Strategic industries: Nanotechnology

Since the late 1990s, there has been growing interest in nanotechnology, which occurs at the convergence of information and communication technology, life sciences, and biotechnology. It is believed that nanotechnology, i.e., the engineering of functional systems at the molecular scale, will usher in the Industrial Revolution of the 21st century as a platform technology with potential to revolutionize a broad range of industries.

Country roadmaps for nanotechnology development

The APO, in collaboration with the Korea Productivity Center (KPC), organized a multicountry observational study mission on Strategic Industries in Member Countries: Nanotechnology, 10–13 April, in Seoul. Fourteen participants from six member countries as well as four local and two overseas experts attended. The objectives were to study nanotechnology national initiatives (NNIs) in the host country, examine recent developments in strategic and high value-adding industries, and identify factors in their competitiveness in terms of technological progress, market orientation, and national industrial capability.

The Republic of Korea envisions becoming one of the world's top three nanotechnology leaders by 2015. Study mission participants observed the success of the host country in NNIs from basic research to full commercialization. "The Korean government leads investment, whereas the private sector leads in advanced countries," said Dr. Kwang Ho Lee, Associate Research Fellow, Science and Technology Policy Institute. Although still at the initial stage of commercialization Dr. Lee commented that, "The number of patent applications received by the Korea Intellectual Property Office has dramatically increased since 2000," with the transfer of government investment from R&D into practical applications.

Dr. Lerson Tanasugran, Chulalongkorn University, Thailand, and Dr. Pietro Busnardo, Coordinamento Interuniversitario Veneto per le Nanotecnologie, Italy, gave an international perspective on nanotechnology investment, nanosafety issues, and cluster development and management. "High-tech clusters can be the drivers of local economic growth," said Dr. Busnardo, introducing the case of Veneto Nanotech, the management team of a nanotechnology cluster in Venice. He listed three factors as evidence of future prospects in the cluster: upward trends in investment; ongoing scientific and technological research in the field; and the increasing number of local nanotechnology firms.

Participants spent two days visiting the National NanoFab Center, the host country's largest nanotech fabrication facility; Museum of Science and Technology at the Korean Institute of Science and Technology; and Park Systems, a local start-up company producing the nanotech atomic force microscope. The first two sites showcased the substantial infrastructure built at government initiative. President Park of Park Systems explained that his company's products had market-winning quality and features at mid-level price. The company's strengths are technological innovation, product commercialization know-how, and a world-class technoengineering staff.

During discussions, participants agreed that it would be difficult to formulate integrated strategies for all member countries since each is at different stages of nanotechnology development. Three factors needed for APO member countries to benefit from the nanotechnology revolution are a formal collaborative network, sufficient production capacity, and common knowledge system. However, it was agreed that the study mission was a useful steppingstone to further discussion and cooperation.