

Title (en)
Electron cyclotron resonance ion source.

Title (de)
Elektronzyklotronresonanz-Ionenquelle.

Title (fr)
Source d'ions à résonance cyclotronique électronique.

Publication
EP 0252845 A1 19880113 (FR)

Application
EP 87401608 A 19870708

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FR 8610066 A 19860710

Abstract (en)
1. Electron cyclotron resonance ion source comprising : - a sealed enclosure (2) having a longitudinal axis of symmetry (4) a first end and a second end (8, 10) which are oriented along this axis, this enclosure (2) containing a gas intended to form by electron cyclotron resonance a plasma confined in the said enclosure, - a device (12, 14) for injecting a high-frequency electromagnetic field at the first end (8) of the enclosure, - a system (30, 32) for extracting the ions formed from the enclosure, which system is situated at the second end of the enclosure, and - a magnetic structure, disposed about the enclosure (2) and exhibiting an axis of symmetry coincident with that of the enclosure, generating local, axial and radial magnetic fields defining at least one equimagnetic surface (28) on which the condition of electron cyclotron resonance is satisfy, the magnetic structure comprising, in order to create a cusped or crescent magnetic bottle : - a first coil and a second coil (20, 22) which are disposed on either side of and at equal distance from a median plane (III-III), perpendicular to the longitudinal axis (4) of the enclosure and passing through the centre (6) of the cavity, currents of opposite directions of circulation flowing through these two coils (20, 22), and - means (36, 42, 50) for concentrating the magnetic force lines (38), surrounding the enclosure in the median plane (III-III) and locally reinforcing the radial magnetic fields in this plane, at the location of the enclosure.

Abstract (fr)
Cette source comprend une enceinte (2) contenant un gaz destiné à former un plasma confiné, un dispositif (12, 14) pour injecter à une extrémité (10) de l'enceinte un champ électromagnétique HF, deux bobines (20, 22) disposées autour de l'enceinte, alimentées en opposition, disposées de part et d'autre d'un plan médian (III-III) perpendiculaire à l'axe longitudinal (4) de l'enceinte, un blindage (36) en fer doux ayant la forme d'un anneau entourant l'enceinte, situé dans le plan médian, les bobines et ce blindage définissant au moins une nappe équimagnétique (28) sur laquelle la condition de résonance cyclotronique électronique est satisfaite, et un système (32, 34) pour extraire les ions formés, situé à la seconde extrémité (8) de l'enceinte.

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• [A] EP 0145586 A2 19850619 - COMMISSARIAT ENERGIE ATOMIQUE [FR]
• [A] FR 2551302 A1 19850301 - COMMISSARIAT ENERGIE ATOMIQUE [FR]
• [A] US 2946919 A 19600726 - ALFRED LERBS
• [A] US 4529571 A 19850716 - BACON FRANK M [US], et al

Cited by
FR2756097A1; FR2705584A1; US5422481A; FR2701797A1; US5726412A; DE19933762A1; DE19933762C2; DE4419970A1; WO9822970A1; WO9403919A1; WO9419921A1

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