

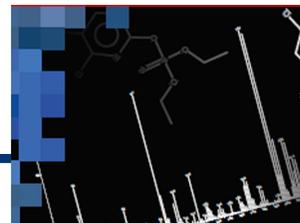
To view online, please [click here](#).

[SEM](#) | [TEM](#) | [EPMA](#) | [Sample Prep](#) | [NMR](#) | [Mass Spec](#) | [FIB](#) | [E-Beam](#) | [Elemental Analysis](#)

JEOL **JEO**Link Mass Media

Solutions for Innovation

Mass Spectrometry Newsletter



GC-TOF | GCxGC | AccuTOF-DART | TripleQuad GC-MS/MS | Single Quad GC | MALDI | HRMS
April 2020 | ISSUE #91



NETZSCH INTEGRATED THERMAL ANALYSIS GC-MS

Netzsch Integrated Thermal Analysis GC-MS System

NETZSCH Instruments North America is now offering the JEOL Q1500 Single Quadrupole Mass Spectrometer as part of the NETZSCH integrated Thermal Analysis GC-MS system. The partnership of the two companies provides a unique analytical solution for measuring chemical reactions under increased temperatures. The coupling of the [JEOL Q1500 Single Quadrupole Mass Spectrometer](#) and the [NETZSCH STA 2500 Regulas Integrated Thermal Analysis](#) system provides precise identification of mass changes and gas species evolving from chemical reactions at elevated temperatures. Applications include food, pharmaceuticals, cosmetics, polymers, and biomass. [More >](#)



MASS SPEC APPLICATIONS NOTE

Analysis of Pesticides in a Cannabis sativa Matrix

With the recent surge in legalization of Cannabis sativa for recreational and medicinal use, there is a need for reliable analytical tools to meet the regulatory requirements for pesticide testing in Cannabis. Action limits for each pesticide vary between jurisdictions, but can be as low as 10 ppb.^{2,3}

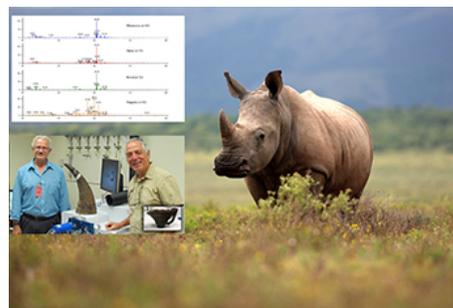
The JEOL JMS-TQ4000GC triple-quadrupole GC-MS/MS system offers high speed and high sensitivity for quantitation of trace or residual pesticides. It is an excellent platform for fast, sensitive analysis of a wide range of pesticides in Cannabis matrix. Using built-in SRM optimization tools, optimal ion transitions and collision energies for each pesticide were determined in the presence of the matrix.

[Read the applications note here.](#)



NEW ACCUTOF-DART APPLICATIONS

Forensic Chemistry: Ethanol in Beer



US FISH & WILDLIFE FORENSIC LAB

Protecting Endangered Species

The alcohol content of beverages is tightly regulated, and determination of alcohol content in beverages is important for labeling compliance and quality control. Traditional testing methods for alcohol content are typically based upon measurements of physical properties such as specific gravity (relative density) and refractive index.

Standardized methods for determination of alcohol by volume use a distillation method to determine specific gravity. Headspace gas chromatography is typically used in forensic laboratories when there is a need to determine the alcohol content of beverages. While effective, the method is time-consuming and requires specialized headspace sampling equipment.

Researchers at NIST have developed a fast and accurate method using the for the determination of alcohol content in beverages by using the JEOL AccuTOF-DART mass spectrometer. The method described in a [recent article in the journal *Forensic Chemistry*¹](#) uses a simple T-junction to sample beverage headspace in seconds to measure ethanol concentration with an accuracy of greater than 99%. The AccuTOF-DART system has found wide use in forensic laboratories for application such as drug screening, trace evidence, explosives detection and even questioned documents. The development of the new method for determining ethanol concentration adds another capability to the AccuTOF-DART for use in forensics.

The [U.S. Fish and Wildlife Forensic Lab](#) in Ashland, Oregon is helping to stop the export and import of rhino horn. The only wildlife forensic lab of its kind in the world, their work is identifying illegal exports and imports of products made from endangered wildlife as well as protected natural resources. JEOL is proud to share how the [AccuTOF™_DART®](#) mass spectrometer, widely used in forensics investigations, is used to accurately identify the presence of rhino horn in illegal trade.

Trafficking of rhinoceros horn has had a tremendous impact on the decline of the species, which is listed in the Endangered Species Act of the United States and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). If a shipment is suspected to contain rhino horn, Customs officials need to be able to confirm the taxonomy and distinguish it quickly from what may be imitation. Both authentic and imitation horn may be shipped in the form of jewelry, libation cups, powders, and statuary.

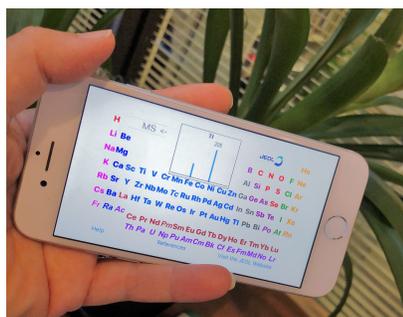
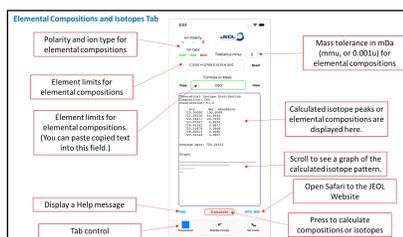
This work holds a new and important role in accurately identifying the source of the suspected keratinous materials and confirming if they are from the endangered rhinoceros. Thanks to Dr. Edgard Espinoza and his team at the United States Fish and Wildlife Forensic Lab, the standard for taxonomic differentiation of different sources of keratin, such as equine hoof, bovid horn, and pangolin scales has been achieved using the AccuTOF-DART. [Read the story here>](#)

Save the Date - Webinar April 14, 2020 - [Register Here](#)



Download the JEOL Apps - MS Calculator and Periodic Table

Get the new app for the iPhone - JEOL MS Calculator - to instantly calculate exact mass, relative abundance for isotope peaks, m/z values, etc. [Learn more](#) on our website, then search for JEOL in the Apps Store to find the MS Calculator.



Always keep the Periodic Table with you! Available through the Apple store for iPhone and Android. For Mass Spec, click on an element to display the isotopes of each element, click on the subsequent graph to display a list of all isotopes. App includes EDS and NMR Periodic Table. [More>](#)

Papers and Publications that Were Presented at Pittcon 2020

[Musah Group, SUNY Albany](#)

- Identification of Necrophagous Beetles Through the Chemometric Processing of DART-HRMS Derived Metabolome Profiles
- Determination of the Structures of New Psychoactive Substances using DART-MS-derived Collision Induced Dissociation Data
- High Times: Mass Spectral Analysis of Headspace Volatiles for the Detection and Identification of Psychoactive Synthetics
- Kava Kraze: The Use of DART-HRMS to Quantify Yangonin, the Psychoactive Component of a Popular "Legal High" Plant If it's
- Mint to Be – An Ambient Mass Spectral Technique for the Rapid Forensic Analysis of Psychoactive Salvia Divinorum
- Bake Sale – An Ambient Mass Spectral Technique for the Rapid Detection of Cannabinoids in Complex Edible Matrices

[Armitage Group - Eastern Michigan University](#)

- Collaborative Investigation of an Unusual Ancient Andean Textile by Multiple Techniques
- Developing a Process for Identifying the Components of a Mummy "Resin" with Direct Analysis in Real Time Mass Spectrometer
- Examining the Contents of Ancient "Perfume" Bottles

[Bridge Group - University of Central Florida](#)

- NIJ - Determining the Strength of Forensic Lubricant Evidence from DART-MS and GC-MS Data
- A Longevity Study on the Analysis of Sexual Lubricants When Stored in Different Environmental Conditions

[Cizdziel - University of Mississippi](#)

- Forensic Analyses of 3D-printed Firearms

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JEOL USA Service and Support - Expect M.O.R.E.



The JEOL service department is dedicated to providing optimal solutions that support customer innovation. Our professionalism, knowledge, and integrity allow JEOL to achieve the highest level of quality and customer satisfaction. [Expect M.O.R.E.](#)

- Interested in getting top priority service? [View](#) our Service Level Agreements page
- To request service on your instrument, please [visit](#) our service request page

Powerful Solutions for Chemical and Structural Analysis

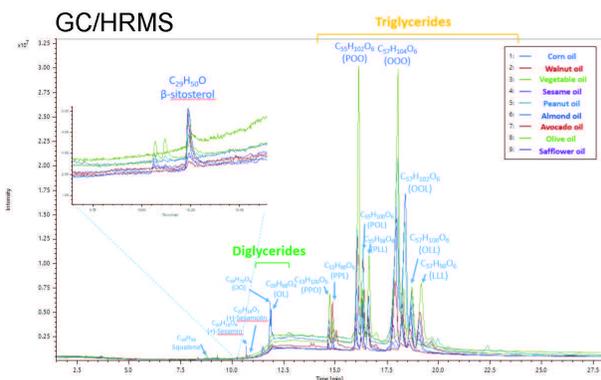
Like many of you, we're sorry to miss AOCS this month in Montreal. We were prepared to share our food oil data and applications expertise at the American Oil Chemists Society meeting. Here's a glimpse of our latest information. Want to learn more? Contact us and we'll help you with your application. Download our [Food Note](#) for additional details.



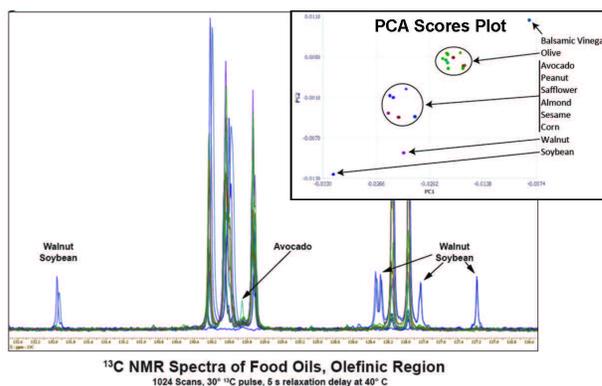
Powerful Solutions for Chemical & Structural Analysis



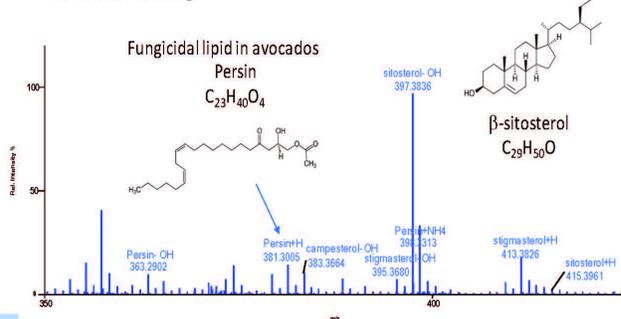
Mass Spectra of Triglycerides and Lipids



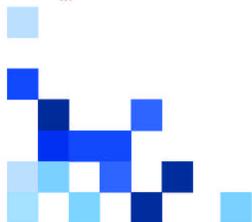
NMR Spectra of Food Oils, Olefinic Region



DART/HRMS



- JEOL NMR spectrometers rapidly identify and quantitate bio-oils with little to no sample prep and no calibration.
- AccuTOF-DART ambient ionization MS characterizes lipids, biodiesel feedstock, lipophilic nutrients and olive oil.
- SpiralTOF MALDI-TOF/TOF for complete structural analysis of triglycerides.
- AccuTOF-GCX GC/HRMS and GCxGC/HRMS analysis of complex lipid mixtures.
- JMS-Q1500GC Single-Quad GC/MS – robust, sensitive, and easy-to-use GC/MS system for routine analysis.
- JMS-TQ4000GC Triple-Quad GC-MS/MS measures trace pesticides, regulated chemicals, dioxins and PCB's.



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MEETINGS AND EVENTS

Please check our [Events page](#) for our latest scheduled conferences and meetings, as many have been rescheduled or cancelled for this year. We hope to see you at one of our mass spec meetings in the future.

[More information](#)

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