

QUARTZ INSULATOR FOR ION IMPLANTER BEAMLINE COMPONENTS

Abstract

An electrostatic quadrupole lens assembly (60) is provided for an ion implanter (10) having an axis (86) along which an ion beam passes, comprising: (i) four electrodes (84a-84d) oriented radially outward from the axis (86), approximately 90° apart from each other, such that a first pair of electrodes (84a and 84c) oppose each other approximately 180° apart, and a second pair of electrodes (84b and 84d) also oppose each other approximately 180° apart; (ii) a housing (62) having a mounting surface (64) for mounting the assembly (60) to the implanter, the housing at least partially enclosing the four electrodes (84a-84d); (iii) a first electrical lead (104) for providing electrical power to the first pair of electrodes (84a and 84c); (iv) a second electrical lead (108) for providing electrical power to the second pair of electrodes (84b and 84d); and (v) a plurality of electrically insulating members (92) formed of a glass-like material, comprising at least a first electrically insulating member for attaching the first pair of electrodes (84a and 84c) to the housing, and at least a second electrically insulating member for attaching the second pair of electrodes (84b and 84d) to the housing. The plurality of electrically insulating members (92) are preferably comprised of quartz (SiO_2), or a heat resistant and chemical resistant glass material such as Pyrex®. The members (92) resist accumulation of material such as graphite sputtered off of the electrodes (84a-84d) by the ion beam, thus reducing the occurrence of high voltage breakdown and electrical current breakdown.

Fig. 3