

Title (en)  
ELECTRODE SYSTEM OF A LINEAR ION TRAP

Title (de)  
ELEKTRODENSYSYSTEM EINER LINEAREN IONENFALLE

Title (fr)  
SYSTÈME ÉLECTRODE DE PIÈGE IONIQUE LINÉAIRE

Publication  
**EP 2534670 B1 20180725 (EN)**

Application  
**EP 10787587 A 20100906**

Priority  
• RU 2010104792 A 20100211  
• RU 2010000494 W 20100906

Abstract (en)  
[origin: WO2011099889A1] Invention relates to the field of mass spectrometry, in particular it relates to design of a linear ion trap and its electrode system which forms a trapping field. Claimed electrode system of a linear ion trap has four electrodes, each pair oppositely located. Plains of symmetry of electrode pairs are perpendicular to each other. Difference from prototype is that each electrode of at least one pair has in a cross section substantially a shape of isosceles triangle. Top of the triangle is directed towards longitudinal axis of the trap. The best result is achieved when angle between shoulders of the triangle is from 130° to 152°. In other words, angle between working surfaces of electrodes is 130- 152°. The width of slit for ejecting ions in such electrode is less than 24% of the inscribed radius of the trap. Suggested electrode system for a linear ion trap allows achieving high resolving power which is comparable with resolution of ion traps of hyperbolic geometry, i.e. significantly higher than can be achieved by prototype ion traps. At the same time the working surface of electrodes in proposed system is composed of flat surfaces, which are placed at certain angle to each other, with top of angle directed towards ion trap axis. Manufacturing of such electrodes is much simpler. Angle in the region of ejection slit compensates for local reduction of the field strength.

IPC 8 full level  
**H01J 49/42** (2006.01)

CPC (source: EP)  
**H01J 49/4225** (2013.01); **H01J 49/423** (2013.01)

Citation (examination)  
• US 2939952 A 19600607 - WOLFGANG PAUL, et al  
• EARL C. BEATY: "Simple electrodes for quadrupole ion traps", JOURNAL OF APPLIED PHYSICS, vol. 61, no. 6, 1 January 1987 (1987-01-01), pages 2118, XP055213205, ISSN: 0021-8979, DOI: 10.1063/1.337968

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