Magnetic sector mass spectrometer

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How does a magnetic sector mass spectrometer work. Define magnetic sector mass spectrometer. Magnetic sector mass spectrometer 中文. Single-focusing magnetic sector mass spectrometer. Briefly describe how a magnetic sector mass spectrometer works. Double focusing magnetic sector mass spectrometer. Magnetic sector mass spectrometer equation. Magnetic sector inductively coupled plasma mass spectrometer.

schema of a magnetic mass spectrometer-sector ion optics in the ion source chamber of a mass spectrometer extract and accelerates ions to a kinetic energy given by: K.E. = 0.5 mv2 = ev where m is the mass of the ion, v is the speed, and is the charge of the ion and v is the applied voltage of ion optics. ions enter the air pipe between the poles of a magnet and are deviated from the magnetic field, h. only ions of mass-load ratio that have centrifugal forces and equal centripetal pass through the air pipe: mv2 / r = centrifugal hev = centripetal forces. where r is the curvature radius of the ion path, and is the charge, m is the mass, and v is the speed of the molecule. r = mv / eh this equation shows that the m/e of ions reaching the detector can be varied by changing both h and v. instrumentation single focusing analyzers: you can use a circular path of 180, 90 or 60 degrees. the various forces that influence the particle the separate ions with different mass relations. Double focus analyzers: an electrostatic analyzer is added to this type of instrument to separate particles with the difference in kinetic energies. magnetic field. The first mass spectrometer, built by J.J. thompson in 1897, used a magnet to measure the m/z value of an electron. the instruments of the magnetic field have evolved from this same concept. industry tools have greater resolution and greater mass range than quadruple instruments, but require larger vacuum pumps and often slower. the typical mass range is at 5000 m/z, but this can be extended to 30,000 m/z. Magnetic industry tools are often used in series with an electrical industry, described below, for high resolution mass spectrometry experiments and tandem. magnetic field instruments (Figure 10) separate ions in a magnetic field based on the moment and the charge of the ion. ions are accelerated by the source region in the magnetic field from an electric field of 1 to 10 kv. this acceleration is significantly greater than the typical 100 v acceleration for a square instrument. Since ions are loaded, while moving through the magnetic field, the magnetic field folds the ion beam in an arc. this is the same principle that causes electric motors to turn. the radius of this arc (r) depends on the moment of the ion (), the charge of the ion (c) and the force of the magnetic field (b.) the ions with greater momentum will follow an arc with a wider radius. This separates ions according to their momentum, so magnetic sectors are often called momentum analyzers. the moment of the ion is the product of the mass (m) and speed (v.) the charge of the ion is the product of the ion charge number (z) and the charge of an electron (e.)these variables in eq. 1 yields: The velocity of an ion is determined by the acceleration voltage in the region of origin (V) and by the mass ratio (m/z) of the ion. Equation 2 fittings to giveM / Z ION Transmitted for a certain radius, magnetic field and acceleration voltage such as: only an M / Z value will satisfy the equation 3 for a specific radius, magnetic field and acceleration voltage. Other M / Z ions travel in a different radius in the magnetic sector. The tools in the oldest magnetic sector use a photographic plate to simultaneously detect ions to different rays. Since every M / Z has a different radius, they hit the photographic plate in a different position. Modern instruments have a series of cracks in a fixed radius to transmit a single M / Z to the detector. The mass spectrum is scanned by changing the magnetic field or acceleration voltage to transmit different M / Z ions. Some new tools use multi-channel diodes array detectors to simultaneously detect ions on a range of M / Z values. SF_HPLC â € ¢ Team TFS 1495 0 comments 5 Kudos by Jeff-Rohrer â € ¢ Team TFS 703 View 1 comments 4 Kudos of SF_HPLC â € ¢ Team TFS 372 3 Kudos The official websites use the .gov website a .gov It belongs to an official government organization in the United States. Secure .gov websites use https to lock (a blocked blockade) or https: // means that you have quietly connected to the .gov website. Share sensitive information only on official and secure websites. The mass spectrometry of secondary ions of the magnetic sector (sims) generates isotopic and elemental information from solid surfaces with proflation capacity of depth to measure the concentration of isotopes and elements as a depth function in the film. The Magnetic Sells SIMS uses high-energy â € œprimariaâ € to bomb the surface and release â € œSecondariâ € very similar in Tof-Sims, but the ion beam is continuously managed to maximize the duty cycle . The high dose of ion is preferred for profound profiling, where the concentration of elements and isotopes are determined as a depth function. This is one of the few techniques in which the resolution of the depth can approach 1 Nm in inorganic films. The separation of secondary mass ions takes place through a double focus lens, first through an electrostatic sector to filter ions for energy, then through a magnetic sector to filter ions by mass. The quantification is obtained by applying factors of relative sensitivity (determined by standard samples) to convert secondary ion intensities to concentrations. Precision and precision higher than 1% can be achieved with detection limits in Part-per-million (PPM) to parts-per-million (PPB) for most elements in the periodic table. Figure A. schematic of electrostatic sectors (a) magnetic and (b) magnetic which are used for the separation of mass ions. The radius of curvature within the electrostatic sector only depends on the force electric field and ion energy (independent mass), while the magnetic sector separates ions based on energy and mass. The detector must be “positioned” depending on the mass of the detected ion. Creating a test model for effective automated particle mappingOften, the characterization of the dimensions, morphology and elementary composition of thousands of particles and aerosols become necessary. Automation allows the collection of particle data with certain characteristics, such as size, shape, composition and/or isotopic signature. The SIMS tool that operates in the ion SIMS imaging mode has the sensitivity and resolution of images to accurately characterize these particles. However, this ability to characterize the particles depends strongly on the user configuration of the instrument, such as the correct calibration of the image and the configuration of the optimized tool, whose failure can lead to unexpected results regarding the particles. A standardized test model (Figure B) that contains features with known formats, shapes, height and composition is currently being produced so that the instruments around the world equipped with the automated particle mapping capacity can be calibrated to produce the same results. Figure B. A SIMS tool that operates in ion imaging mode is used for the image of a test model manufactured to evaluate the performance of the instrument. The individual particles identified during the screening process can be subsequently relocated and analyzed with greater precision, and the software has been developed to automate this process. The sample consists of a collection of Ni characteristics of various sizes on a substrate It is distributed on 500 µm x 500 µm, repeating in an array 20 x 20. The test sample can be used to investigate spatial resolution limits for particle detection, evaluate algorithms for the identification of individual particles, and examine the limits of the calculations of the isotopic ratio from small particles Nanoparticle Detection in Act The release of nanoparticles in the environment presents a potential health hazard that is not yet well understood. Sensitive measuring instruments are required for risk assessment and regulatory decision-making. The depth profiling of the SIMS image has been used to monitor and display the absorption of Au nanoparticles by Caenorhabditis elegans (C. elegans), a simple multicellular organism useful as a model in environmental toxicology studies. The high spatial resolution and sensitivity of SIMS makes it a powerful tool for in-situ study of nanoparticles absorption at concentrations of environmental importance. Figure C. Optical micrograph showing the size of the body in relation to the size of the analysis area, as seen by the square crater. The corresponding secondary ion images show the distribution of Au- and CsC4- in two-dimensional space within the organism. Created on 24 July 2020, Updated on 31 July 2020and batch measurement method of Hg-196 concentration using a DOEpatents Grossman mass spectrometer, Mark W.; Evans, Roger 1991-01 A sample manifold and method of its use has been developed so that mercury quantities can be analyzed spectroscopically to determine the .sup.196 Hg concentration less than 0.02 percent atomic. Use of natural mercury as standard, accuracy of .+-.0.002 atomicIt can be obtained. The mass spectrometer preferably used is a commercially available GC / MS manufactured by Hewlett Packard. A new sample sample is contained inside a oven that allows the control of the HG flow rate in the MS. Another part of the collector connects to an auxiliary pumping system that facilitates rapid cleaning of the residual HG in the collector. The sample cycle time is about 1 hour. High performance multiple flow time mass spectrometers for research with exotic nuclei and for the analytical mass spectrometry of NASA NASA data system data system (ADS) PlaÃƒÂ¿, Wolfgang R.; Dickel, thyme; Ayet San Andres, Samuel; Ebert, Jens; Greiner, Florian; Hornung, Christine; JESCH, CHRISTIAN; Lang, Johannes; Lippert, Wayne; Maioros, Tamas; Short, Devin; Geissel, Hans; Haettner, Emma; Reiter, Moritz p.; Rink, Ann-Kathrin; Scheidenberger, Christoph; Yavor, Mikhail I. 2015-11-01 A class of mass spectrometers of multiple reflection time (MR-Tof-MS) (MR-TOF-MS) was developed for research with exotic nuclei currently and future structures Accelerator such as GSI and Fiera (Darmstadt) and Triumf (Vancouver). They can perform extremely accurate mass measurements of exotic nuclei, serve as high resolution and high capacity mass separators and be used as diagnostic devices to monitor the production, separation and handling of exotic nuclei. Furthermore, high-resolution MR-TOF-MS has been developed for in situ applications in the analytical mass spectrometry that goes from environmental research to medicine. Recently, the MR-Tof-MS for GSI and the fair was further developed. A new ion radius switch based on RF quadruple rods has been developed which allows the fusion and division of ion rays and ion transport in different directions. Efficiently connects a source of test and reference ions and an auxiliary system detector. Due to an increase in kinetic ion energy in the MR-Tof-MS flight analyzer, a given mass resolution power is now reached less than the flight half. Conversely, depending on the time of flight, mass resolving power was increased by a factor of more than two. Magnetic properties Comparison of mass standards between seventeen national metrology institutes NASA Astrophysical data system (ADS) Becerra, L. or.; Berry, J ;; Chang, c. s.; Chapman, G. d.; Chung, J. W.; Davis, R. S; Field, me; Fuchs, P; Jacobsson, U; Lee, S. M.; Loyza, V. M.; MADEC, T.; Matilla, c.; OOIWA, A.; Scholz, f.; Sutton, c.; Van Andel, I. 2006-10-01 The omnipresent technology of compensation of the magnetic force of gravitational forces that acts on artifacts on the pots of modern balances and comparators have brought with the problem of magnetic loss from the compensation coils with itself. of magnetic fields, as well as those due to the surrounding balance, can interact with the artifact whose mass must be determined, causing incorrect observations of values. For this reason and to comply with legislationIt has become important for mass metrologists evaluate magnetic susceptibility and any remanic magnetization that mass standards can possess. This document describes a comparison between measurements of these parameters between seventeen national metrology institutions. The measurements are carried out on three transfer standards whose magnetic parameters span the interval that could be found in mass standard in stainless steel. Mass spectrometer with electron source to reduce the lighting effects of the DOEPATENTS HOUK sample space, Robert S.; Praphaairaksit, Narong 2003-10-14 A mass spectrometer includes a source of ions that generates a radius comprising positive ions, a sampling interface that extracts a portion of the radius from the source of ions to form a radius of samples traveling along a route and has an excess of positive ions on at least part of the path, causing these effects of room charge within the sample radius due to the access of positive ions within the sample radius, an electron source that adds electrons to the sample radius per Reduce the space charge repulsion between the positive ions within the sample radius, thus reducing the space charge effects within the sample radius and producing a sampling radius that has reduced space charge effects and a mass analyzer that analyzes The sample ray that has reduced space charge effects. Design of a magnetic shielding system for flying time enhanced diagnostics neutroptometer of neutrons to advanced experimental superconductor tokamak scitech connect which, z. q.; Chen, Z. J.; Xie, XF 2014-11-15 The novel neutron spectrometer (advanced flight diagnostic time), comprising 90 fotoMultiplier single pipes coupled with 85 plastic sparkling detectors through light guides, has been built and installed with a tokamak superconductor Advanced experimental. A dedicated magnetic shielding system was built for a tofed and is designed to ensure the normal operation of the photomultiplier tubes in the stray magnetic field that loses from the tokamak device. Experimental measurements and numerical simulations performed use the finished element method are combined to optimize the design of the magnetic shielding system. The system allows detectors to function properly in a field of external magnetic fields of 200 g.Ã‚Â «the lower chemical composition measurements of the atmosphere of Jupiter with the mass spectrometer of Galileo probes Spectrometer NASA technical reports Server (NTRS) Niemann, H. B.; Atreya, S. K; Carignan, G. R.; DonaHue, T. M.; Haberman, J. A.; Harpold, D. N.; Hartle, R. and.; Hunten, D. M.; Kasprazak, W. T.; Mahaffy, P. R.; 1998-01-01 The Galileo probe has entered the atmosphere of Jupiter on 7 December 1995. of the chemical and isotopic composition of the atmosphere jacket were obtained from the mass spectrometer during the descent in the pressure region from 0.5 to 21 bar during a period of about 1 hour. Sampling was one of the atmospheric gases introduced directly in the source of mass mass ions Through capillaries or gas losses, which were chemically developed to improve the sensitivity of the measure to draw noble species or gases. The analysis of this data set continues to be refined based on the support of laboratory studies on an engineering unit. The mixing relationships of the main constituents of the hydrogen and helium atmosphere were determined, in addition to mixing relationships or higher limits for different species less abundant, including: methane, water, ammonia, ethylene, ethylene, propane, hydrogen sulfide, neon, Argon, Krypton and Xenon. The analysis also suggests the presence of traces of another 3 and 4 carbon hydrocarbons, or carbon and nitrogen containing species, phosphine, hydrogen chloride, and benzene. The data set also allows you to set higher limits for many species of interest that have not been detected. The isotope reports were measured for 3he / 4he, d / h, 13c / 12c, 20ne / 22ne, 38ar / 36ar and for isotopes of KR and XE. Measurements of chemical composition of the atmosphere of Jupiter with the mass spectrometer of the Galileo probe. PubMed Niemann, H B; Atreya, s k; Carignan, G R; Donahue, T M; Haberman, J A; Harpold, D N; Hartle, R and; Hunten, d m; Kasprzak, W T; Mahaffy, P R; Owen, T C; Spencer, NW 1998-01 The Galileo probe entered the atmosphere of Jupiter on 7 December 1995. The measurements of the chemical and isotopic composition of the Giovani atmosphere were obtained from the mass spectrometer during the descent in the pressure region from 0.5 to 21 bars over a period of approximately 1 hour. The sampling was of atmospheric gases directly introduced into the ionic source of the mass spectrometer through capillaries or gas losses, which had been chemically developed to improve the sensitivity of the measure to draw noble species or gases. The analysis of this data set continues to be refined based on the support of laboratory studies on an engineering unit. The mixing relationships of the main constituents of the hydrogen and helium atmosphere were determined, in addition to mixing relationships or higher limits for different species less abundant, including: methane, water, ammonia, ethylene, ethylene, propane, hydrogen sulfide, neon, Argon, Krypton and Xenon. The analysis also suggests the presence of traces of another 3 and 4 carbon hydrocarbons, or carbon and nitrogen containing species, phosphine, hydrogen chloride, and benzene. The data set also allows you to set higher limits for many species of interest that have not been detected. Isotopic reports were measured for 3he / 4he, d / h, 13c, 20ne / 22ne, 38ar / 36ar and for KR and XE isotopes. Chemical composition measurements of the atmosphere of Jupiter with the mass spectrum of the Galileonian probe NASA Astrophysics Data System (ADS) Niemann, H. B.; Atreya, S. K.; Car. of the chemical and isotopic composition of the atmosphere Jovian were obtained from the mass spectrometer during the descent into the pressure region from 0.5 to 21 bar during a period of about 1 hour. The sampling was of atmospheric gas directly introduced into the ion source of the mass spectrometer through capillary or gas leaks, which had been chemically processed to improve the sensitivity of the measurement to trace noble species or gases. The analysis of this dataset continues to be refined based on the support of laboratory studies on an engineering unit. The mixing ratios of the main constituents of the hydrogen and helium atmosphere were determined, in addition to mixing ratios or higher limits for several less abundant species including: methane, water, ammonia, ethane, ethylene, propane, hydrogen sulphurate, neon, argon, krypton and xenon. The analysis also suggests the presence of traces of other 3 and 4 carbon hydrocarbons, or carbon and nitrogen containing species, phosphine, hydrogen chloride, and benzene. The data set also allows you to set higher limits for many species of interest that have not been detected. The isotope ratios were measured for ^3He/^4He, D/H, ^13C/^12C, ^20Ne/^22Ne, ^38Ar/^36 Ar mg and for isotopes of both Kr and Xe. Survey of soil samples Luna-20, using a mass spectrometer with a source of spark ion NASA Technical Reports Server (NTRS) Hubbard, N. J.; Ramendik, G. I.; Gronskaia, S. I.; Gubina, I.; Gushchin, V. N. 1979-01 It shows that four parts of the Lunar Moon-20 plateau sample differ in their chemical composition. Automated peak/crybration identification procedure for high-dimensional protein measurements from mass spectrometers. PubMed Yasui, Yutaka; McLerran, Dale; Adam, Bao-Ling; Winget, Marcy; Thornquist, Mark; Feng, Ziding 2003-01 The discovery of "signature" protein profiles that distinguish disease states (for example, malignant, benign and normal) is a key step towards the translation of recent advances in proteomic technologies in clinical utilities. The data of proteins generated by mass spectrometers are, however, large and have complex characteristics due to complexity both in biological samples and in interfering biochemical/physical processes of the measurement procedure. Making sense to such complex high-dimensional data is challenging and requires the use of a systematic data analytics strategy. Here we propose a data processing strategy for two major issues in the analysis of such proteomic data generated bymass: (1) Separation of the "signs" proteins from the "noise" background in the measurements of the protein intensity and (2) Calibration of mass measurements / protein charge on samples. We illustrate the Problems and the utility of the proposed strategy using data from a project for discovery biomarca of prostate cancer as an example. Electronic two-screens spectrometer for accelerated electron laser field rays. PubMed Soloviev, a; Starodubtsev, M V; BURDONOV, K F; Kostyukov, yu; Nerush, and N; Shaykin, a; Khazanov, and at 2011-04-01 The electron rays of acceleration of the laser field can essentially deviate from the axis of the system, which greatly distinguishes them from the rays of conventional accelerators. In the case of energy measurements by means of a permanent magnet electron spectrometer, the deviation angle can affect accuracy, especially for high energies. A two-screensed single-screens spectrometer is considered which correctly allows the variations in the entry angle. The design of the spectrometer improves the accuracy of measuring the bundles of strict electrons significantly than a screen spectrometer with analog magnetic field, angular size and acceptance. Â © 2011 American Institute of Physics Developing at Vacuum Electrospray Source to Implement Efficient Atmospheric Sampling for Miniature Ion Trap Mass Spectrometer. PubMed Yu, quan; Zhang, Qian; Lu, Xinqiong; Qian, Xiang; Ni ... Kai; Wang, Xiaohao 2017-12-05 The performance of a miniature mass spectrometer in atmospheric analysis are closely linked to the design of its sampling system. In this study, a simplified vacuum ionization ionization (Vesi) was developed based on a combination of different techniques, including the discontinuous atmospheric pressure interface, direct capillary sampling and pneumatic injection electrospray. The pulsed air has been used as a vital factor to facilitate the operation of placing placement in the vacuum chamber. This vessel can be used as an effective atmospheric sampling interface when coupled with a straight miniature (RIT) mass spectrometer. The developed VESI-RIT instrument allows a regular ESI of the liquid, and its qualitative and quantitative capacities have been characterized by the use of various samples of solution. A detection limit of 8 ppb could be reached for arginine in a methanol solution. Furthermore, the ionization extracted from electrosprees of organic compounds can be implemented using the same vessel device, until the gas analytes are injected with the pulsed auxiliary air. This methodology can extend the use of the technique proposed for rapid and online analysis of gaseous and volatile samples. Experimental characterization of secular frequency scanning in Ion Trap Mass Spectrometers NASA Astrophysics Data System (ADS) Snyder, Dalton T.; Puliam, Christopher J.; Wiley, Joshua S.; Duncan, Jason; Cooks, R. Graham The secular frequency scanning is implemented and characterized by using both a bench-top linear trap and a miniature rectilinea ion trap mass spectrometer. Tetraalkylammonium ion separation and those from a mass calibration mixture and a mixture of pesticides is With flagship widths approaching the resolution of the units for optimized conditions using the Ionian trap. The effects on the spectra of the operating parameters of the ion trap, including wavelength width, scanning direction, scanning and pressure rate are scanned, and black holes peaks corresponding to non-linear resonance points (higher order range) They are investigated. Reverse frequency sweeps (mass increased) on the mini 12 are shown to lead to a significantly higher ionic expulsion efficiency and a higher resolution compared to forward frequency sweeps that decrement mass. This result is represented by the asymmetry in the absorption profiles of ionic energy as a function of AC frequency and movement of the secular ion frequency to higher width in the trap due to higher order fields. We have also discovered that the use of superior AC amplifications advanced frequency sweeps biased ions towards ejection at parametric resonance points of higher order, despite the use of excitement only to dipolar. The higher ac amplities also increase peak width and decrease the sensitivity to be forward and in reverse. Greater sensitivity and resolution were obtained at higher pressures in the secular frequency scan, in contrast to conventional resonance scans, which showed the trend opposite in the resolution on the mini 12. The mass interval is indicated to be naturally extended In the secular frequency scan when expelling ions sweeping the AC waveform through low frequencies, a method that is similar, but probably higher, to the most useless method of mass range extension using low q resonance expulsion. Experimental characterization of secular frequency scan in the mass spectrometers of ion trap. PubMed Snyder, Dalton T; Puliam, Christopher J; Wiley, Joshua S; Duncan, Jason; Cooks, R Graham 2016-07-01 The secular frequency scanning is implemented and characterized by using both a bench-top-bench ion trap and a miniature rectilinea ion trap. The separation of tetraalkylammonium ions and those from a mass calibration mixture and a mixture of pesticides is demonstrated with peak widths approaching the resolution of the units for optimized conditions using the bench ion trap. The effects on the spectra of the operating parameters of the ion trap, including wavelength width, scanning direction, scanning and pressure rate are scanned, and black holes peaks corresponding to non-linear resonance points (higher order range) They are investigated. Reverse frequency swepts (increase in mass) on the mini 12 are shown to bring to one Significantly higher ionic expulsion and higher resolution compared to forward frequency sweeps that decrement mass. This result is represented by the asymmetry in the absorption profiles of ionic energy as a function of AC frequency and movement of the secular ion frequency to higher width in the trap due to higher order fields. We have also discovered that the use of superior AC amplifications advanced frequency sweeps biased ions towards ejection at parametric resonance points of higher order, despite the use of excitement only to dipolar. Dipolate. BC amplitudins also increase maximum width and decrease sensitivity in forward and forward sweepings. Greater sensitivity and resolution were obtained with higher trap pressures in the scan of the centuries-old frequency, in contrast with the expulsion requirements of conventional resonance, which showed the opposite trend of the resolution on the mini 12. is demonstrated naturally extended in scanning of the Secular frequency during expulsion the ions by opening the AC waveform through the low frequencies, a similar method, but probably higher, to the most usual method of extension of the mass range using the maximum q. Resonance explosion. Graphic extract is ... TO. Association of the structure of the magnetic sector Corotation with Jupiter Decameter-Wave Radio Emissions NASA Technical Reports NASA Server (NTRS) Barrow, CH 1979-01-01 CHREE (Overlapping era) Analysis of the decameter-wave Radio Issue of the new Thieman (1979) Show catalog Highly significant correlation with the solar activity indicated by the Geomagnetic AP Index. The correlation effects can be explained in terms of coretant interplanetary magnetic sector functionality. Sometimes the solar wind speed is relatively low, from about 300 to 350 km / s, a border of the sector can meet the Earth and Jupiter almost simultaneously during the period immediately before the opposition. After the opposition, this normally won't occur because the necessary solar wind speeds are too low. The related effects are very strengthened for the three apparitions of 1962-1964 during which a relatively stable and long-lasting sector was present. CHREE analyzes for this period indicate periodicity, approximately half of the solar rotation period, in the data of Jupiter. Sounding mass spectrometer of the Turbopausal region on commercial vehicles NASA astrophysical data system (ADS) Thurairajah, b.; Bailey, S. M.; Syrstad, E. A.; Fish, C. S; Siskind, D. e.; Russell, J. M. 2013-12-01 The TurboPausal region near 100 km remains one of the most scarce but crucial regions of the upper atmosphere. In the vicinity of this altitude, the atmosphere reaches its lowest temperature and changes from being well mixed to be in diffusive equilibrium. Dynamic energy in the form of tides, as well as gravity and planetary waves are propagated by the lower atmosphere up to the ionosphere and thermosphere. Some reactive energy and chemical species are transported throughout the turboopause to lower the altitudes in which the impact is significant. There is a significant deficiency of composition observations near the turboopause. A few measurement techniques work well at this altitude, and it is too low for satellite orbits. Species incredibly and With relatively large plenty of o2, or, and CO2 are all poorly understood in these attitudes. While there are several experiments measuring the temperature, the uncertainties in temperature measurements are great because the techniques used are based on the knowledge of CO2 or sometimes O2. The lack of The information thus hinders such observations that occur near the turbulence and mesopause and leaves us with a poor overall understanding of this region of altitude. Soon entering a new era in the exploration of space. Routine visits to the region of 100 km from commercial vehicles are on the verge of becoming a reality. Relevant organizations have expressed their will and even enthusiasm to include scientific instruments with their tourism and related business objectives. We provide an important step forward in understanding the region of turbulence by developing a mass spectrometer that can manifest itself on these commercial vehicles. This system could finally result in the daily sound of the turbopause region and greatly expand the measurement database there. Our suggested tool is a cryogenic time mass spectrometer. This technique has heritage, and our Huygens gas chromatograph mass spectrometer from TITAN NASA Report Technical Reports Server (NTRS) Niemann, Hasso 2008-01-01 The Huygens probe performed a successful entry, descent and impact on the Titan's sacturnal moon on January 14, 2005. The instrument Gas Chromatograph Mass Speerometer (GCMS) has conducted isotopic and compositional measures throughout the expiry of two and half an hour from 146 km of altitude, and on the surface for 69 minutes until the signal loss of the orbiting Cassini. The GCMS has incorporated a quadrupole mass filter with a secondary electronic multiplier detection system. The gas sampling system provided continuous atmospheric composition measurements and batch sampling through three gas chromatographic columns (GC), a chemical scrubber and a hydrocarbon enrichment cell. GCMS gas input was heated to prevent condensation, and evaporate the birds from the surface after impact. The GCMS data products included altitude profiles of the main atmospheric constituents Dinotrogen (N2) and methane (CH4), ITOTopE Ratios of N-14 / N-15, C-12 / C-13 and D / H, fractions of Argon radiogenic mole (AR-40) and Primordial Argon AR-36) and higher limits on the fractions of the Neon mole, Krypton The measurements of the surface confirmed the presence of ethane (C2H6) and cyanogen (C2N2). Subsequent data products include the instrument's response to the C2N2, C2H6, acetylene (C2H2) and carbon dioxide (CO2). The latest results include benzene detection (C6H6) and molecular hydrogen height profiles (H2). A number of other trace species have also been identified by evaporating from the surface using GCMS data.POTONO POTONO COMPATTO NASA Tonokura, Kenichi; Kanno, Nozomu; Yamamoto, Yukio; Yamada, Hiroyuki 2010-02-01 We have developed a compact-time mass spectrometer based on the laser based on single photons (SPI-TOF-MS) for online monitoring of photonsOrganic species. To obtain the mass spectrum, we use a free SPI technique for almost fragmentation with ultraviolet ultraviolet ultraviolet laser pulses from 10.5 EV (118 Nm) generated by the triplication of the frequency of the third harmonious of a nd: yag laser. The instrument can be used in a linear toof-ms mode or in mode tof-ms reflectron in coaxial design. We have designed ionic optics to optimize the sensitivity of detection and mass resolution. For data acquisition, the instrument is controlled using the LABVIEW control software. The total power requirement for the suction unit, the control electronics unit, ion optics and the detection system is about 100 W. We reach a detection limit of parts per billion volume (PPBV) For the analysis of online track of different organic compounds. A mass resolution of 800 to about 100 AMU is obtained for the Reflectron TOF-MS mode in a 0.35 m long instrument. The application of the online monitoring of the diesel engine is demonstrated. A multiple time mass spectrometer with flight orbit based on low energy electrostatic storage storage (announcements) System Sullivan, M. R.; Spanjers, T. L.; Thorn, P. A.; Reddish, T. j.; Hammond, P. 2012-11-01 The results are presented for an electrostatic storage ring, consisting of two hemispherical deflector analyzers (HDA) connected by two separate series of cylindrical lenses, used as a mass flight time spectrometer. Based on the results of the simulations of charged particles and formal matrix models, the ion storage ring is able to function with more stable orbits, both for single ions and multipliceable loads simultaneously. Caprice98: a balloon Magnetic spectrometer transmitted to study the antimatter cosmic radius and composition at different atmospheric depth NASA Astrophysics data system (ADS) Ambrola, M. L.; Barbiellini, g.; Bartaluccci, s.; Basini, g.; Bellotti, R ;; Bergstroem, d.; Bocciolini, m; Boezio, m; Bravar, U; Cafagna, F.; Carlson, P; Cottage, m; Castellano, M; CIACIO, F.; Circella, m; de march, c.; De Pascale, M. p.; Finets, n.; Franca, T.; Hof, m; Kremer, J ;; Menn, W.; Mitchell, J. W.; Morselli, A.; Ormes, J. F.; Papini, p; Perego, A.; Piccardi, s ;; PICOZZA, P; Curly, m ;; Schiavon, p.; Simon, m; Sporfaces, R.; Spillantini, P; Stephens, S. A.; Stochaj, S. J.; Streitmatter, R. e.; Suffert, m; Vacci, A.; Weber, n.; Zampa, No. 1999-08-01 Caprice98 It is a magnetic superconductor spectrometer built by the collaboration of the wizard. It was launched by ft. Sumner, NM, USA on May 28, 1998. For the first time a rich gas detector was flown together with an electromagnetic silicon calorber. The configuration of the instrument included a flight detector time and a stack of the chamber of drift, They have been included in the region of a magnetic field, for the measurement of the rigidity. The objectives of science for this experiment include the antimatter study in cosmic rays and that of the composition of cosmic rays in the atmosphere with particular attention to the muons. Muons. Muons.

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