

## Outline of Selected Projects Comments by Program Committee

Host institution name	National Institute for Materials Science
Title of center project	International Center for Materials Nanoarchitectonics (MANA)
Chief entire-project officer	Teruo Kishi
Chief center-project officer	Masakazu Aono (Affiliation: National Institute for Materials Science, Title: Fellow (Coordinating Director of Key Nanotechnologies Field ) )
Prospective center director	Masakazu Aono (Affiliation: National Institute for Materials Science, Title: Fellow (Coordinating Director of Key Nanotechnologies Field ) )
<p>&lt;Project Summary&gt;</p> <p>“Sustainable development” is the biggest issue for humanity in the 21st century. The field of research to which Japan is most likely to make significant contributions regarding this issue is materials science. This project is designed from the viewpoints of the essential importance of materials and the necessity of international cooperation for the effective promotion of the project. In the center, innovative materials that contribute to “sustainable development” will be developed based on a new material technology system called “nanoarchitectonics”. In addition, young researchers will be fostered through the center’s operation so that they can develop their careers to become research leaders in the main body of NIMS. For this purpose, a multinational and multidisciplinary group of researchers will be organized to conduct cutting-edge research in a relaxed international environment, and making up a total workforce of 200 staff.</p> <p>&lt;Remarks&gt;</p> <p>Nanoscience is a strong field in Japan, and NIMS has contributed greatly. MANA covers an important field.</p> <p>MANA is clearly a well-identified and basically a very orthodox approach to strengthening what is already strong in the international arena.</p> <p>The research field is well defined and important. International collaboration seems good. Good experience is already accumulated.</p> <p>Nano-tech and nano-material sciences have great potentials in the future, and Japan has certainly captured a leading edge.</p> <p>NIMS has a good track record of attracting international scientists and international graduate students. NIMS also has a good concentration of top scientists. The assembly of PIs is truly outstanding and good research is likely to come out of this.</p> <p>Expanding collaboration, building closer exchange and attracting outstanding scientists shown in this proposal, are a good sign which should be welcomed.</p>	



# International Center for Materials Nanoarchitectonics (MANA)

Host institute: National Institute for Materials Science (NIMS)

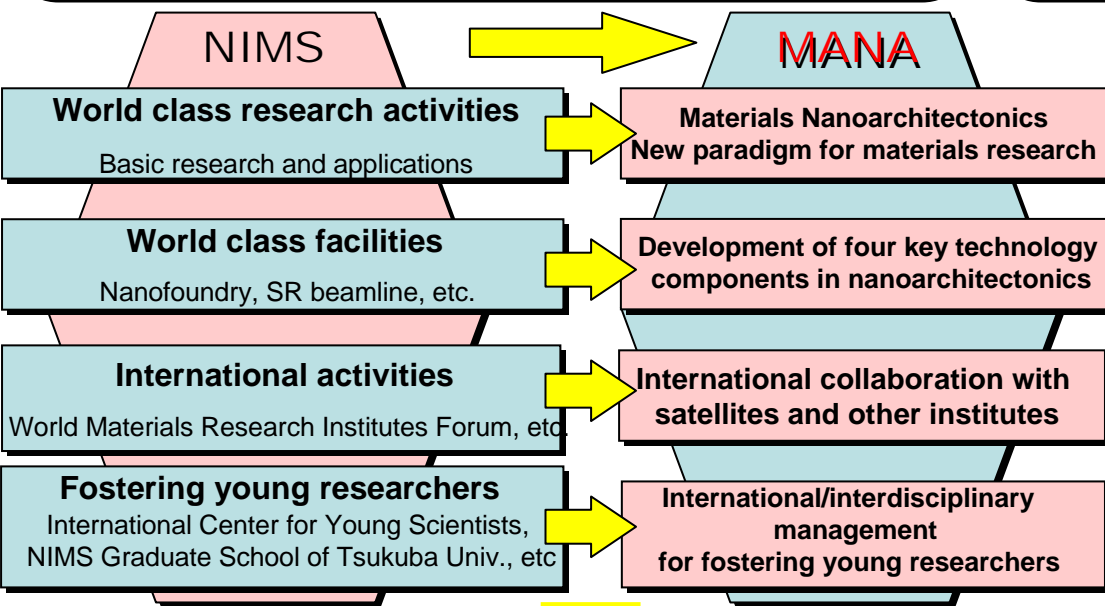
Chief entire-project officer: Teruo Kishi, Center director: Masakazu Aono

## Purpose of MANA

Aimed at developing innovative materials that contribute to "sustainable development", MANA will realize a paradigm shift in materials research based on the new technology of "nanoarchitectonics", organizing a multinational and multidisciplinary group of researchers. In addition, young researchers will be fostered through the center's operation so that they can develop their careers to become research leaders in the main body of NIMS.

## Nanoarchitectonics

This is a new technological concept that enables not only creation of new nanomaterials but also arrangement of nanoscale structural units in desired configurations for development of materials with extreme functions. Its four key technology components are "artificial self-organization", "field-induced material control", "chemical nano-manipulation", and "atom/molecules novel manipulation".



Establishment of world center for nanotechnology and nanomaterials

Development of innovative materials to solve serious problems facing humanity in the 21<sup>st</sup> century

Fostering young researchers and provision of research leaders to NIMS

### Nanomaterials Creation and Nanosystems Organization

e.g. Novel Nanosheets      e.g. Atomic Switch

Exfoliation

Heterostructure after restacking

Nanosheets

Brain-type circuit

e.g. Conductive organic nanowire

Conductive organic nanowires formed by chain polymerization



Aiming at being an international core research institute