



PRESS RELEASE

**Mass Spectrometry method reveals thermal history of recycled polymers**

**BioChromato Inc.** has demonstrated how a **Thermal Desorption and Pyrolysis / Direct Analysis in Real Time-Mass Spectrometry (TDP/DART-MS) analysis method** can reveal the thermal history of recycled thermoplastic resins.

Recycling thermoplastic resins such as polypropylene is regarded as a vital step to help realise a more sustainable society. However, physical properties of thermoplastic resins such as strength and ability to elongate are known to degrade after repeated thermal reprocessing. It is there important to have analytical methods that can quickly and reliably reveal the thermal history of recycled polymers. Many traditional analytical techniques however fail to detect differences between virgin and recycled thermoplastic resins.

In this work, using an IonRocket sample introduction device, it was confirmed that TDP/DART-MS can be a useful way to evaluate thermal history, by using the antioxidants contained in thermoplastic resins as a "thermal history marker".

The ionRocket from BioChromato is a temperature-heating device for direct thermal desorption and pyrolysis of samples, prior to ionization and analysis by mass spectrometry. Using ionRocket a temperature gradient from ambient up to 600°C can be achieved in just a few minutes. This enables

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thermoplastic resins to be rapidly pyrolyzed and then introduced into the DART-MS gas stream.

BioChromato has published a technical poster (see [https://biochromato.com/wp-content/uploads/EI-067\\_Evaluation-of-thermal-history-of-thermoplastic-resins.pdf](https://biochromato.com/wp-content/uploads/EI-067_Evaluation-of-thermal-history-of-thermoplastic-resins.pdf)) that shows how TDP/DART-MS, employing an ion-Rocket device, provides qualitative and quantitative information on changes in antioxidant additives incorporated into recycled polypropylene compared to virgin polymer pellets. This work shows the promise of TDP/DART-MS using an IonRocket device as a 'go to' analytical technique for analysing the longer-term durability of recycled polymers.

For further information on ionRocket temperature gradient sample introduction device for DART-MS please visit <https://biochromato.com/analyticalinstruments/ionrocket/> or contact BioChromato Inc. on +81-466-23-8382 / enquiries@bicr.co.jp.

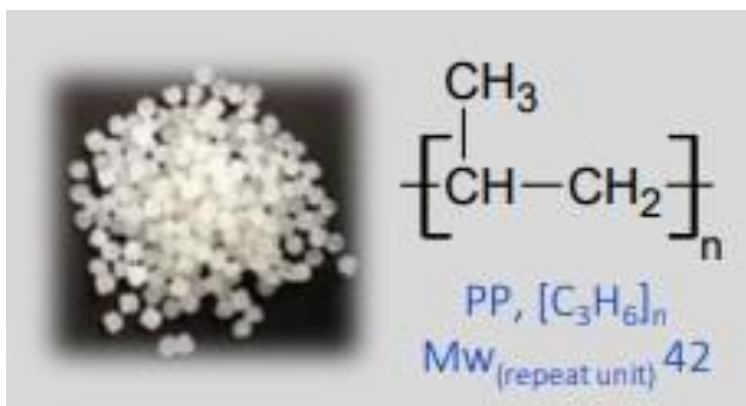
Founded in 1983, BioChromato Inc is a respected Japanese manufacturer of unique high-quality products for chemical laboratories. Through its team of experienced technical experts and network of specialist distributors - BioChromato's aim is to enhance the efficiency of research and development through its development of problem-solving laboratory instruments and consumables.



**Illustrative images:** (available on request)



Caption: Introducing polymer sample into ionRocket temperature gradient sample introduction device for DART-MS



Caption: Illustration of repeating molecular unit in Polypropylene thermoplastic resins

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