# The Quick Discrimination of Nylon by ionRocket-DART®-MS

## 【BACKGROUND】

Nylon, the synthetic polymer and aliphatic polyamide, is one of the most widely used industrial polymers. Nylon is widely diffused due to its high rigidity and elasticity. nylon-6,10 and nylon-6,12 reflect similar tendencies in FT-IR spectrum. In addition, the melting temperatures of both polymers measured by DSC are approximately 220°C. This makes it difficult to discriminate between the two analogs.

## 【SAMPLES】 nylon-6,10 and nylon-6,12 (e.g. toothbrush).

## 【METHODS】

The analyzing tool 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】

TIC is shown in Fig 1. MS spectra measured at 300°C is shown in Fig 2.
In Fig 2, the monomers and dimers were mainly observed.
The comparisons of ionRocket-DART®-MS spectra made it possible to distinguish between nylon-6,12 and nylon-6,10.



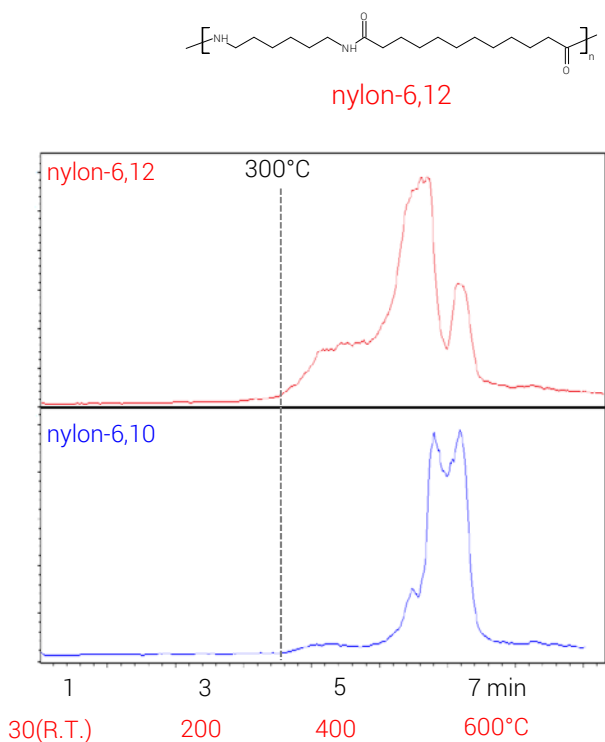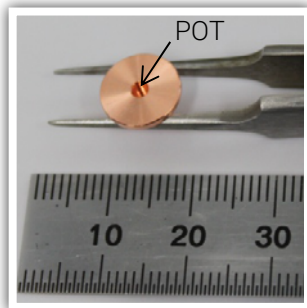nylon-6,12



nylon-6,10



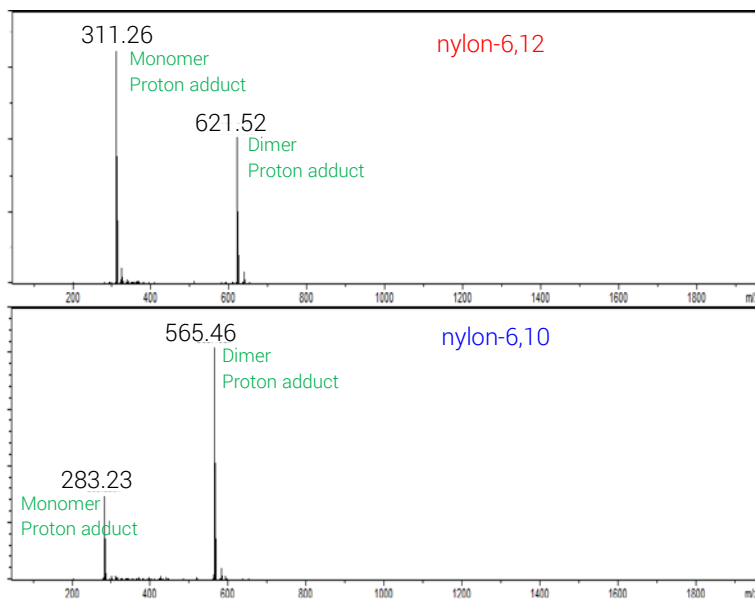Fig. 1 TIC of each sample.
R.T. 100°C/min  600°C



Fig.2 MS spectrum measured at 300°C
The preset temperature of DART®-SVP was 400°C
Ionization was DART® positive.

## 【TARGET】 Material development, chemical industry, foreign material analysis

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