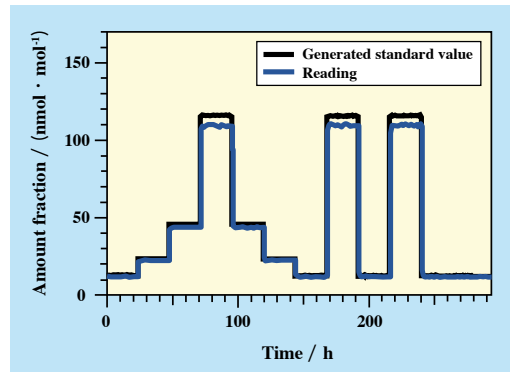


## Development of humidity standard in trace-moisture region

We developed a magnetic suspension balance/diffusion-tube humidity generator (MSB/DTG) with the aim of establishing a primary humidity standard in the amount-of-substance fraction of moisture down to 10 nmol/mol. A comparison between humidity generated with the MSB/DTG and humidity measured with a moisture analyzer based on cavity ring-down spectroscopy was performed. It was demonstrated that the MSB/DTG is capable of steadily producing a trace-moisture gas down to 10 nmol/mol, and of quickly changing the amount-of-substance fraction of the gas generated.



Comparison between generated standard values from MSB/DTG and readings of moisture analyzer

**Hisashi Abe**

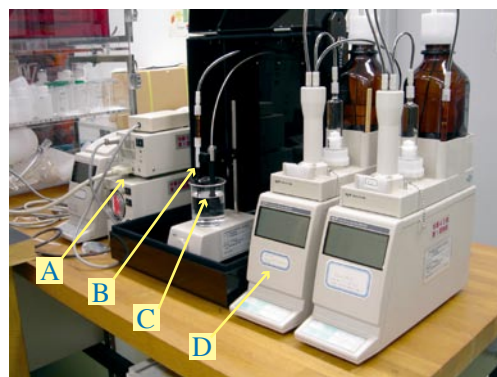
Metrology Institute of Japan

abe.h@aist.go.jp

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## Development of metal ion standard solutions via spectrophotometric titrator method

In the field of standard material development, there is a demand for a primary method of measurement, which is based on calculations relying on applicable physical and chemical laws, and whose results are directly related to the International System of Units. Though titrimetry has a potential to be a primary method, it is required to detect an accurate equivalence point with low uncertainty depending on the titration system. The equivalence point of a chelatometric titration was determined by analyzing a titration curve with a theoretical equation, in which equilibrium among metal ions, metal chelates and an indicator were taken into account. While absorbances at a single wavelength during a titration are observed with usual photometric titrators, absorption spectra can be observed with a spectrophotometric titrator. Using our method, it became possible to determine a much more precise equivalence point by analyzing the three-dimensional titration data.



Equipment for spectrophotometric titration

A:spectrometer, B:titration nozzle, C:photometric sensor, D:electrically-operated burette

**Toshihiro Suzuki**

Metrology Institute of Japan

toshihiro.suzuki@aist.go.jp

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