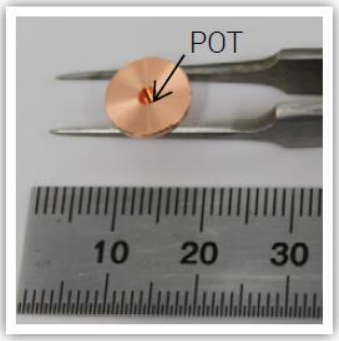
The Analysis Application of Cellulose by ionRocket-DART®-MS

EI-006

Background

The biofuel and chemical production from lignocellulosic biomass is being studied due to the adverse effects of global warming and the depletion of fossil fuel resources. Cellulose is a type of lignocellulosic biomass, which is not consumed as food. Cellulose is a polysaccharide constructed with β-1,4 linked glucose molecules. It has many intermolecular and intramolecular hydrogen bonds, so it does not easily dissolve in water or organic solvents.



Samples

Cellulose powder.

Methods

The analyzing tool utilized was the ionRocket heating system connected to the DART®-MS (Direct Analysis in Real Time - Mass Spectrometry). Small quantities of the samples were put on the POT and analyzed. The temperature was increased by 100℃ per minute, from 30℃ to 600℃.

Results

The DART®-MS spectrum around 400℃ and the total ion current chromatogram of cellulose powder were shown in Fig 1. The cellulose powder was detected from 200℃ and the highest intensity was detected at around 400℃. The monomer, dimer, and hydrate were detected. These results indicate that the ionRocket DART®-MS analysis can provide the structural information of cellulose.

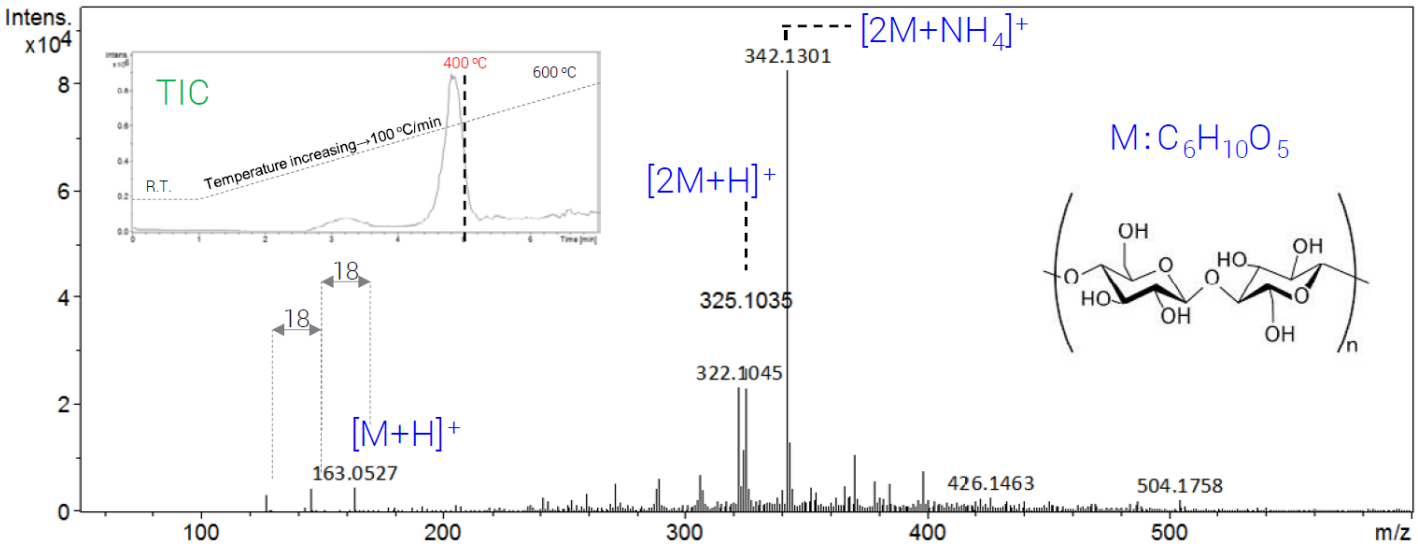


Fig. 1 Total ion chromatogram and DART®-MS spectrum around 400℃ of cellulose powder
ionRocket: R.T. 100℃/min 600℃, DART®-SVP temperature: 400℃, ionization mode: DART®(+)

Target

Material development, chemical industry, foreign material analysis

BioChromato
Mining ideas, Aiding laboratories

ionRocket

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