

3.13 Analysis of Cellulose - GCMS

■ Explanation

Cellulose molecules are extremely large with a polymerization degree of 5000 to 6000 for the polysaccharide bonded β -1,4-glucoside. Analysis of the cellulose involved thermal decomposition using a thermal decomposer and measurement of the generated components. Also, NiCl_2 was mixed into the cellulose and the sample thermally decomposed at 500°C to generate peak 13. A molecular ion peak (providing molecular weight data) for peak 13 could not be detected with EI mass spectrum, but could be well detected with CI mass spectrum, making qualitative analysis possible.

■ Analytical Conditions

Instrument : GCMS-QP1100EX PYR-4A
Column : OV-17 2mm \times 2m 5%
Col.Temp. : 80°C - 230°C ($4^\circ\text{C}/\text{min}$)
Inj.Temp. : 300°C
I/F Temp. : 250°C
Carrier Gas : 30mL/min

References

Application News No. M62

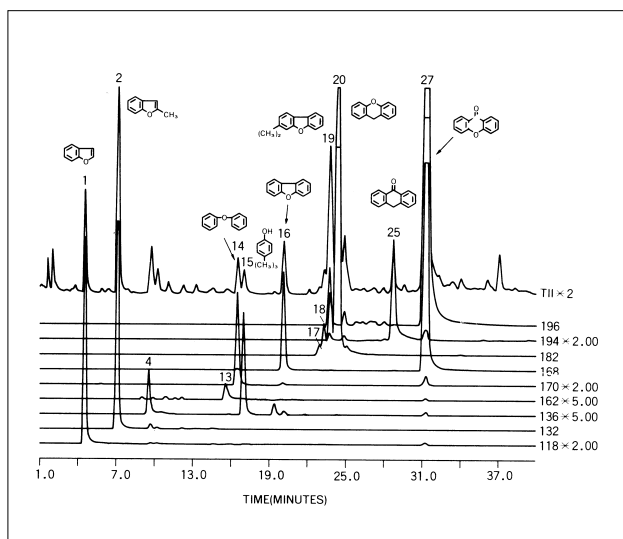


Fig. 3.13.1 Cellulose MC

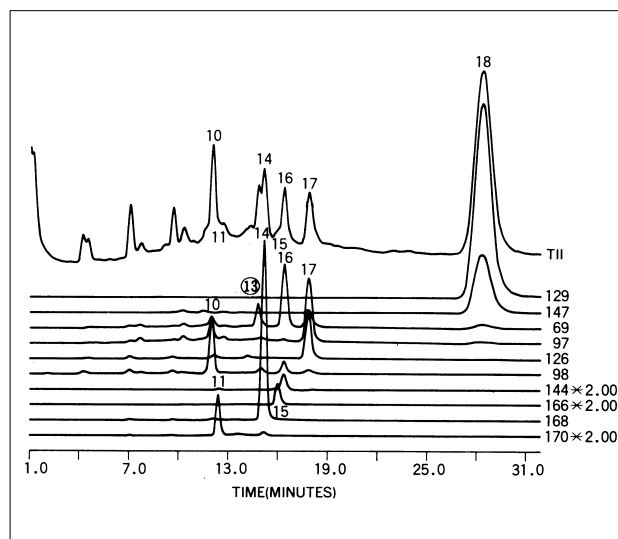


Fig. 3.13.3 Cellulose MC

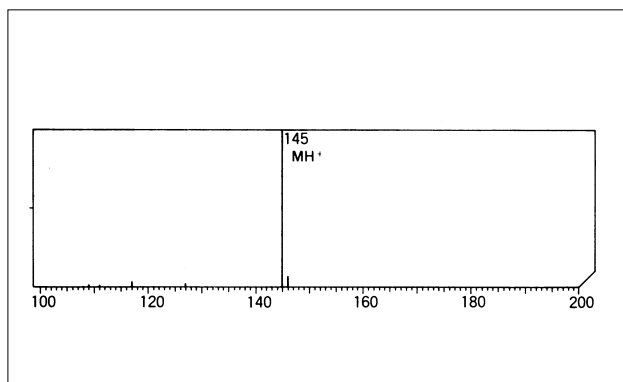


Fig. 3.13.2 EI mass spectrum of peak 13

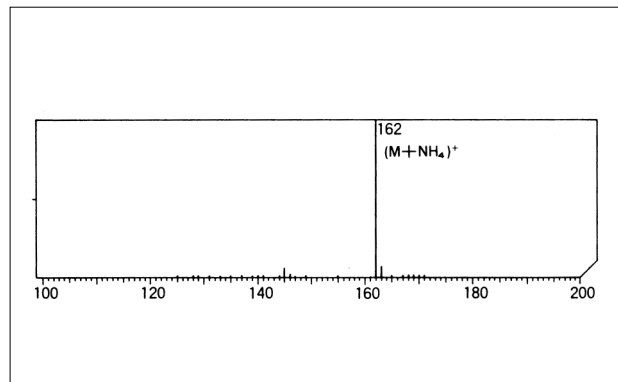


Fig. 3.14.4 CI mass spectrum of peak 13 (isobutene)