

High-sensitivity ion source for GCMS-TQ8050 NX Boosted efficiency ion source





GCMS-TQ8050 NX

C146-E402

An ion source that dramatically increases the sensitivity of GC-MS/MS

As the capabilities of GC-MS/MS equipment have improved in recent years, it has come to be used for analysis of toxic compounds such as POPs (Persistent Organic Pollutants). Equipment sensitivity is of great importance for the analysis of low concentrations of these highly-toxic compounds,.

The BEIS (Boosted Efficiency Ion Source) maximizes ionization efficiency through optimizing the focal point of the electron beam in El ionization. This achieves 4 times^{*1} the sensitivity of previous ion sources, allowing reliable analyses of low concentrations that until now have not been possible. This is effective for analyzing POPs in environmental samples.



Boosted efficiency ion source

Detection at the attogram level

Example: analysis of octafluoronaphthalene

With the increase in sensitivity, the instrument detection limit (IDL) is improved. The figure shows an example analysis of octafluoronaphthalene. With an IDL of 0.14 fg, detection on the order of attograms becomes possible.



Analysis results for octafluoronaphthalene (1 fg, n=8)

Reliable analysis of dioxins

Until now, analysis of dioxins in foodstuffs has been carried out using GC-HRMS (double-focusing GC-MS). However, with the increase in GC-MS/MS capabilities, the EU has issued regulations (EU589/2014,644/2017) which grant analysis methods using GC-MS/MS the same status in compliance regulations as methods using GC-HRMS. The BEIS therefore provides an optimal solution for those looking to move from GC-HRMS to GC-MS/MS for high-sensitivity analysis of dioxins in ultra-low concentrations.

Sensitivity comparison against a previous ion source



Compatible instruments

GCMS-T08050 NX



Standard specifications*³

- EI MRM IDL (helium carrier):
- 1 fg octafluoronaphthalene m/z 272 \rightarrow 222 IDL \leq 0.3 fg (n=8)

- *1 The increase in sensitivity is dependent on the compound.
- *2 Depending on usage, the lifetime of the filament may be shortened compared to previous models. Please contact a Shimadzu sales representative for details

*3 As a general rule, standard specification checks are not carried out. If checks are required, please inquire about this in advance. In addition, the IDL is only checked when mounting the auto-injector



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