



A new paradigm in forensic analysis

DART-MS enables the rapid chromatography-free analysis of seized drugs

Introduction

The growing demand for forensic analytics is driven by the increasing number of targets, including emerging new psychoactive substances (NPS). This has put pressure on labs to handle larger caseloads while also improving the selectivity and sensitivity of analyses to reduce sample preparation and analysis time, ultimately shortening response time and increasing throughput. Direct Analysis in Real Time-Mass Spectrometry (DART-MS) as Bruker's unique Point-of-Need (PoN) workflow is meeting these demands, allowing for quick and easy generation of useful information and increased productivity in labs.

Keywords:

DART-MS,
chromatography-free,
QTOF instruments,
Point-of-Need (PoN),
automation, forensics

But how can data be interpreted?

Interpreting DART-MS results can be challenging without access to forensic MS database tools. However, Bruker has developed an automated library search for DART-MS/MS data that solves this problem. Therefore, home-built libraries as well as external databases such as those from NIST can be used to generate sample reports in under 30 seconds, making it highly efficient. As a result, this feature improves the workflow, reduces cycle times, and enhances screening accuracy.

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Seized Drug Suite: Get the report in just 5 simple steps

This chromatography-free workflow reduces the need for extensive sample preparation and enables rapid analysis. Once the sample is introduced to the instrument and method initiated, a report is automatically and rapidly generated.

With the automation capabilities in Bruker's software, it takes only a few seconds to go from sample to report.



1

Pipette the sample onto a QuickStrip

Let the drop dry at room temperature

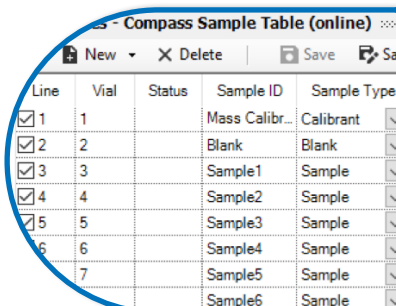
2

Put the QuickStrip at the sample holder of the DART source



3

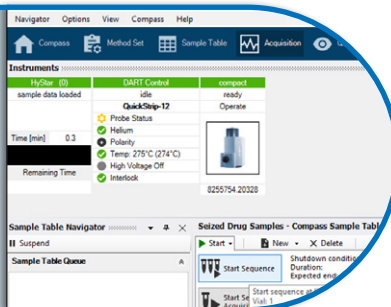
Create a sample table



Line	Vial	Status	Sample ID	Sample Type
<input checked="" type="checkbox"/>	1		Mass Calibr...	Calibrant
<input checked="" type="checkbox"/>	2		Blank	Blank
<input checked="" type="checkbox"/>	3		Sample1	Sample
<input checked="" type="checkbox"/>	4		Sample2	Sample
<input checked="" type="checkbox"/>	5		Sample3	Sample
<input checked="" type="checkbox"/>	6		Sample4	Sample
<input checked="" type="checkbox"/>	7		Sample5	Sample
<input checked="" type="checkbox"/>			Sample6	Sample

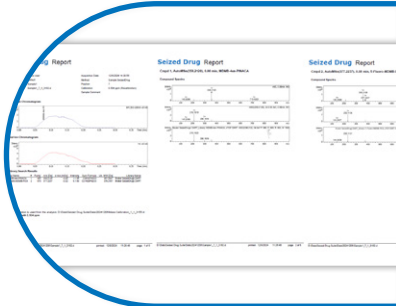
4

Start DART acquisition after setting the parameters



5

A sample report is generated automatically, completing the process



What if further detailed analysis is required

In forensic cases, chromatographic information is often essential to ensure the analysis is defensible in court. Switching from chromatography-free DART-MS analysis to liquid chromatography (LC) analysis can be done in under 2 minutes.

CHANGE IN LESS THAN 2 MINUTES



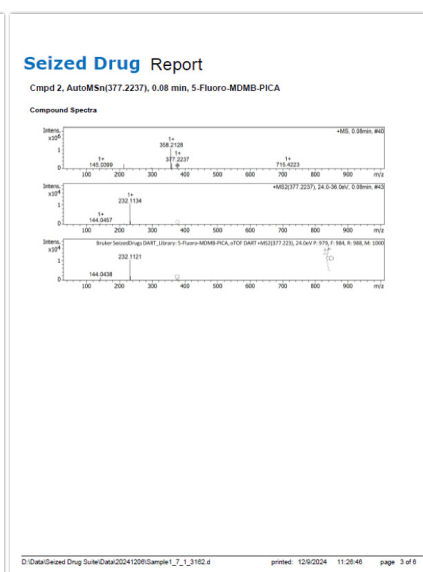
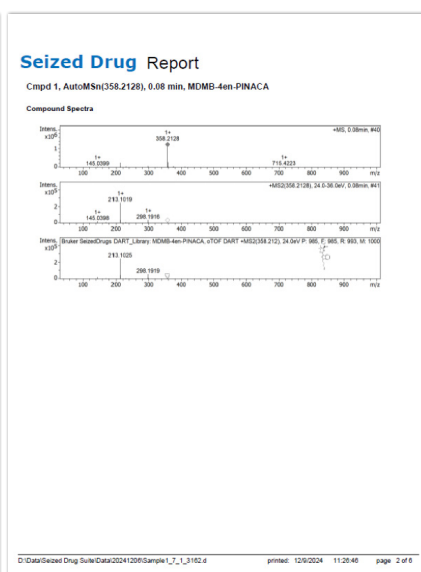
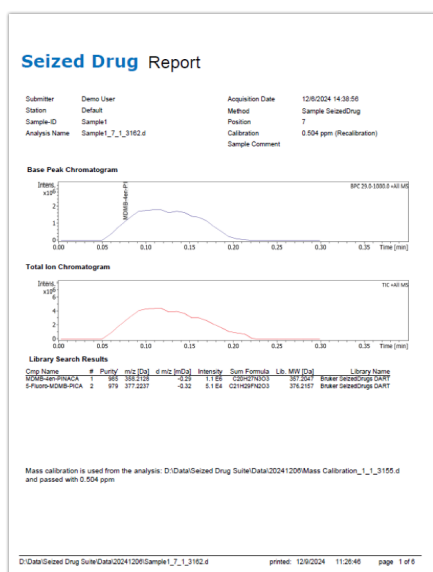
DART source + MS



VIP-HESI source + UHPLC + MS

Confidence in analytical results

Minimal sample preparation is required. The QTOF instrument provides MS/MS spectral data and accurate mass measurements, enhancing confidence in the analytical results. Bruker's automated library search delivers reports directly.



Conclusion

- Fast analysis for high throughput
- Direct report from analysis
- Change from DART to LC in less than 2 min for detailed analysis

Easily **connect the DART source to Bruker's compact QTOF** which offers an unrivalled dynamic range in combination with mass accuracy, sensitivity, MS/MS performance and robustness.



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