METHOD FOR ION SOURCE COMPONENT CLEANING

Abstract

This invention relates in part to a method for cleaning an ion source component of an ion implanter used in semiconductor and microelectronic manufacturing. The ion source component includes an ionization chamber and one or more components contained within the ionization chamber. The interior of the ionization chamber and/or the one or more components contained within the ionization chamber have at least some deposits thereon of elements contained within a dopant gas, e.g., carborane ($C_2B_{10}H_{12}$). The method involves introducing a cleaning gas into the ionization chamber, and reacting the cleaning gas with the deposits under conditions sufficient to remove at least a portion of the deposits from the interior of the ionization chamber and/or from the one or more components contained within the ionization chamber. The cleaning gas is a mixture of F_2, one or more inert gases selected from noble gases and/or nitrogen, and optionally O_2, or a mixture of an oxygen/fluorine-containing gas and one or more inert gases selected from noble gases and/or nitrogen. The deposits adversely impact the normal operation of the ion implanter causing frequent down time and reducing tool utilization.

FIG. 1