechnology-forum/ABBoard.htm>

Website for the Nanoforums

The Eighth U.S.-Korea Forum on Nanotechnology: Nanotechnology for Sustainability

Pasadena, CA, USA, April 4 & 5, 2011

Home

General Information

Invitation

Participants

Program

Outcomes

Photo

Link

Organizers

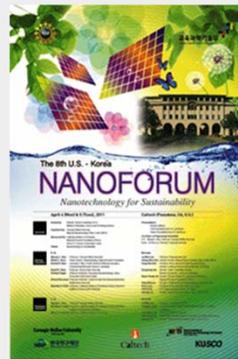
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J.W. Lee (Korea)
Hanyang University
jwlee@hanyang.ac.kr

This Forum consists of five presentation sessions (opening session, sustainable water reuse & desalination, greenhouse gas capture & conversion, sustainable natural resources, and poster session) and discussions spanning two days.

The first day will have keynote speeches followed by the oral presentations by the U.S. and Korean participants, while the second day consists of a keynote speech and poster presentations as well as panel discussions. Dr. Mihail Roco (NSF), Prof. Young Moo Lee (Hanyang Univ.), and Prof. Harry Atwater (Caltech) will deliver the keynote speeches.

Each oral presenter will give a 15 minute talk focusing on their research, contributions, and findings on nanotechnology convergence to the environmental area. The early-career participants will also deliver a 3 minute oral presentation summarizing their poster. The second day will focus on facilitating in-depth discussion among the participants for a close examination of sustainability primarily focusing on nanotechnology and sustainability as well as the roadmaps for collaboration and plans for exchanging personnel. The sub-group's recommendations will be used as the basis for the Forum summary and the action items during the conclusion session.



<http://www.andrew.cmu.edu/org/nanotechnology-forum>

Major Recommendations being Implemented

- Develop Collaboration Mechanism
 - Provide a mechanism allocating funding for collaborative research and exchange scientists(6)
 - Encourage industrial participation(4)
- Exchange People/Program
 - Develop joint research projects/centers(4)
 - Exchange graduate students, young scientists/engineers(6)

Major Recommendations Being Implemented: Example

- **MSIP-AFOSR Symbiosis Phase III Program (2013-2016)**

- Open solicitation for the Nano/Bio/Information Technology Symbiosis (NBIT) Program, co-funded by MSIP (Korea) & US Air Force Office of Scientific Research (AFOSR)
- Areas of interest
 - Convergence of nano-, bio- and information technologies
 - Bio-inspired nano-engineered systems
 - Nanotechnology for electronics, optics, magnetics and load-bearing structures
 - Nanotechnology for man-machine interaction
- Up to 71 million KRW for Korean PI / US\$120,000 for US PI

Potential Impact of Nanoforums to Korean Nanotechnology Development (I)

1. Nano Technology Road Map (NTRM)

- NTRM is in the progress of development to realize new government's pledges with nanotech
 - NTRM serves as milestone for governmental future R&D investment
 - Accelerate innovative change to support the national core agenda including economic growth by nano-convergence industries

2. Nano2020 (Nano Commercialization with Manufacturing)

Project Name	"Nano-convergence 2020"
Responsible Ministry	MSIP & MOTIE
Purpose/Vision	Creating New Industries and Markets through Commercialization of Nano-Convergence Technologies
Project Duration	2012-2020 (9 years)
Total Budget	440 M USD [Gov't : 370MD, Private: 70MD]

Potential Impact of Nanoforums to Korean Nanotechnology Development (II)

3. Nano Safety Management Master Plan (2012~2016)

- In October 2011, Republic of Korea announced “Nano Safety Management Master Plan (2012-2016)” to promote commercialization of nano-related industries
 - Establish life-cycle management system of nano safety, thus enhancing public health, environmental safety, and economic competitiveness
- ME, MSIP, MOEL, MOTIE, KFDA



Future Direction

- We need to discuss these issues during this 10th Forum
→ the participants should suggest some ideas on how to improve upcoming Nanoforums

Here are a few of my ideas:

- **Stable funding**: establishing collaboration basis for R&D networking / common platform → Need to improve mechanism for R&D funding / exchanging scientists
- **Enhanced policy area**: policy cooperation could be enhanced → Need substantial participation of Government officials
- **Generate more publicity**: for example, publish the Forum outcomes to special issues in the SCI journals (Journal of Nanoparticle Research, Roco is Editor-in-Chief)