JEOL MS Data Sheet

MS Tips

Mass Spectrometry Application Group
Mass Spectrometry Business Unit
JEOL Ltd.

No. D030

~ Application Note for DART ~

Analysis of Organic Contaminant on Metal Surface

DART can ionize organic substance on solid surface in atmospheric pressure. By utilizing this feature, we analyzed organic contaminant adhered to a metal part (Fig. 1).

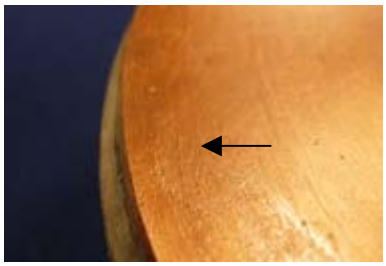

Fig. 1 Organic contamination on metal surface

We wiped of the organic contamination on the metal surface by using ceramic fiber paper and analyzed it by holding up the ceramic fiber paper directly into the DART ion source. Peaks with 74 interval at *m/z* 371, *m/z* 445, and *m/z* 519 are observed (Fig. 2; upper). The elemental compositions of these ions were deduced from their respective accurate masses (Table 1) and they were found to be poly(dimethylsiloxane) series.

One of the candidates for the contamination was silicone vacuum grease. The grease was analyzed separately by DART and the mass spectrum (Fig. 2; lower) was found to contain the same peaks. We concluded that the contamination was from the vacuum grease.

Conditions

Ionization: DART (+)
Helium gas temperature: 250°C

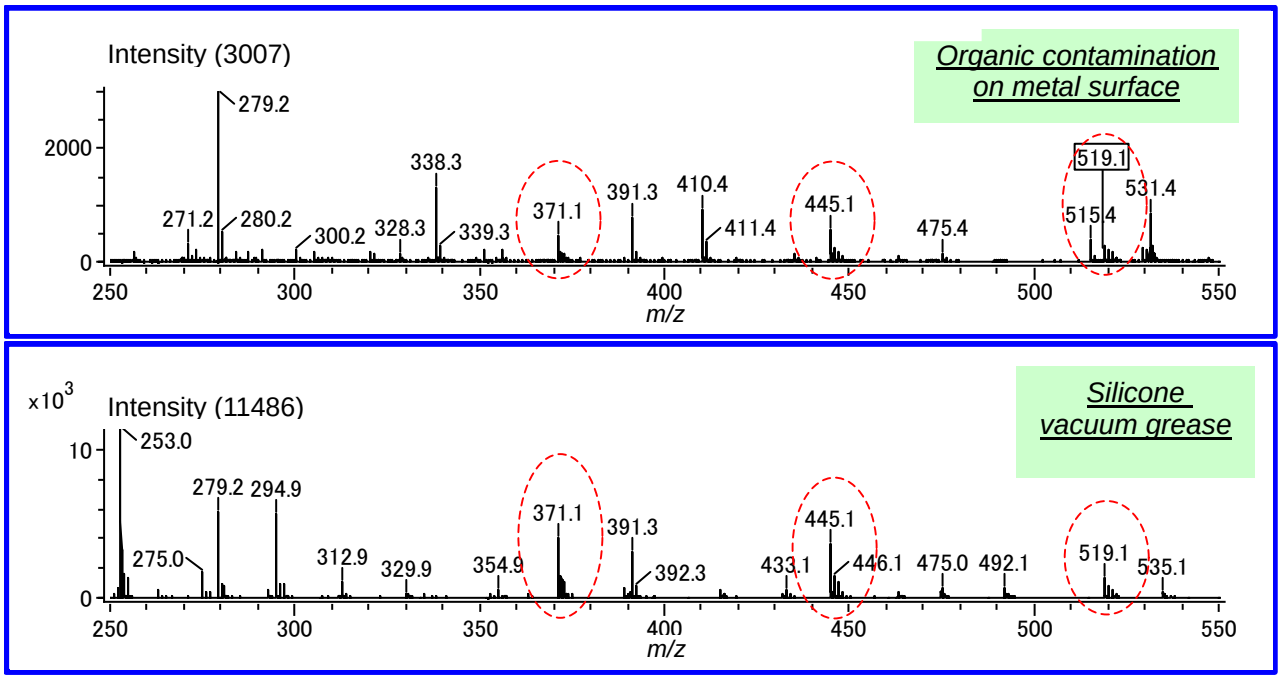

Fig. 2 DART (+) mass spectra
Upper: sample, lower: silicone vacuum grease

Table 1 Estimated elemental compositions of major ions from the sample

Observed *m/z*	Calculated m/z	Error (ppm)	Estimated composition	Unsaturation
371.10133	371.10178	-1.20	12C10 1H31 16O5 28Si5	0.5
445.12036	445.12057	-0.48	12C12 1H37 16O6 28Si6	0.5
519.13959	519.13936	0.44	12C14 1H43 16O7 28Si7	0.5