

ABSTRACT

A gas retaining ion guide has RF electrodes distributed about an ion region that provide an RF confinement field for ions therein. DC electrodes are also provided that extend from an entrance of the ion guide to an exit, and provide a DC electric field. The DC electrodes are further from the central axis than the RF electrodes, and each provides a gas seal between two adjacent RF electrodes. Conductive surfaces of the DC electrodes establish the DC electric field through gaps between adjacent RF electrodes, and the conductive surfaces have a distance from the central axis that changes over the length of the ion guide so as to provide an axial DC field component. The size of the DC electrode conductive surfaces and a width of the gaps between RF electrodes may be selected to ensure that ions escaping confinement through the gaps are discharged on the conductive surfaces.

Fig. 3