Mass Media

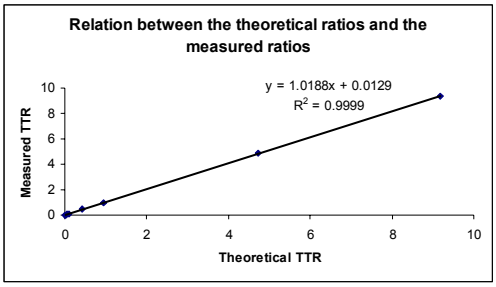
JEOL USA, Inc.

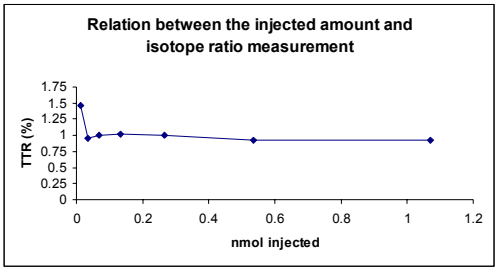
Vol. 5, No. 2 Summer 2003

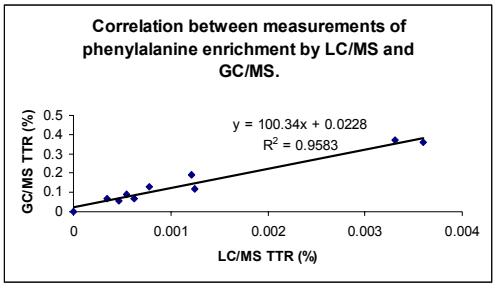
Isotope Ratio Enrichment Measurement

In contrast to conventional scanning mass spectrometers (e.g., quadrupole and magnetic sector mass spectrometers) that must scan one mass at a time, time-of-flight mass spectrometers (TOF-MS) detect ions simultaneously across the full mass range. This may reduce the effect of temporal variations in the ion source on the measured isotope ratios. A very accurate peak area measurement for all isotopomers can be achieved. However, the dynamic range is relatively low in most commercially available LC/TOF-MS systems with TDC (Time-to-Digital Converter) as a data acquisition system. The disadvantage of a narrow dynamic range hinders the applications for isotope ratio enrichment measurement.

Recently, JEOL introduced a new LC/TOF-MS system, AccuTOF™, which achieves a wide dynamic range by using an ADC (Analog-to-Digital Converter) instead of a conventional TDC as a data acquisition system. We used this system to measure phenylalanine isotope ratio enrichment. $^{13}C_6$-labeled phenylalanine standard was used to evaluate the sensitivity, reproducibility, and concentration dependency. A comparison between this method and the traditional GC/MS method was also made in rabbit skin protein samples after $^{2}H_5$-phenylalanine was infused. All standards and samples were injected into the LC/MS system directly without derivatization. The method is simple, rapid, and accurate and presents an attractive alternative to traditional GC/MS applications. ***www.jeol.com/ms/docs/ apps%20note%20phenylalanine.pdf***







JEOL Recognized for Service Commitment

For the third consecutive year, JEOL USA, Inc. has received the Omega Northface Award in recognition for its commitment to providing exemplary service and exceeding customer expectations. Through quarterly surveys of 150 JEOL customers, Omega Management Group computed JEOL's customer satisfaction score to be 4.0 or above out of a possible 5.0 in the categories of technical support, field service, account management, and training. JEOL was rated on product reliability, service response time, call center assistance, and service expertise.

JEOL's commitment to customer support is apparent in the way the organization is structured and managed. The organization is

(continued next page)

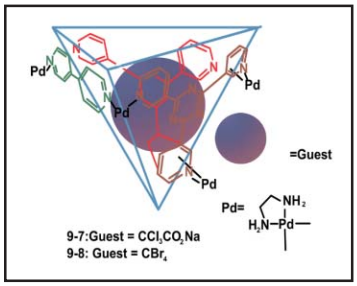
For More Information

For access to JEOL MS applications notes and extended abstracts, visit our web page at www.jeol.com/ms/ms.html.

See Us at
Fall ACS
September 8-10
New York City
Booth #413/415

New Electrospray Ionization Source

A new electrospray ionization source from JEOL makes it possible to use mass spectrometry in the study of weakly-bound, unstable structures such as supramolecular complexes and self-assembled nanostructures, DNA and proteins, DNA-drug interaction, and enzyme mimics. The ColdSpray™ source, based on technology pioneered by Prof. Kentaro Yamaguchi of Chiba University and developed in cooperation with JEOL, Ltd. (Akishima, Japan), combines new electrospray ionization technology with the AccuTOF™ LC/TOF-MS system. Use of the AccuTOF with ColdSpray is expected to lead to new insights into solution-phase structure that could previously only be detected with NMR.



www.jeol.com/ms/docs/coldspray.pdf

Advanced Data Processing Functions Added

Sierra Analytics has added support for JEOL's AccuTOF™ LC/TOF-MS data format to its mass spectrometry software tools. Now users can take full advantage of advanced data processing functions for homopolymer composition analysis and deconvolution.

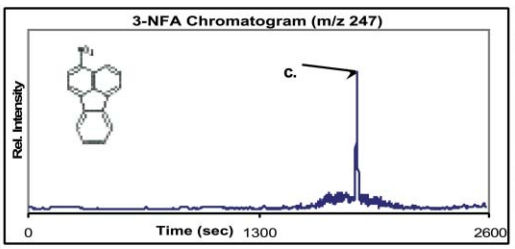
Using the new Polymerix™ software, scientists can specify a wide range of synthetic polymer processing functions for spectral data obtained with the AccuTOF, including analysis of continuum or centroided spectra, peak detection, baseline correction, processing in monoisotopic, chemical, or nominal mass mode, and spectral isotope correction.

Detecting Trace Levels in Complex Matrices

The JEOL Tuneable-Energy Electron Monochromator (TEEM™) is finding the proverbial needle in the haystack when it comes to detecting sub-ppb levels of explosives, environmental contaminants, chemicals associated with chemical warfare agents, and bacterial spores in samples of dirt, packing foam, and other common substances.

"The TEEM takes the guesswork out of trace level analysis," says Dr. Chip Cody of JEOL. "It makes a science out of what was previously an art. The electron monochromator is a new approach to an old technique – electron capture – which is sensitive, but lacks reproducibility. The TEEM forms negative ions without using a moderating gas and selectively ionizes the analyte, not the matrix."

A recent paper demonstrates how the TEEM identified minute traces of carcinogens in cigarette smoke.



Detection of nitrofluoranthene in cigarette smoke by using the JEOL TEEM™. Courtesy of John Dane, Crystal Havey, and Prof. Kent Voorhees of the Colorado School of Mines.

www.jeol.com/ms/docs/asmsposter2003a.pdf

Service Commitment

(continued)

distributed, not centralized. "Most companies moved away from this type of service years ago as a cost-cutting measure," said Patrick McGinley, Director of Service, who explained that "little by little, they're coming back to it. A distributed organization takes more management time and skill, but our customer satisfaction score is proving that there are benefits to this approach. We have carried forward an old-fashioned style of service commitment. When customers call JEOL, they can speak directly to a person, not voice mail, and they can expect outstanding responsiveness and expertise."

Connections

For our valued customers in Mississippi, Louisiana, and Arkansas, your contact for sales information is now Rae Ann Baldwin. Rae Ann has been with JEOL for five years, covering the southeastern states, and is looking forward to meeting customers in her new area. Please feel free to contact her with any questions about JEOL analytical instruments.

Contact JEOL USA, Inc.

Midwest and New England
Robert DiPasquale
978-536-2310/dipas@jeol.com

Southeast
Rae Ann Baldwin
978-536-2287/baldwin@jeol.com

Middle Atlantic States
Peter Paterson
732-254-7026/paterson@jeol.com

West Coast & Mountain States
Adrian Pike
303-297-1339/apike@jeol.com