Mass Media
JEOL USA, Inc.
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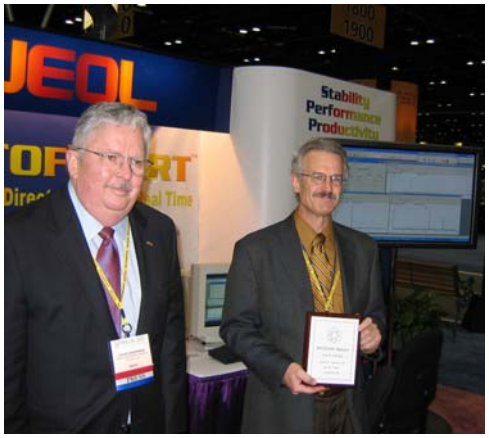

Dr. O. David Sparkman, University of the Pacific, presents Dr. Robert Cody with the Pittcon Editors' Gold Award for the DART

JEOL "DART" Wins Pittcon Editors' Gold Award for Best New Product

JEOL USA's newest mass spectrometry technology captured the Pittcon Editors' Gold Award for best new product at Pittcon 2005 (Orlando, Florida, February 28 – March 3). According to *Pittcon Show Daily*, "A very long consideration of 30 nominated instruments by 21 nominating editors resulted in a clear runaway for the top product shown here at Pittcon." The DART™ generated interest among show attendees and editors alike due to the unique technology and instant mass analysis capability demonstrated in an interactive exhibit on the show floor. Visitors to the JEOL booth were invited to analyze the chemical composition of everyday items, such as food, as well

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DART Revolutionizes Mass Spectrometry

Introducing a new technology from JEOL that revolutionizes mass spectrometry. A new ion source known as DART™ (Direct Analysis in Real Time) enables non-contact analysis of materials in open air, under ambient conditions, at ground potential. The DART makes it possible to directly detect chemicals on surfaces, in liquids, and in gases without the need for sample preparation, and without the use of radioactive components, solvent sprays, high voltage, or vacuum. DART preserves the integrity of the sample and provides real-time information, critical for screening or high throughput analyses during forensics investigations, homeland security operations, and toxicological examinations.

The DART ion source, when installed on the JEOL AccuTOF™ time-of-flight mass spectrometer, provides improved selectivity and accurate elemental composition assignment through exact mass measurements. During its development and subsequent beta site testing at the Edgewood Chemical Biological Center located at the U.S. Army Aberdeen Proving Grounds in Maryland, DART successfully sampled hundreds of chemicals, including chemical agents and their signatures, pharmaceutics, metabolites, peptides and oligosaccharides, synthetic organics, organometallics, drugs of abuse, explosives, and toxic industrial chemicals. These chemicals were detected on a variety of surfaces such as concrete, human skin, currency, airline boarding passes, fruits and vegetables, body fluids, cocktail glasses, and

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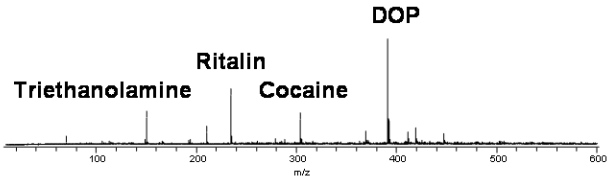


The new DART ion source for the AccuTOF mass spectrometer provides real time analysis without sample prep, and without the use of radioactive components, solvent sprays, high voltage, or vacuum.

DART Wins the Gold *(continued from page 1)*

as samples specific to their industries, including forensics and pharamaceuticals.

The DART was demonstrated by co-inventor Dr. Robert Cody, who noted that "The level of excitement was enormous. People who came to the booth expressed the feeling that the technology was going to revolutionize the whole mass spec industry.

"DART provides immediate answers for a wide variety of applications, from environmental disasters to clinical analyses," says Dr. Cody. "The potential for this new device is enormous and we're excited to finally be able to show it to the public." JEOL received its first commercial orders for the AccuTOF-DART on the opening day of the show.

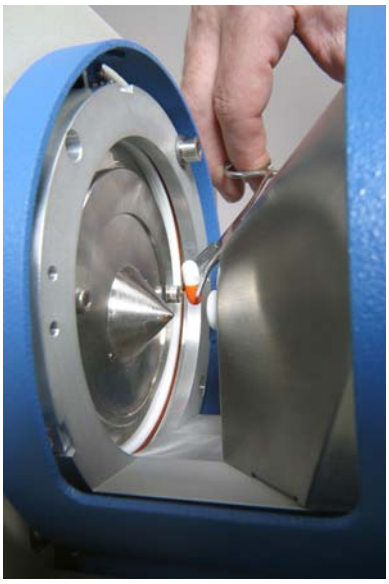
See Us at

ASMS
San Antonio, TX
June 5-9

ACS
Washington, D.C.
August 29-31

DART Revolutionizes MS *(continued from page 1)*

clothing. The composition of drug capsules and tablets was directly analyzed.



The DART is based on the reactions of excited-state species with reagent molecules and polar or non-polar analytes. It is free of the limitations of other atmospheric pressure ion sources, which require direct exposure of gaseous or vaporized liquid samples to elevated temperatures and electrical potentials, ultraviolet irradiation, laser radiation, or a high-velocity gas stream. DART does not alter the sample in any way, nor does it expose the user to a potentially harmful substance or dangerous situation.

DART is currently available for use on the AccuTOF mass spectrometer from JEOL. The high-resolution AccuTOF provides accurate mass measurements of trace components and is also available for either gas and liquid chromatography.

The AccuTOF-DART has been in continuous operation in two independent laboratories since the initial demonstration of the concept in the early spring of 2003. DART has detected a wide variety of chemical agents on various surfaces and detects toxic industrial chemicals faster than current methods. It has rapidly identified the composition of unknown drugs in tablet and capsule form, and it has instantly detected prescription drugs present in saliva and urine. So simple is the operation of the DART ion source and AccuTOF mass spectrometer that a cocktail glass can be held in front of the sampling orifice and the presence of the "date-rape" drug, GHB, can easily be detected. This is not possible using any other type of analysis.

For More Information

For a complimentary bound copy of the AccuTOF-DART Applications Notebook, contact your local sales representative or email ms@jeol.com, or visit www.jeol.com/ms/appsnotes.com

Development of the AccuTOF-DART Ion Source

After the initial development of a tuneable energy electron monochromator (TEEM), Dr. Jim Laramee, now of EAI Corporation (a GEO-CENTERS, Inc. company) and Dr. Robert Cody of JEOL USA, Inc. considered potential applications of an atmospheric-pressure thermal electron source. The source would extend the range of applications of the TEEM and provide a safe alternative to radioactive materials, such as nickel-63 or americium-241, used in chemical agent monitors (CAM) and toxic industrial chemical sensors.

Several designs were discussed and ion optics modeled. Following initial experiments with a prototype discharge apparatus, the gas stream from the discharge source was directed into the atmospheric pressure interface (API) of the JEOL time-of-flight mass spectrometer (AccuTOF) in early spring of 2003. An examination of the ions produced revealed that excited-state species were largely responsible for sample ionization.

Co-inventors of the DART™ Ion Source, Dr. James Laramee and Dr. Robert Cody

The source was found to be highly sensitive to trace-level vapors arising from activities far removed from the laboratory, such as an open pot of glue from building renovations. Other chemicals such as acetone, acetic acid, acetonitrile, pyridine and nitric acid could be detected from across the room by simply opening the bottle for a few hundred milliseconds. Because compounds could be desorbed and ionized directly from surfaces, it became apparent that this device was an extremely powerful atmospheric pressure ion source that could be combined with mass spectrometry or ion mobility spectrometry (IMS).

The value of this new ion source as a chemical agent detector was quickly realized and explored. DART has been undergoing method development under the sponsorship of Dr. H. Dupont Durst of the Edgewood Chemical Biological Center (ECBC) located at the U.S. Army Aberdeen Proving Grounds in Maryland since 2003. ECBC was able to capitalize on advanced testing of this emerging technology for the nation's chemical defense. DART is a Defense Threat Reduction Agency (DTRA) funding project under the Environmental Fate of Chemical Agents program.

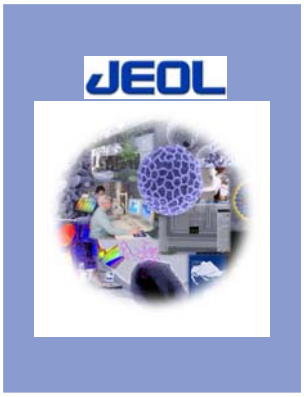
Just What Can You Do with a DART?

We've sampled just about everything, from saliva laced with raspberry candy to a necktie that was worn while strolling past a blasting site. By just breathing on the DART ion source, or placing an object in front of the "sniffer," we get results instantly and can identify traces of chemicals on all kinds of surfaces, in gases, and in liquids. We've checked the ingredients in a chocolate bar, and verified the composition of tablets and pills. And we've done it without solvents, sample prep, radiation, high voltage, or the need for vacuum (no plumbing to clean!).

For a copy of our most up-to-date applications notebook, or to join the JEOL DART hotline to get the latest applications information as we complete it, contact us at ms@jeol.com.

Want to Know More About JEOL?

To learn more about JEOL, request a copy of our new eight-page brochure that describes our products and services, as well as our more than 50 years of history in the fields of mass spectrometry, electron microscopes, and NMR. Contact us at www.jeolmarketing@jeol.com.



Visit Us at ASMS

Visit the JEOL booth in San Antonio, or come by our hospitality suite for dessert and coffee! Meet the co-inventor of the AccuTOF-DART and talk to us about your mass spec challenges for some fresh ideas.

June 5 – 9, 2005

Henry B. Gonzalez Convention Center, San Antonio, Texas

Enter a drawing to win a DELL Axim Handheld PC!

www.jeol.com -- JEOL Launches Global Website

You can still find our applications notes and mass spectrometry news online at www.jeol.com, but you'll see a few changes when you first enter our website. JEOL has now encompassed all of its worldwide locations under one main site. That means that when you visit www.jeol.com, you can read about JEOL and our global product offerings. **To link to JEOL USA's library of information, simply select your location -- USA, Canada, South America, or Central America -- and you'll have access to applications notes and the latest news in mass spectrometry. Or go directly to JEOLUSA.com.**

CONTACT MASS MEDIA -- Let us know your comments, change of address, or mailing preferences at jeolmarketing@jeol.com. We look forward to hearing from you.

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