The Development of QCM Type Chloroorganic Compound Sensor

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The simple and continuous monitoring method of volatile chloroorganic compounds using quartz crystal microbalance (QCM) was developed. The selectivity was improved, when the surface of the detector was covered by the lipid with the characteristic adsorption function. The reversible response which dealt with increase and decrease of the concentration was obtained. And this sensor has the wide dynamic range (0 to 1000 ppm). So, by using this method, the application to continuous monitoring and working environment measurement can be expected.

The appearance of quartz crystal microbalance and measurement cell

Cs Atomic Fountain Frequency Standards in NMIJ

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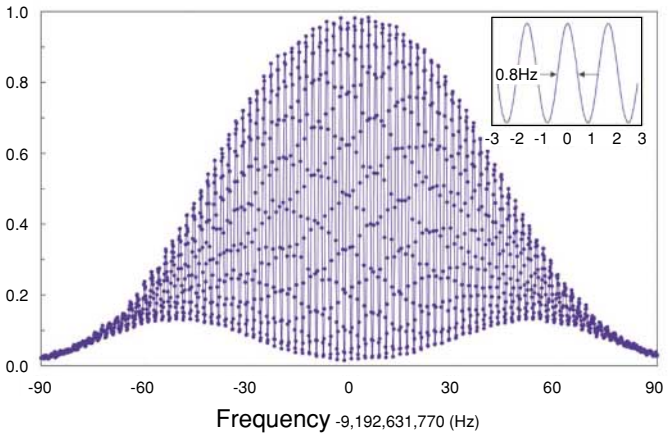
Using methods to cool and trap atoms with laser light, new frequency primary standards has been developed in NMIJ. This type of standards is called "atomic fountain" because cooled atoms motion looks like a fountain flow. We have obtained the Ramsey fringes with a linewidth of 0.8 Hz (fig.). Its linewidth is 100th smaller than that in former type of standards. It is expected that new type of standards achieve high stability and accuracy. And the short-term stability has been represented by $7\times10^{-13}\times\tau^{-1/2}$.



Ramsey fringes