

2<sup>nd</sup> International Conference on

# Current Trends in Mass Spectrometry

July 20-22, 2016 Chicago, USA

## Introduction of liquid samples into high-vacuum plasma ion source for low-cost quantification of inorganic elements

**Tatsuya Urabe** and **Masanori Kidera**

Nishina center for Accelerator-Based Science, Japan

We have been developing a mass spectrometer based on plasma ion source, ECRIS (Electron Cyclotron Resonance Ion Source). Although ECRIS is known as a large-sized ion source in accelerator facility, we succeeded to miniaturize and mount it on a portable mass spectrometer (called “miniECRIS-MS”) for detecting gas compounds. The miniECRIS-MS contains a permanent magnet for an ion source, ion optical system, quadrupole mass analyzer and so on. In this poster session, we will present our ongoing project for quantifying elements in liquid samples. Comparing gas samples, liquid sample introduction into high vacuum plasma (i.e. ECRIS) is troublesome. However, it can offer great advantages over present analytical methods such as ICP-MS in terms of stability, sensitivity, freedom from polyatomic (spectral) interference, initial/running costs, and portability. Details of sample introduction system are as follows. Electrospray is used as a spraying unit of liquid samples at first stage. The solutions containing the analyte of interest are electrosprayed and gradually desolvated with the aid of heated assist gas at atmospheric pressure. Then, sample aerosol was introduced into ECRIS through differential pumping systems. Since analytes of interest are charged by electrospray (as relatively large clusters), they can be electrically extracted by ion lenses such as ion funnel in the pumping system. And they are finally reached at ECRIS and ionized (decomposed) into monovalent atomic ions for quantitative purpose. By this system some solvents (water and methanol) and inorganic elements (Na) were successfully observed, and the potential of mini ECRIS-MS will be discussed in the session.

### Biography

Tatsuya Urabe has completed his PhD in 2010 from Tokyo University of Marine Science and Technology and worked as a Postdoctoral researcher of Japan Society for the Promotion of Science (JSPS) until 2011. Now he is working in an accelerator facility at RIKEN and developing a new mass spectrometer based on accelerator science.

[t-urabe@riken.jp](mailto:t-urabe@riken.jp)

### Notes: