SHIMADZU
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Press Release

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Shimadzu European Innovation Center
Insights on molecular level

iMScope TRIO revolutionary technology /
Unique tool: optical microscope meets mass spectrometer /
Wide range of applications in R&D of various industries

With its wide range of applications in various industries, the iMScope TRIO meets the versatile needs of R&D challenges. The iMScope TRIO revolutionary technology combines an optical microscope together with a mass spectrometer. It is applied to cutting-edge R&D and identifies what users see at the molecular level. iMScope TRIO features extensive functionality for structural analysis through highly accurate MSn analysis.

Wide range of R&D applications in various industries

With three proprietary features (mass spectrometry imaging, integration with optical images, and qualitative analysis), the iMScope TRIO targets applications in life science research organizations, universities, pharmaceutical companies and food as well as manufacturing industries. The iMScope TRIO covers versatile applications:

- At research organizations and in medical applications, it identifies disease-specific markers based on differences in molecular distribution in normal and diseased tissues (biomarker discovery)
- In the pharmaceutical marketplace, it focuses effectiveness in pharmacokinetics analyses elucidating the distribution of drugs or their metabolites, pharmacological mechanisms, toxicity testing and others
- In the food industry, it monitors the amount of effective ingredients
- In manufacturing, it supports stable production of high quality products, e.g. in surface inspection.

Shimadzu is pursuing cooperative research with research agencies to develop more applications for basic research including cancer research and brain function analysis, drug delivery systems (DDS), metabolomics, forensic medicine and lipid analysis. Together with the National Cancer Center in Japan, cutting-edge research results have been obtained that are expected to contribute to ultra-early diagnosis of diseases and drug discovery.

Best in world features

The iMScope TRIO is capable of overlaying observation images from an optical microscope and molecular distribution images obtained by mass spectrometry under atmospheric pressure conditions of ionization which feature a high resolution of 5 µm or less, the best in the world. This enables detailed analysis of regions of interest, including observation of the lesion area and distribution of anticancer drugs.

Enabling high accuracy and precision mass spectrometry, the iMScope TRIO provides high level qualitative analysis via the IT-TOF function, which integrates ion trap (IT) mass spectrometry for MSn analysis with time-of-flight (TOF) mass spectrometry. Not only limited to imaging samples, the system is also capable of analyzing samples extracted and separated from tissues via connection with a liquid chromatograph.

Figure 1: iMScope TRIO revolutionary technology combines both an optical microscope and a mass spectrometer

Web link: www.shimadzu.eu.com/imscope-trio

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