Title (en)
Methods of using ion trap mass spectrometers

Title (de)
Verfahren zur Verwendung eines Massenspektrometers

Title (fr)
Methode de mise en oeuvre d'un spectromètre de masse

Publication
EP 0575777 B1 19980923 (EN)

Application
EP 93108670 A 19930528

Priority
US 89099192 A 19920529

Abstract (en)
[origin: EP0575777A2] Improved methods of using an ion trap mass spectrometer, whereby AC voltages supplemental to the AC trapping voltage are used for scanning the trap (10), for conducting chemical ionization experiments, and for conducting MS<n> experiments, are shown. In one embodiment a broadband supplemental AC voltage is applied to rid the trap of ions above or below a preselected cutoff mass. This is particularly useful in conducting chemical ionization experiments for eliminating high mass sample ions that are formed when the reagent gas is ionized by electron impact ionization. Likewise, this technique may be used to eliminate low mass reagent ions when conducting an electron impact ionization experiment in the presence of a reagent gas. In another embodiment a non-resonant, low-frequency supplemental voltage is applied to the trap (10) causing trapped ions to undergo collision induced dissociation. Multiple generations of ion fragments may be simultaneously formed in this manner, thereby enabling MS<n> experiments. The low-frequency supplemental field has the additional property of causing high mass ions to be ejected from the trap (10) as a function of the magnitude of the supplemental voltage. This property may be used to scan the trap (10), for example, by scanning the magnitude of the supplemental voltage. Likewise, when conducting chemical ionization experiments, this property may be used for eliminating unwanted high mass sample ions, formed during ionization of the reagent gas, from the trap (10). <IMAGE>

IPC 1-7
H01J 49/00; H01J 49/42

IPC 8 full level
G01N 27/62 (2006.01); **H01J 49/10** (2006.01); **H01J 49/42** (2006.01)

CPC (source: EP)
H01J 49/005 (2013.01); **H01J 49/145** (2013.01); **H01J 49/424** (2013.01); **H01J 49/427** (2013.01)

Cited by
US10304672B2; EP1009015A3; EP0746873A4; US6410913B1; EP0608885A1; KR20160030186A; EP0793256A1; GB2291534A; US5528031A; GB2291534B; WO2015003819A1; TWI579888B

Designated contracting state (EPC)
CH DE FR GB IT LI

DOCDB simple family (publication)
EP 0575777 A2 19931229; **EP 0575777 A3 19940316**; **EP 0575777 B1 19980923**; CA 2097211 A1 19931130; DE 69321165 D1 19981029; DE 69321165 T2 19990602; DE 69328979 D1 20000810; DE 69328979 T2 20010215; DE 69333589 D1 20040916; DE 69333589 T2 20050203; JP 2004004082 A 20040108; JP 3444429 B2 20030908; JP H0696727 A 19940408

DOCDB simple family (application)
EP 93108670 A 19930528; CA 2097211 A 19930528; DE 69321165 T 19930528; DE 69328979 T 19930528; DE 69333589 T 19930528; JP 15304193 A 19930531; JP 2003145488 A 20030522