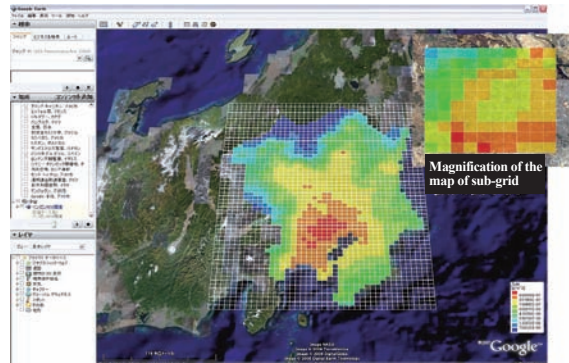


Release of enhanced “Atmospheric Dispersion Model for Exposure and Risk Assessment (ADMER Ver. 2.5)” Creation of a map of the atmospheric concentration of chemical substances on Google Earth™

We have developed ADMER Ver. 2.5, a model to estimate extensive atmospheric concentrations of chemical substances, and distribution of exposed population. ADMER Ver. 2.5 may be freely downloaded at <http://www.aist-riss.jp/software/admer/> from August 5, 2008. AIST’s Atmospheric Dispersion Model for Exposure and Risk Assessment (ADMER) is free software that can be used to calculate atmospheric concentrations of chemical substances in each area of Japan from data on emissions and meteorological conditions. The newly released, upgraded version makes it possible to display concentrations maps on satellite photos in Google Earth™. In addition, it has such features as enhanced calculation speeds through parallel processing, improved user-friendliness, and an in-built function to download Automated Meteorological Data Acquisition System (AMeDAS) data of the Japan Meteorological Agency. U.S. EPA (Environmental Protection Agency) began releasing atmospheric concentrations data using Google Earth™ in 2007, but this is a first for Japan.



An example of displaying atmospheric benzene concentration map on Google Earth™

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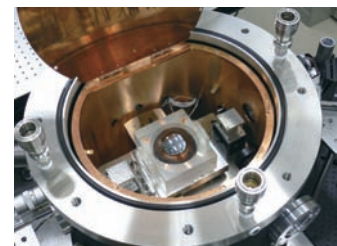
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Metrology and Measurement Science

The International Avogadro Coordination Project entering its last phase of measurement Redefinition of the kilogram by ^{28}Si

In order to redefine the kilogram, the only SI base unit still defined by material artifact, the International Avogadro Coordination (IAC) Project was organized by the International Committee for Weights and Measures (CIPM) in 2004. Seven national metrology institutes and the International Bureau of Weights and Measures (BIPM), including the National Metrology Institute of Japan (NMIJ) of AIST, are involved in this project. We hope that the new silicon crystal made of pure ^{28}Si produced in the project will achieve fundamental reduction of uncertainty in the determination of the Avogadro constant. In May 2007, a 5 kg of ^{28}Si crystal with an enrichment factor of 99.99 % was successfully grown by the cooperation with the Russian and German institutes. After two 1 kg spheres were polished from the crystal, one of the spheres came to NMIJ in April 2008 for its density measurement. The project has entered its last phase of measurement, and final results will be available by the end of 2009.



5 kg of ^{28}Si crystal (left) with enrichment factor of 99.99 % grown with float-zone (FZ) method, and laser interferometer (right) which measures the diameter of 1 kg of silicon sphere made from this crystal. Measurement of the diameter of the sphere is done with nanometer precision in a vacuum of strictly-controlled temperature by radiation shield.

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