

Title (en)

Quartz quadrupole for mass filter.

Title (de)

Quarz-Quadrupol für Massenfilter.

Title (fr)

Quadrupole en quartz pour filtre de masses.

Publication

EP 0268048 A2 19880525 (EN)

Application

EP 87114411 A 19871002

Priority

US 92605686 A 19861119

Abstract (en)

A quartz quadrupole comprises a quartz substrate (13), conductive strips (15) and low-conductivity strips (17). The substrate includes hyperbolic inner surfaces (19) which provide the geometry for the conformed conductive strips to produce an appropriate electric field for mass filter operation. The use of quartz as a substrate material provides the thermal and electrical characteristics required by high performance mass filtering operations, including scanning mode operation to 800 amu and above. During such operation, potential field distortions by accumulated charge in cusp sections of the substrate are minimized by the low-conductivity strips, which are arranged to overlap longitudinal edges of the conductive strips. Formation of the quartz substrate is made possible by high precision machining, grinding and polishing of a refractory metal mandrel. The actual step of forming the substrate is simplified by the low thermal coefficient of expansion of the quartz. The conductive strips are applied by firing metal-glass frit tape. The low-conductivity strips are applied by firing a metal-oxide slurry including a bonding agent.

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