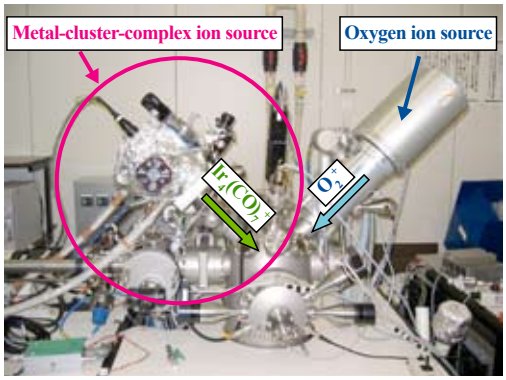
A new ion beam source using a metal cluster complex

Yukio Fujiwara
Research Institute of
Instrumentation Frontier

yukio-fujiwara@aist.go.jp

AIST TODAY Vol.7, No.2
p.26-27 (2007)

We have developed a new ion source using massive molecules called a metal cluster complex. The use of ion beams of metal cluster complexes allows for a layer-by-layer sputtering technique, resulting in accurate measurement of trace amounts of elements in samples. The ion source is compact enough to be installed in commonly-used secondary ion mass spectrometry (SIMS) systems. With the ion source, we have performed SIMS analysis of boron-doped silicon samples, thereby demonstrating that high depth resolution of less than 1nm can be obtained at a beam energy of 5 keV. In addition to inorganic materials, it also allows one to analyze organic materials with higher sensitivity and lower damage. Hence, we expect that the ion source will have great potential in SIMS analysis of various materials such as heterogeneous and biomedical materials.



The metal-cluster-complex ion source is installed in a commercial SIMS system. The ion source is compact and comparable in size to oxygen ion sources.

Development of optical fiber power standard

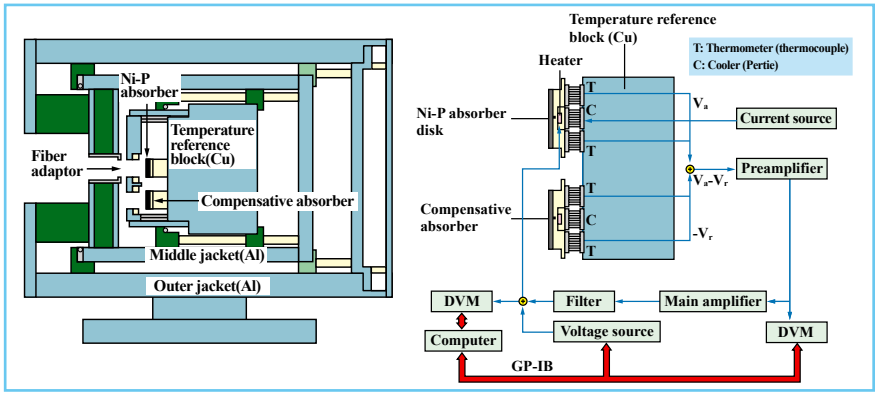
High-accuracy measurements of optical fiber power and its international comparison

Kuniaki Amemiya
Metrology Institute of Japan

k.amemiya@aist.go.jp

AIST TODAY Vol.7, No.3
p.20-21 (2007)

Rapid expansion of optical communication network strongly demands accurate measurements of optical fiber power. For this reason, we developed an optical fiber calorimeter as Japan's national standard for optical fiber power and started the calibration service of optical power meters using the standard. Combining the calorimeter with a linearity calibration system enabled us to measure the optical fiber power as low as 1 μW accurately. Using these systems, we participated in international comparison of optical fiber power measurements. The results support the reliability of our calibration systems.



Structure of optical fiber calorimeter (left) and block diagram of its main body (right)