

## Toward a Healthy Future

With the slogan, “healthy future”, Nihon University has initiated a strategic research scheme, “N. research project”, in 2009, aiming at contributing to society as the largest university in Japan. Our project “Nanotechnology Excellence, Nihon University — Nanomaterial-based Photonic, Quantum and Bio Technologies —” has been chosen as the first project in the scheme. This project aims at helping to realize a “healthy future” for society through a collaborative scientific and technological endeavor.

We face serious problems that might hinder the realization of a “healthy future”. While human health should come first as the basis of a healthy society, it is a fact that a third of the Japanese population die from cancer. While the oil shortage comes closer, the rapidly increasing CO<sub>2</sub> concentration in the atmosphere may become a threat to human being. On the other hand, we will have to deal with rapidly increasing amount of information in a secure way. We consider that part of the solutions to these apparently diverse problems may be provided by nanoscience and nanotechnology. We have made a plan to develop nanomaterial-based technologies to help find solutions for these problems, particularly focusing on the use of light, that can carry energy and information.

We have made a team of researchers assembled from the fields of information, energy, and medical technologies, together with scientists working in more basic nanoscience and nanotechnology. Experimental and theoretical researchers will come together to study interactions between light and matter at the nanoscale. We have envisaged that truly innovative technologies will emerge from the interactions among researchers ranging from basic science to applied engineering and medicine.

I am pleased to say even in the first year some of our researches are getting appreciated. A work on super high speed recording was highlighted in *Physics* published by the American Physical Society. Analysis of genetic network was published in *Nature*. Both of these works are conducted in international collaboration. Many other achievements are waiting to be published and encouraging results are emerging.

The launching of this project appeared in news media *Nikkan Kogyo Shinbun* (Daily Industry Newspaper) and *Toyo Keizai* (Eastern Economy). We are getting recognition from communities at various levels through events including a symposium held in September and participation in scientific exhibition *Science Agora*. We plan to make a renewal of our website.

Apart from scientific achievements and public recognition, we have a hope to be pioneers in a new frontier emerging from our interdisciplinary project. We also put an emphasis on education through research for young generations. We expect that young researchers get familiar not only with their own area but different areas through this interdisciplinary project. We are doing our best to create a center of excellence for the research community, academic and industrial, in five years when the project will have been completed.

Joe Otsuki, the Principal Investigator, January 23, 2010.

I have added reviews from advisors and updated data on publications in page 20.

Joe Otsuki, February 9, 2010.