

**Recommendations of the Second U.S.-Korea Forum on Nanotechnology:
Nanomanufacturing Research and Education**

Adopted on February 18, 2005

Forum Participants,

The delegates at the fifth meeting of the Korea-U.S. Joint Committee on Scientific and Technological Cooperation (held in Seoul on October 30-31, 2002) agreed that the establishment of a Korea-U.S. Nanoforum would be mutually beneficial to both countries in enhancing nanotechnology, and that the Ministry of Science and Technology (MOST) of Korea and the National Science Foundation (NSF) of the U.S. would jointly hold Forums on nanotechnology regularly, starting in 2003, with a view toward facilitating cooperation in nanotechnology, one of the most promising technology fields of mutual interest to the two countries in the 21st century. This Forum will facilitate networking between the research communities and agencies of each country and will enable each country to exchange information and explore new opportunities for cooperative efforts in this vital area. This Forum also promises to serve as an excellent benchmark for future international joint forums in other research areas.

Our first Forum, held in Seoul with 250 participants from both countries, covered a broad range of nano-research areas, while this second Forum, held in Los Angeles, was primarily focused on nanomanufacturing and nanotechnology educational program development and was attended by 32 experts in these areas.

The following are the recommendations of the Forum, which focus on developing and enhancing the partnership between the two countries for the continued success of nanotechnology research and education:

General recommendations:

1. We have established an advisory board (AB) following the recommendations of the first Forum. The AB members will identify one or two specific topics for the next Forum, including potential organizers for each topic. These topics will be prioritized based on the perceived mutual benefits for both countries, and the topical organizers will form working groups (WGs) to assist in organizing the next Forum.
2. To assure Forum's success, both NSF and MOST should provide a mechanism to allocate funding for collaborative research and development of educational programs between U.S. and Korea via direct research support and the exchange of scientists.
3. The exchange of young scientists is an extremely effective means for fostering nanotechnology development. Both countries will promote this exchange by creating a new initiative in which the nanoscale science and engineering centers of both countries will play a vital role.
4. The national nanoscience and technology programs in both countries should work more closely by executing joint research projects, promoting the exchange of information, and inviting scientists and engineers from each country under the condition of reciprocity. Promotion of networking via constructing a detailed webpage for U.S.-Korea collaboration on nanotechnology is recommended.

Nanomanufacturing recommendations:

Device and circuits applications of carbon nanotubes, device interconnection and packaging, bio-driven manufacturing (nanobio devices, synthesis) and assembly, new nano-characterization tools and reliability test devices, multi-scale simulation, and scale-up synthesis and the integration of top-down and bottom-up approach of nanoscale

components, are identified as key research areas for collaboration in nano-manufacturing. Specific topical meetings or joint U.S.-Korea WGs in these areas as recommended by the AB are a logical step for the development of interactions and collaborations in these areas.

Recommendations for education in nanotechnology:

1. There is a strong need for quality educational materials on nanotechnology and corresponding curricula at both the undergraduate and graduate levels. A joint U.S.-Korea WG will be one means of identifying core materials and curricula.
2. Efforts to highlight the success and research of women scientists from both countries may provide a means to bring more women scientists and engineers into the area of nanotechnology (at the undergraduate level as well as K-12).
3. The transport of existing educational materials developed at nanocenters in the U.S. to Korea will assist both the general education and the preparation of a new generation of scientists. The creation of exciting nanotechnology-based traveling exhibits would provide not only an additional means of technological and cultural exchange but also a general public awareness of nanotechnology.

On behalf of the U.S participants

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