CLEANING OF SEMICONDUCTOR PROCESSING SYSTEMS

ABSTRACT

A method and apparatus for cleaning residue from components of semiconductor processing systems used in the fabrication of microelectronic devices. To effectively remove residue, the components are contacted with a gas-phase reactive material for sufficient time and under sufficient conditions to at least partially remove the residue. When the residue and the material from which the components are constructed are different, the gas-phase reactive material is selectively reactive with the residue and minimally reactive with the materials from which the components of the ion implanter are constructed. When the residue and the material from which the components are constructed is the same, then the gas-phase reactive material may be reactive with both the residue and the component part. Particularly preferred gas-phase reactive materials utilized comprise gaseous compounds such as XeF_2, XeF_4, XeF_6, NF_3, IF_5, IF_7, SF_6, C_2F_6, F_2, CF_4, KrF_2, Cl_2, HCl, ClF_3, ClO_2, N_2F_4, N_2F_2, N_3F, NFH_2, NH_2F, HOBr, Br_2, C_3F_8, C_4F_8, C_5F_8, CHF_3, CH_2F_2, CH_3F, COF_2, HF, C_2HF_5, $C_2H_2F_4$, $C_2H_3F_3$, $C_2H_4F_2$, C_2H_5F, C_3F_6, and organochlorides such as $COCl_2$, CCl_4, $CHCl_3$, CH_2Cl_2 and CH_3Cl.

Figure 1