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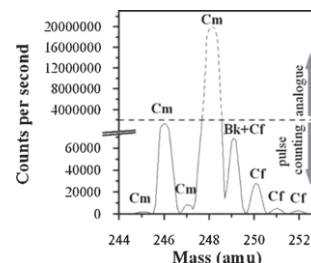
Review

101–107

Accurate determination of Curium and Californium isotopic ratios by inductively coupled plasma quadrupole mass spectrometry (ICP-QMS) in ^{248}Cm samples for transmutation studies

A. Gourgiotis, H. Isnard, M. Aubert, E. Dupont, I. AlMahamid, G. Tiang, L. Rao, W. Lukens, P. Cassette, S. Panebianco, A. Letourneau, F. Chartier

This work describes a quadrupole ICP-MS (ICP-QMS) analytical procedure for precise and accurate determination of the isotopic composition of Cm before sample irradiation and of Cm and Cf after sample irradiation.



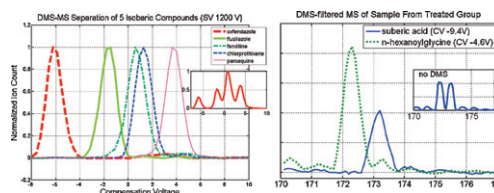
Regular articles

108–117

Detection of radiation-exposure biomarkers by differential mobility prefiltered mass spectrometry (DMS-MS)

Stephen L. Coy, Evgeny V. Krylov, Bradley B. Schneider, Thomas R. Covey, David J. Brenner, John B. Tyburski, Andrew D. Patterson, Kris W. Krausz, Albert J. Fornace, Erkinjon G. Nazarov

Technology to enable rapid screening for radiation exposure has been identified as an important need, and, as a part of a NIH/NIAD effort, metabolomic biomarkers for radiation exposure have recently been identified. To reduce the time necessary to detect and measure these biomarkers, differential mobility spectrometry–mass spectrometry (DMS-MS) systems have been developed and tested for performance on test mixtures and on bio-fluid samples. Among the results presented are the resolution of a mixtures of isobaric compounds (first figure below), separation of charge states of the same m/z , separation of isobaric biomarkers (citrate and isocitrate), and DMS-MS performance for small-molecule biomarkers for radiation exposure on a bio-fluid sample (second figure).

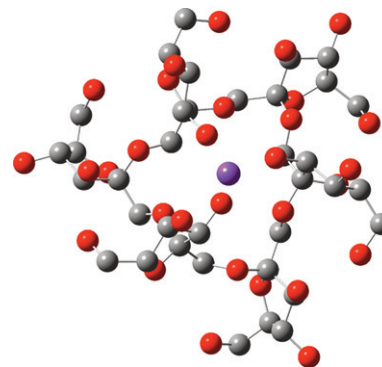


118–124

Study of complexation between cyclofructans and alkali metal cations by electrospray ionization mass spectrometry and density functional theory calculations

Chunlei Wang, Samuel H. Yang, Jianguang Wang, Peter Kroll, Kevin A. Schug, Daniel W. Armstrong

We study the solution and gas phase selectivity of cyclofructan for alkali metal cations by ESI-MS and DFT calculations.

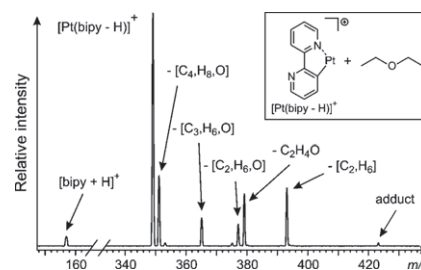


125–132

On the gas-phase decomposition of acyclic ethers mediated by “rollover” cyclometalated $[\text{Pt}(\text{bipy}-\text{H})]^+$ (bipy = 2,2'-bipyridine): A mechanistic study

Burkhard Butschke, Shadan Ghassemi Tabrizi, Helmut Schwarz

Mechanistic details of the ion/molecule reactions of cyclometalated $[\text{Pt}(\text{bipy}-\text{H})]^+$ with acyclic ethers were uncovered by deuterium-labeling experiments and the results are compared with those for analogous reactions of the corresponding thioethers.



133–139

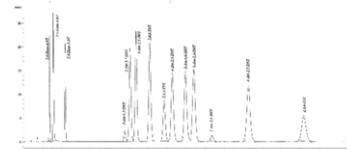
Identification and determination of trinitrotoluenes and their degradation products using liquid chromatography–electrospray ionization mass spectrometry

Jitka Bečanová, Zdeněk Friedl, Zdeněk Šimek

Optimized properties of analytical method based on RP-HPLC coupled with electrospray ionization tandem mass spectrometry were used for the separation and quantification of trinitrotoluenes and their degradation products.

Properties of HPLC-MS/MS identification and determination of TNTs and their cation derivatives in elution order. Capillary voltage 1500 V, fragmentor voltage 110 V and collision energy 10 eV.

Peak	Compound	R _t (min)	Quantifier MRM	Qualifier MRM
1	2,6-Dim-4-NIT	5.88	168/121	168/122
2	2,5-Dim-4-NIT	6.37	168/133	168/133
3	2,4-Dim-3-NIT	9.27	168/131	168/121
4	2,4-Dim-3-DNT	21.96	190/120	190/150
5	2,4-Dim-4-DNT	23.07	190/148	190/118
6	4-Dim-2,3-DNT	24.38	190/150	190/119
7	2,4,6-TNT	27.22	226/176	226/196
8	2,4,5-TNT	26.33	226/180	226/150
9	4-Dim-2,6-DNT	31.95	190/119	190/149
10	2,4m-4,6-DNT	34.72	190/136	190/150
11	3-Dim-2,4-DNT	40.12	190/136	190/121
12	4-Dim-2,5-DNT	45.85	190/136	190/149
13	2,3,4-TNT	48.52	226/105	226/90



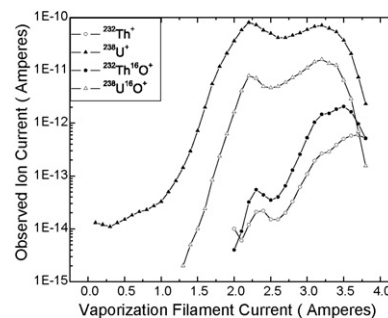
HPLC separation of tested compounds. Column: Acclaim Expressions RT, 250 mm x 4.6 mm I.D., 5 µm; mobile phase: methanol/water (45/55); flow rate: 1 mL/min and mobile phase temperature: 32°C; UV detection 234 nm.

140–144

Studies on the formation of atomic and molecular ions of uranium and thorium in thermal ionization mass spectrometry

D. Alamelu, S. Jagadish Kumar, A.R. Parab, A.K. Choudhary, S.K. Aggarwal

Atomic and oxide ions' formation in uranium and thorium, using their synthetic mixtures and employing thermal ionization mass spectrometry, for determination of U-232 are presented.

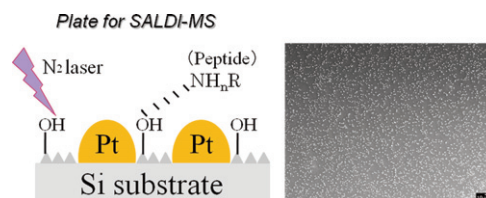


145–151

Effectiveness of platinum particle deposition on silicon surfaces for surface-assisted laser desorption/ionization mass spectrometry of peptides

Teruyuki Yao, Hideya Kawasaki, Takehiro Watanabe, Ryuichi Arakawa

We found that the proton adduct from of peptides was dominant in SALDI mass spectra using a galvanic deposition Pt on bare silicon, in contrast to the use of Pd on silicon.

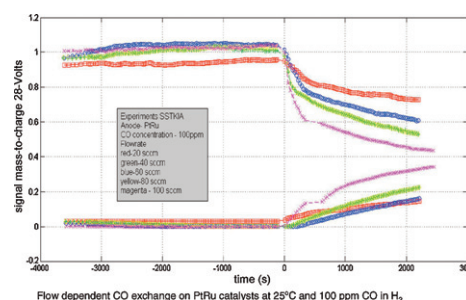


152–158

SSITKA investigation of CO and H₂ competitive adsorption at PEM fuel cell anode catalysts

J.C. Davies, G. Tsotridis, M. Varlam, S. Valkiers, M. Berglund, P. Taylor

Steady-state isotopic transient kinetic analysis (SSITKA) experiments have been performed using the isotopic exchange between ¹³CO and ¹²CO to investigate the competitive adsorption of hydrogen and CO on commercial Pt and PtRu catalysts. PtRu alloys are known to be more tolerant fuel cell anode catalysts than platinum, in the instance where the hydrogen fuel contains ppm levels of CO. It has been recently demonstrated that there is a dynamic equilibrium between CO adsorbed on platinum or platinum/ruthenium nano-particles and CO in the gas phase. In this paper, the effect of the competitive adsorption between hydrogen and CO on this equilibrium has been demonstrated. The presented methodology using the SSITKA technique has demonstrated a novel way to measure these rate constants, and the implications of these measurements on the mechanistic understanding of the anode reaction are presented.

Flow dependent CO exchange on PtRu catalysts at 25°C and 100 ppm CO in H₂**Erratum**

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Erratum to “Coordination chemistry of nickel(II) nitrate with superbasic guanidines as studied by electrospray mass spectrometry” [Int. J. Mass Spectrom. 290 (1) (2009) 22–31]

Zoran Glasovac, Vjekoslav Štrukil, Mirjana Eckert-Maksić,
Detlef Schroder, Maria Schlangen, Helmut Schwarz

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