Development of Practical Device for the Automated Manufacture of Hyperpolarized Xenon Gas

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A practical device for the automated manufacture of hyperpolarized xenon gas, which can be used to increase the sensitivity of sophisticated measuring devices (NMR/MRI) has been developed. The device produces a 10,000-fold increase in NMR signal sensitivity. The research should facilitate work on NMR/MRI to shorten measuring times, produce more diverse information, and increase accuracy. The research should also facilitate the development of technologies suitable for industrial applications, including measurement of pore size distribution, analysis of gas dynamics, and nondestructive testing. The research is the result of the AIST's small and medium-sized enterprise support R&D system, which is run by the AIST's Collaboration Department for industry, academia, and government partnerships.

Practical device for the automated manufacture of hyperpolarized xenon gas developed through the AIST research

Calibration Facility of Infrared Ear Thermometers

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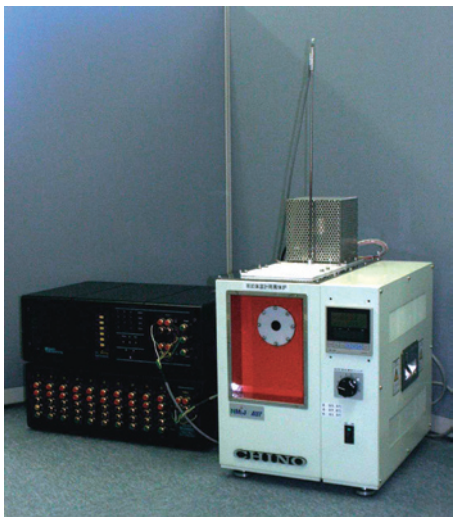
Clinical ear thermometer sensing infrared thermal radiation from an eardrum is capable of measuring temperature in less than a few seconds and has rapidly become widely used. To meet the demand of calibration and conformity assessment in industry, AIST has developed a standard blackbody system traceable to the International Temperature Scale (ITS-90) for the calibration of the clinical ear thermometers. An expanded uncertainty of around 30 mK has been evaluated in the temperature range from 35 ºC to 42 ºC. The AIST has also established a high-quality traceability system for industries.



Standard blackbody for infrared ear thermometers