

A new frontier of Earth, Space and Life Sciences pioneered by the innovative developments in mass spectrometry

*Kentaro Terada¹, Hirochika Sumino², Michisato Toyoda¹, Masayo Minami³

1. Graduate School of Science, Osaka University, 2. Graduate School of Arts and Sciences, The University of Tokyo, 3. Institute for Space-Earth Environmental Research, Nagoya University

So far, various mass spectrometers, which can determine elemental abundance, isotopic composition and molecular weight of macromolecule have greatly contributed to the understanding of the Earth, Space and Life sciences. Above all, high-precision isotopic measurements of natural samples using sensitive mass spectrometers provide us with an important clue to deciphering the origin and evolution of the Earth and Planetary system. On the other hand, it is well known that many unknown/unresolved scientific issues are still remained because of technical restraints of “general-purpose” commercially-available mass spectrometers. Therefore, the “science-oriented” development of mass spectrometers has been highly desired.

Here, Osaka University, Geochemical Society Japan, and Mass Spectrometry Society of Japan collectively propose the ideas of innovative development of mass spectrometers that are specialized for the “Scientific issues”, in order to pioneer a new horizon of the Earth and Planetary Science (e.g decipher of the pre-solar history, Galactic chemical evolution, on-site real-time geochemistry, big-data geochemistry so on).

Keywords: Mass spectrometry, Development of instrumentation