

Mass Spectrometry is a Keystone of the Fusion of Multidisciplinary Fields including
Pharmaceutical Sciences

Koichi Tanaka

Koichi Tanaka Mass Spectrometry Research Laboratory, Shimadzu Corporation
tanaka-ms@shimadzu.co.jp

The scope of Mass Spectrometry (MS) covers an extremely wide range of sample types and objectives, including substances derived from plants and animals (e.g., proteins, carbohydrates, lipids, and metabolites), disease diagnosis, testing for drug abuse and doping, autopsies, testing the efficacy of, and testing for impurities in, natural and synthetic medicines, inspection of synthetic chemical (industrial) products such as metals, ceramics, inorganic compounds, plastics, semiconductors, new materials and nanotechnology-based products, determination of the age, origin, and authenticity of objects such as meteorites, fossils and cultural assets, and determination of the degree of pollution of soil, water supplies, sewerage and air.

MS requires mutual understanding and cooperation between an extremely large number of academic fields and can, conversely, contribute to developments in these fields.

All analysis, not just in mass spectrometry, can be thought of as the capability to make something that is not visible (with the naked eye) visible. Being able to observe some phenomenon for the first time can contribute significantly to creation and innovation. As a result of many years of human endeavor, many phenomena have been elucidated, and at the same time, a diverse range of academic fields has developed. However, the task of unravelling the complex mechanisms of life has only just begun, and there are vast areas of science that remain unexplored.

History shows how the process and results of analysis, and the development of analytical instruments, have made a great contribution to the creation of new discoveries, inventions and academic disciplines, and to the fusion of different fields.