

2.18 Analysis of polymers (polystyrene) - GCMS

•Explanation

Various analytical methods are used in the analysis of polymeric materials. When using gas chromatography (GC) or a gas chromatography mass spectrometer (GCMS), the polymer is broken down by heating and the gas generated is analyzed. Introduced here is an example of analysis of polystyrene using a pyrolyzer (PYR-4A).

Shown in Fig. 2.18.1 are the mass chromatograms (MC) of the molecular ions of each component. In table 2.18.1 the results of qualitative determination are shown.

•Analytical Conditions

Model : Shimadzu GCMS-QP5000
 Column : CBJ1 0.25mm × 30m df=0.25
 Column Temp. : 50°C (1min)-7°C/min-280°C
 Carrier Gas : He 100kPa
 PyrolysisTemp. : 500°C
 Interface Temp. : 250°C
 Split : 50:1

1	CO ₂
2	C- Toluene
3	C=C- Styrene
4	C=C(C)- α-Styrene
5	C-C=C- Propynyl Benzene
6	C--C-, -C-C-
7	C-C--C-
8	C=C--C-C- Dimer
9	C=C--C=C-C-C-
10	C=C--C-C--C-C- Trimer

Table 2.18.1 Results of qualitative determination

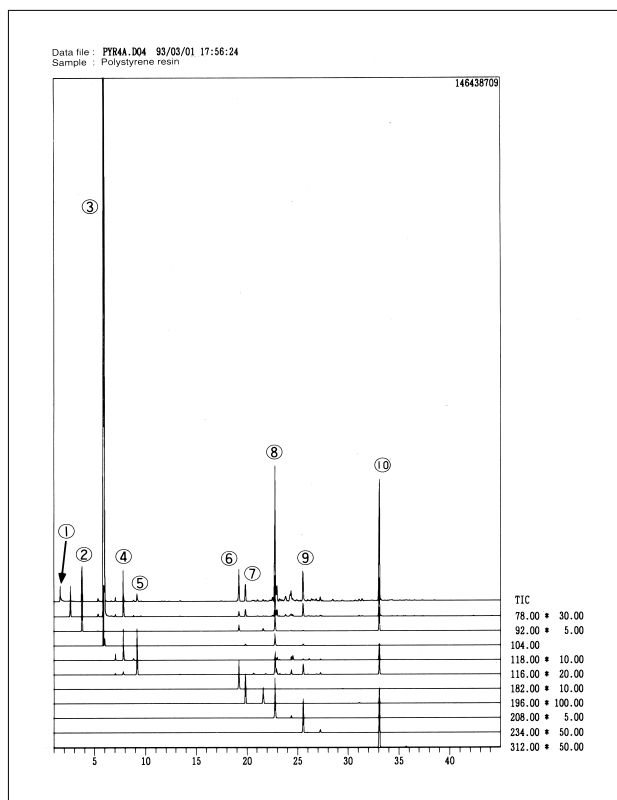


Fig. 2.18.1 Mass chromatogram of polystyrene (MC)