

Breakthroughs in science and technology

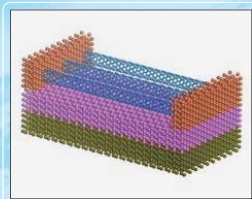
Results anticipated from the Next-Generation Supercomputer

Development of the Next-Generation Supercomputer will contribute to society by uncovering the secrets of natural phenomena occurring across all scales of existence, from the ultra-small world of quantum particles to the vast expanse of outer space and its countless galaxies.

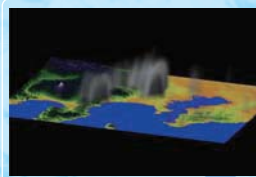
At a micro scale, for example, simulations of viruses in solution and long-time simulation of liposomes (made up of several hundred thousand atoms) contribute to the field of medicine, while simulations of cellulolytic enzymes will in the future provide in-

expensive biofuel and contribute to the energy field. At a somewhat larger scale, full simulation of next-generation semiconductor nanodevices and exploration of materials with new functions such as non-silicon materials will bring momentum to the area of next-generation electronics technology. At a yet larger scale, the combination of seismic wave propagation and structural earthquake resistance simulations will contribute to disaster preparation, and the simulation of typhoon path and intensity will play an important role in meteorological forecasting.

Examples of simulations using the Next-Generation Supercomputer: From nano to galactic scale



Contribution to electronics: full simulation of post-32nm generation devices



Contribution to meteorology: elucidating complex atmospheric phenomena and correctly measuring the path and intensity of typhoons



$10^{21}m$

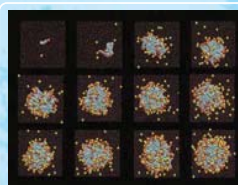


10^7m

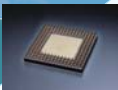
10^2m



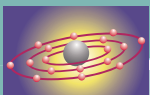
10^0m



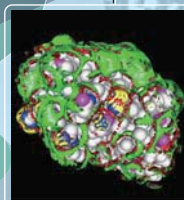
Contribution to medical treatment: full simulation of virus in water



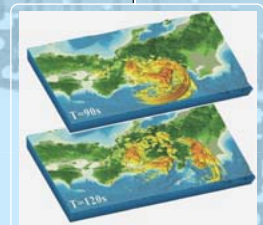
$10^{-8}m$



$10^{-10}m$



Contribution to the energy field: affordable biofuels through simulation of cellulolytic enzymes



Contribution to disaster preparation: seismic wave propagation and structural earthquake resistance simulations