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Recent News

Initial Trials on New Ovarian Cancer Tests Exhibit Extremely High Accuracy

Scientists at the Georgia Institute of Technology have attained very promising results on their initial investigations of a new test for ovarian cancer. Using a new technique involving mass spectrometry of a single drop of blood serum, the test correctly identified women with ovarian cancer in 100 percent of the patients tested. The results can be found online in the journal *Cancer Epidemiology, Biomarkers, & Prevention Research*.

Read the full article in [Science Daily](#)

Probing Proteins for Structure

Identifying a protein's structure offers many benefits to drug discovery and development, and improving technology makes this easier to do. "Classically, there are two general ways to look at protein structure," says Douglas Melnhart, PhD, analytical products manager at JEOL in Peabody, Mass. "These are crystallographic and NMR [nuclear magnetic resonance] approaches." He adds, "Each has its own set of challenges."

Read the full article in [Drug Discovery & Development](#).

Hi-Res Mass Spec

When it comes to high-resolution mass spectrometry, Fourier transform ion cyclotron resonance used to be the only game in town. FTICR MS still has the highest resolving power of all MS techniques, but improvements in other mass analyzers have made them suitable for some applications that previously required the big guns of FTICR.

Read the full article in [C&E News](#).

See JEOL at Upcoming Events

ACS Fall

22-26 August 2010
Boston, Massachusetts

Southern Assoc. of Forensic Science

20-23 September 2010
Tunica, Mississippi

SMASH-Small Molecule NMR Conference

26-28 September 2010
Portland, Oregon

New Jersey Mass Spec Discussion Group

27 September 2010
East Brunswick, New Jersey

SOFT Meeting

17-22 October 2010
Richmond, Virginia

EAS

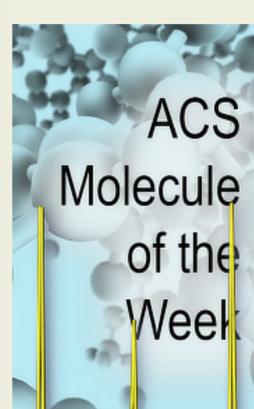
15-17 November 2010
Somerset, New Jersey

Contact JEOL

If you would like to speak directly with us, please call 978-536-2310

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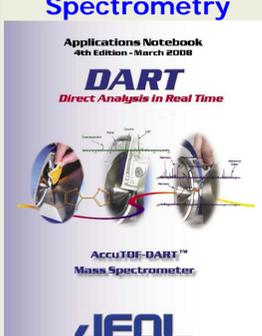
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AccuTOF-DART Analysis of ACS Molecule of the Week

Applications AccuTOF-DART

Open Air Mass Spectrometry

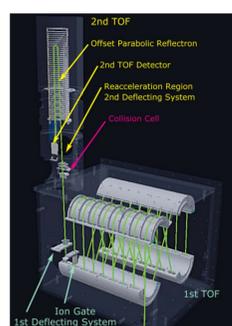


An updated 4th Edition of Applications Notes for the AccuTOF-DART is now available. To download, click on the image.

Mass Spec & NMR Reference Data

Bookmark www.jeolusa.com for complete access to useful mass spec [Tutorials](#), [NMR Tutorials](#), and [application notes](#).

New MALDI-TOF System Reinvents Time-of-Flight



is refocused with each pass around the spiral, keeping heavy and light ions from becoming indistinguishable from each other.

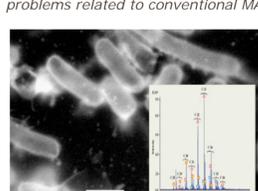
The SpiralTOF is available in four configurations: MALDI-TOF, with TOF/TOF, with Linear TOF, and with Linear and TOF/TOF.

Featuring a high resolving power of better than 60,000 (FWHM) over a wide mass range of m/z 10-30,000 and sub-ppm mass accuracy, JEOL's new [SpiralTOF](#) reinvents Time-of-Flight mass spectrometry with a revolutionary optics design.

At the heart of JEOL's first commercially-available MALDI-TOF is a staggered 17m figure-eight ion trajectory design in a compact console. In this slightly offset multipass system, the ion packet

Additional Reading

["Development of JMS-S3000: MALDI-TOF/TOF Utilizing a Spiral Ion Trajectory"](#). This paper describes the development of the combined spiral trajectory ion optical system and reflectron type ion optical system using offset parabolic ion mirrors. This innovative design has overcome preexisting problems related to conventional MALDI-TOF and MALDI-TOF/TOF.



SEM was used to observe the morphology of the bacteria.

The SpiralTOF was featured in *C&E News* in June in an article entitled [Hi-Res Mass Spec](#). Visit the [web page](#) for additional information, including technical notes.

"Rapid Characterization of Bacteria Using ClairScope(TM) and SpiralTOF(TM)"

In many fields such as clinical diagnosis and food inspection, there is a demand for rapid, reliable and simple-to-use methods for characterizing bacteria. The new SpiralTOF was used to analyze the ribosomal proteins and phospholipids, while the new ClairScope atmospheric

Eastern Michigan University to Analyze Ancient Cave Drawings with DART

Among the several interdisciplinary researchers at Eastern Michigan University who look forward to using the AccuTOF-DART® being installed this month is Chemistry Professor Ruth Ann Armitage, who calls it a "first generation tricorder," comparing it to the Star Trek instrument that can instantly analyze almost anything.

As for Armitage, she plans to analyze paint samples from ancient cave drawings to identify organic substances used to make the paint. Armitage's group is involved in "several applications of analytical chemistry to archaeological materials, ranging from soils to rock paintings to historic brick. Currently, there are both undergraduates and MS students carrying out research in the group. We use many different analytical techniques, including gas chromatography-mass spectrometry, ATR-FTIR, and x-ray photoelectron spectroscopy, to characterize a diverse array of archaeological materials. Our predominant interest is the characterization of the organic matter in rock paintings. This is important to aid in understanding the radiocarbon dates for paintings with no visible organic content," her [webpage](#) states.



Ancient handprint recently discovered in Cueva La Conga, Nicaragua. DART will be used to help date and chemically characterize rock paintings as part of the research being done through EMU.

Scheduling of the AccuTOF-DART may pose the biggest challenge for professors and their students at EMU, whose applications range from developing agents to help prevent strokes and Type-2 Diabetes to coatings research. [More >>>](#)

DART Discussion Group Reaches 300+ Members

More than 300 members contribute to and benefit from the [DART MS Discussion Board](#). Regular updates, online chemical search lists, bibliographies, and applications tips keep this global group informed and in touch. If you're not a member already, we invite you to become a part of this active group by signing up online.

Identifying Environmental Pollutants in Biosolids Applied to Soils

Nearly 50 potentially harmful compounds have been identified in biosolids that are being applied as land soil amendment, according to a paper recently published in *Environmental Science & Technology*. [Mark La Guardia](#) and co-authors from the [Virginia Institute of Marine Science](#)



Sludge drying in a lagoon prior to land application.

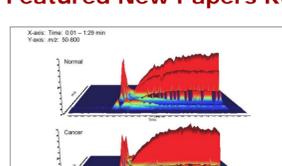
utilized an alternative analytical approach based on compound function group to enhance the information content of their analysis of stabilized sewage sludge. They observed 49 organohalogenes using gas chromatography with electron capture negative ionization mass spectrometry. Of the 49, 23 were identified as flame-retardants, including PBDEs (suspected endocrine disruptors).

"Halogenated organic chemicals are some of the most bioaccumulative and persistent environmental pollutants identified to date, responsible for adverse human and environmental health effects," the paper states. This analytical approach may be used to improve understanding of the risks involved in application of sewage sludge to soil, and may help with targeting chemicals for future studies. The paper, ["Flame-Retardants and Other Organohalogenes Detected in Sewage Sludge by Electron Capture Negative Ion Mass Spectrometry"](#) may be found in *Environ. Sci. Technol.* 2010, 44, 4658-4664. Additional information on the research La Guardia has done using the JEOL [GC/Mate II](#) benchtop GC-MS is spotlighted in the [REALab](#) section of the JEOL USA website.

More than 100 Published Papers Listed in DART Bibliography

Since its introduction in 2005, more than 100 papers have been published on direct analysis done with the AccuTOF-DART®. Applications include drug analysis, homeland security, forensics, organic synthesis, and food, and the list keeps growing. We regularly update the bibliography on our [DART MS Discussion Board](#) and the website for further reference. To download the pdf from the [DART web page](#), scroll to the bottom to the window "Links to Published Papers."

Featured New Papers Relevant to DART®



Rapid Mass Spectrometric Metabolic Profiling of Blood Sera Detects Ovarian Cancer with High Accuracy

"We coupled a high-throughput ambient ionization technique for mass spectrometry (direct analysis in real-time mass spectrometry) to profile relative metabolite levels in sera from 44 women diagnosed with serous papillary ovarian cancer (stages I-IV) and 50 healthy women or women with benign conditions."

Analysis of Printing and Writing Papers by Using Direct Analysis in Real Time Mass Spectrometry

"A quick and direct method for identifying organic components of papers in library and archival collections with minimal destructive sampling is needed for preservation, forensic, and general purposes. Direct analysis in real time mass spectrometry (DART-MS) is used for characterizing 16 reference papers of known manufacture in terms of their pulp composition and pitch contaminants."

AccuTOF-GCv Time-of-Flight Mass Spectrometer

Offering the highest sensitivity of any commercially available GC-TOF (S/N >100 at OFN 1 pg/ μ L), high resolution and mass accuracy, the AccuTOF-GCv allows rapid elemental composition determination and target compound identification. The AccuTOF-GCv is perfectly suited for analyzing complex mixtures of true unknowns - even at low concentrations. Applications include: environmental, petroleum, polymers and materials, forensics, foods, flavors, and fragrances.

Multiple ionization methods

An optional combination EI/FI/FD ion source eliminates the need for source exchange for these experiments. Gas chromatography/field ionization can also be used to characterize difficult samples.

[Click here to learn how the AccuTOF-GCv technology works.](#)



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