

Application Data Sheet

Analysis of an Electrolytic Solution from a Lithium Ion Rechargeable Battery

No.9

Electrolytic solutions in lithium ion rechargeable batteries consist of organic solvents (most of the carbonate series), electrolytes, and additives.

A GC-MS is useful for the evaluation of electrolytic solutions and for analyzing degradation due to repeated charging and discharging. This datasheet introduces a sample analysis of an electrolytic solution from a lithium ion rechargeable battery using a GC-MS.

Experiment

In this analysis, an electrolytic solution was injected directly into the GC-MS for analysis.

GCMS

as Chromatograph Mass Spectrometer

Table 1: Analysis Conditions

GC-MS	: GCMS-QP2010 Ultra		
Column	: Rtx-200MS (30 mL. × 0.25 mml.D., 1 µm) (RESTEK)		
[GC]		[MS]	
Vaporization chamber temperature :250 °C		Interface temperature	: 250 °C
Column oven temperature : 40 °C (3 min) -> (8 °C/min) -> 280 °C (5 min)		Ion source temperature	: 200 °C
Injection mode	: Split	Measurement mode	: Scan
Split ratio	: 100	Mass range	: <i>m/z</i> 35 - 500
Carrier gas	: Helium	Event time	: 0.3 sec
Control mode	: Linear velocity (40 cm/sec)		
Sample injection	quantity :1 µL		

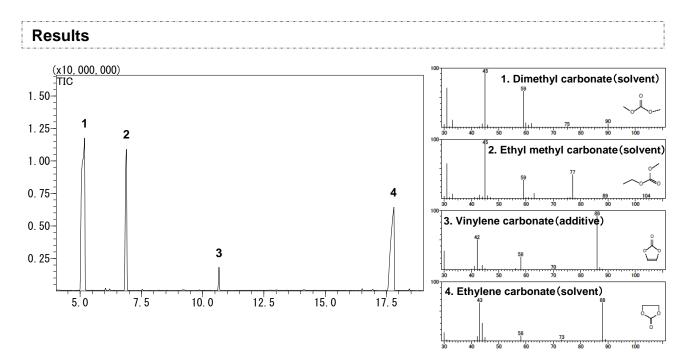


Fig. 1: Total Ion Current Chromatogram and Mass Spectra

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