

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

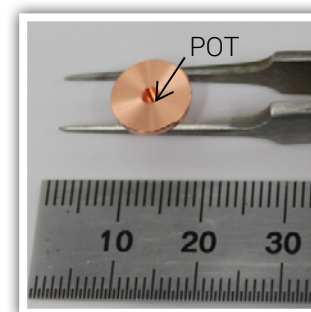
[BACKGROUND]

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°C per minute, from 30°C to 600°C.



[RESULTS]

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

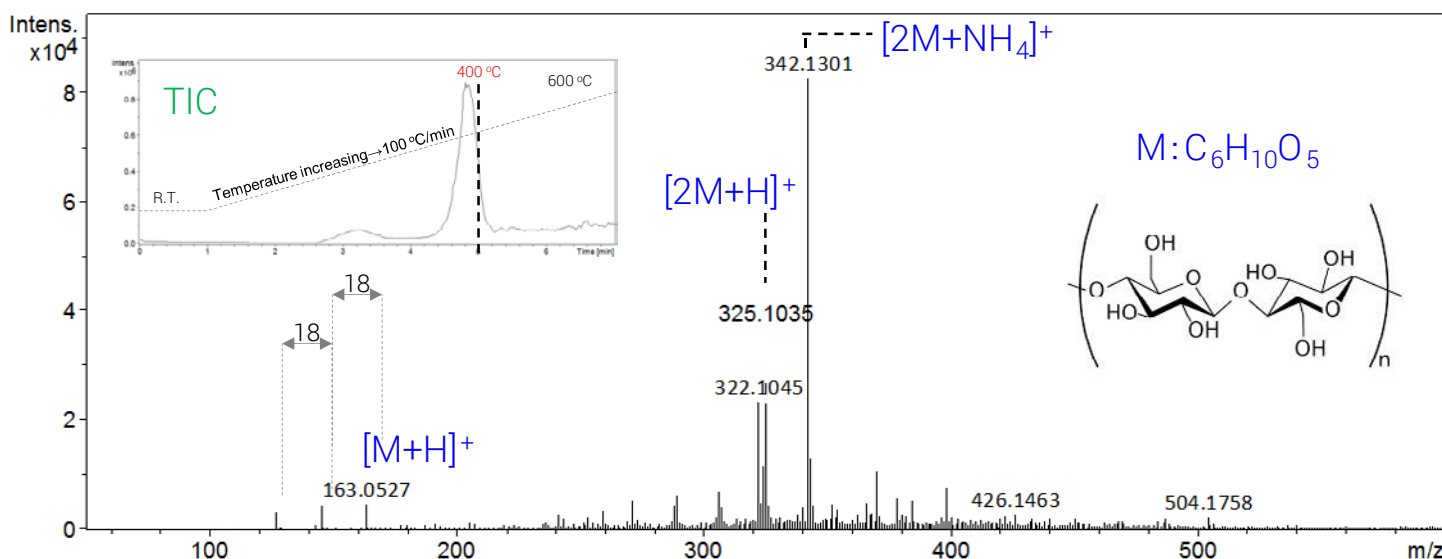


Fig.1 Total ion chromatogram and DART®-MS spectrum around 400°C of cellulose powder

ionRocket: R.T. 100°C/min 600°C, DART®-SVP temperature: 400°C, ionization: DART®(+)

[TARGET] Material development, chemical industry, foreign material analysis