

Title (en)

MASS SPECTROMETRIC HIGH-FREQUENCY QUADRUPOLE CAGE WITH SUPERPOSED MULTIPOLE FIELDS

Publication

EP 0459602 A3 19920701 (DE)

Application

EP 91250128 A 19910508

Priority

DE 4017264 A 19900529

Abstract (en)

[origin: EP0459602A2] An ion cage mass spectrometer, also known as a quistor or ion trap, having an annular electrode and two end-cap electrodes, voltage supplies for generating an ion-storing RF quadrupole field, means for generating ions of the substances which are to be investigated by mass-spectrometric means inside or outside the ion cage, if appropriate, means for introducing the ions into the ion cage, means for detecting those ions which emerge from the ion cage, characterised in that the exact quadrupole potential $P_q = (A_2/4z_0^2) * (r^2 - 2z^2) * [U - V \cos(Wt)]$ has superposed on it, by special shaping of the electrodes, exactly or approximately, a six-pole potential $P_s = (A_3/4z_0^3) * (3r^2 z - 2z^3) * [U - V \cos(Wt)]$, or an eight-pole potential $P_0 = (A_4/4z_0^4) * (r^4 + 8z^4/3 - 8r^2 z^2) * [U - V \cos(Wt)]$, or a linear combination of the two, where r = distance from the z-axis, z = distance from the plane $z = 0$, z_0 = distance of an end cap from the centre $z = 0$, A_2 = intensity of the quadrupole field, A_3 = intensity of the six-pole field, A_4 = intensity of the eight-pole field, U = value of the DC voltage V = peak value of the AC voltage, ω = angular frequency of the AC voltage, t = time. <IMAGE>

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H01J 49/10 (2006.01); **H01J 49/42** (2006.01)

CPC (source: EP US)

H01J 49/424 (2013.01 - EP US)

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- [XP] EP 0383961 A1 19900829 - BRUKER FRANZEN ANALYTIK GMBH [DE]
- [AD] EP 0336990 A1 19891018 - BRUKER FRANZEN ANALYTIK GMBH [DE]
- [A] INTERNATIONAL JOURNAL OF MASS SPECTROMETRY AND ION PHYSICS. Bd. 2, 1969, AMSTERDAM NL Seiten 45 - 59; P H DAWSON ET AL: 'NON-LINEAR RESONANCES IN QUADRUPOLE MASS SPECTROMETERS DUE TO IMPERFECT FIELDS I. THE QUADRUPOLE ION TRAP'

Cited by

EP0608885A1; GB2261988B; GB2267385A; GB2267385B; US6897438B2; US7045797B2; WO2004093122A3

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