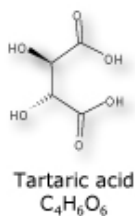
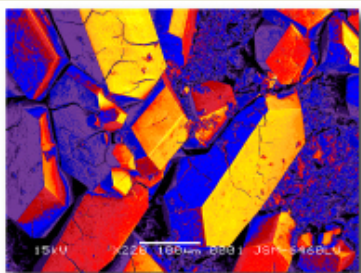


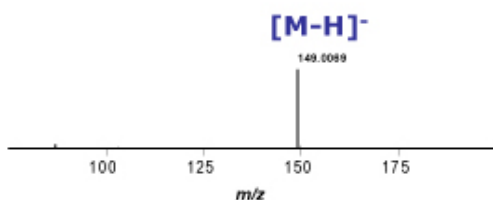
# Mass Media

## JEOL

Mass Spectrometry News and Applications  
JEOL USA, Inc. December 2008



Colored SEM image of tartaric acid



Tartaric acid sampled with a melting point tube

### ACS Molecule of the Week

11/10/08 ACS Molecule of the Week Tartaric Acid analyzed with open air ion source and time-of-flight mass spectrometer. Scanning electron microscope image of tartaric acid on a wine cork shown.

JEOL has analyzed many of the ACS Molecules of the Week with the AccuTOF-DART. [Check our our complete listing online.](#)

### Rapid Detection of Melamine in Powdered Milk



A rapid screening technique that has been widely used for instant analysis without sample preparation has just been proven as a viable means of detecting melamine in food. Chemists at JEOL USA in Peabody, Mass. have published an applications report entitled "[Rapid Detection of Melamine in Dry Milk Using AccuTOF-DART.](#)"

The JEOL AccuTOF-DART readily analyzed a mixture of powdered milk and melamine to obtain data in mere seconds at levels well below the FDA maximum allowable concentration of 2.5 ppm. Earlier this year, the FDA's Forensic Chemistry Center (FCC) reported that researchers had initially detected melamine in pet food using the DART open-air

## Upcoming Events

### AAFS

Booth 400/402

American Academy of Forensic Sciences

Feb 16-21, 2009

Denver, CO

### Pittcon

Booth 3948/4048

March 8-13, 2009

Chicago, IL

ionization method. The University of the Pacific also published findings in the [Journal of Analytical Toxicology](#) after successful analysis of dog food during the original recall of pet foods in April 2007.

Unlike other analytical techniques, the AccuTOF-DART methodology does not require time-consuming extractions or chromatographic methods to detect melamine in dry milk or other food products. The analysis was carried out by simply dipping a melting point tube into the mixture and then dangling the glass rod in front of the DART sensor. Within seconds of sampling the tainted milk powder, the AccuTOF-DART provided exact masses and isotopic data to identify melamine at levels between 500 ppb and 1000 ppm.

The ***Boston Globe*** featured a story on JEOL's work with melamine and open air analysis in November. [To read the story click here >>](#)

## Reaction Monitoring with Open Air Analysis of TLC Slides

### Ranked #1 Hot Article by ACS!

## Quick Links

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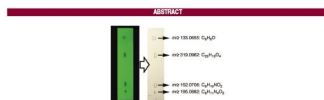
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### HRMS Directly From TLC Slides. A Powerful Tool for Rapid Analysis of Organic Mixtures

Natalie J. Smith, Marek A. Domin, and Lawrence T. Scott<sup>†</sup>  
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Received June 8, 2008



High-resolution mass spectra (HRMS) of individual spots on the layer chromatography (TLC) slide can now be obtained quickly and easily at elevated pressures with very simple operation, with commensurately modest instrumentation. Translated to complementary TOF mass spectrometry, this is made possible by means of high stability and high thermal stability. TOF-MS/MS can be used to monitor chemical reactions in real time and has the capacity thereby to accelerate significantly the pace of scientific organic chemistry.

Thin-layer chromatography (TLC) continues to enjoy widespread popularity as one of the fastest and simplest methods for monitoring the progress of reactions in synthetic organic chemistry.<sup>1</sup> Independence of the spot corresponding to starting material on conventional TLC slides is generally accompanied by the appearance of one or more new spots corresponding to the products. Identifying chemical structures in the products that give rise to each new spot typically entails preparative TLC, HPLC or column chromatography for isolation of the major components, which are then analyzed individually by NMR and/or other spectroscopic methods. To study the new open air...  
...however, it is now a simple matter to obtain high-resolution mass spectra (HRMS) of compounds directly from standard TLC slides, routinely, even while monitoring the course of a chemical reaction, without the need for preparative chromatography or time-consuming sample preparation. Herein we describe the simplicity and power of this new tool by describing the TLC separation and direct HRMS analysis of the components in an analytical mixture of five familiar organic compounds: camphorquinone, phenolphthalein, acetaminophen, and caffeine (see abstract profile and Figure 1).  
The four spectra presented in Figure 1 show base peaks for the individual compounds in their parent molecular ions...  
† Correspondence: Lawrence T. Scott, Department of Chemistry, Merkert Chemistry Center, Boston College, Chestnut Hill, Massachusetts 02467-3809. E-mail: [lawrence.scott@bc.edu](mailto:lawrence.scott@bc.edu)  
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Published in *ORGANIC LETTERS*

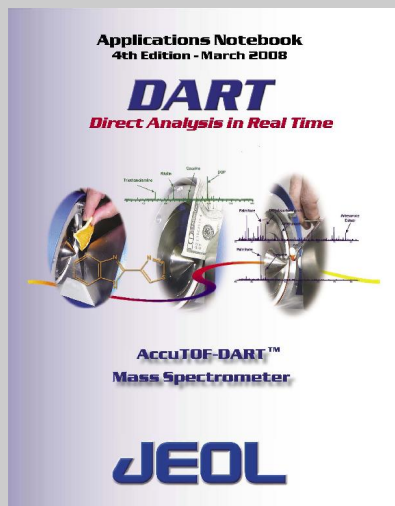
Since its publication in July, this TLC paper has been ranked #1 Hot Article by the American Chemical Society. The paper describes direct analysis of TLC slides to monitor the course of chemical reactions. "[HRMS Directly from TLC Slides. A Powerful Tool for Rapid Analysis of Organic Mixtures](#)" (Natalie J. Smith, Marek A. Domin, and Lawrence T. Scott, Department of Chemistry, [Merkert Chemistry Center, Boston College](#), Chestnut Hill, Massachusetts) was published in July 2008 in *Organic Letters*, 2008, Vol. 10, No. 16, 3493-3496.

Thin-layer chromatography (TLC) is one of the most widely accepted methods for monitoring reactions in synthetic organic chemistry. To analyze the resulting products that appear as spots on the TLC slide typically requires preparative TLC, HPLC, or column chromatography, followed by NMR spectroscopy and/or other spectroscopic methods. The DART ion source makes it easy to directly and routinely obtain high-resolution mass spectra (HRMS) of the compounds compounds directly from standard TLC slides routinely without the need for sample preparation.

## What's It Made of? Real-life CSI with DART

Dr. Chip Cody recently gave an invited talk to the Chemistry Department at the Colorado School of Mines, and an impromptu talk to the analytical chemistry class. [Read the full story in The Ore Digger, the school newspaper.](#) By the way, the AccuTOF-DART has had a regular television role on CSI New York for the past three years, but it does indeed have a starring role in real-life CSI every day!

## Applications Notebook for AccuTOF-DART™ Open Air Mass Spectrometry



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

## DART Behind the Scenes in National Treasure 2



Much to our surprise, the AccuTOF-DART mass spectrometer has a bit part in the hit movie *National Treasure 2: Book of Secrets*. It's shown in the Bonus Feature entitled *Inside the Library of Congress*.

## Mass Spec & NMR Reference Data

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

## JEOL Mass Spectrometry Products

### Fast GC-TOF



The AccuTOF-GC satisfies both demands for high speed responding to the fast GC method, and for obtaining accurate mass easily. Read the comprehensive article in [JEOL News](#).

### GCMate II



JEOL's GCMate II, a compact, double-focusing, reverse geometry magnetic sector mass spectrometer is explained [here](#).

### AccuTOF-DART



See [videos](#) of the AccuTOF-DART as it analyzes samples in open air.

### MStation



The [MStation™](#) is a fully-automated, high-performance, double-focusing magnetic sector mass spectrometer designed for both high-resolution GC/MS and LC/MS analyses. The MStation is capable of achieving a resolving power of 60,000 or greater at 10% valley.

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