Method for treating substrates

The invention relates to a process for the treatment of substrates and more particularly to a process for the treatment of semiconductor substrates and/or of piezoelectric substrates.

During heat treatments in processes using semiconductor and/or piezoelectric substrates, the diffusion of a metal element, such as for example lithium, can result in contamination of the item of equipment carrying out the heat treatment, such as an oven. The level of contamination by this element can, for example, be determined by VPD-ICPMS (from Vapour Phase Decomposition and Inductively Coupled Plasma Mass Spectrometry) as number of atoms per square centimetre. The level of contamination can depend on the number of cycles carried out with substrates comprising the metal element, on the conditions of the process used and on the type of substrate used. A strong increase in the level of contamination is in particular observed when a substrate breaks inside the item of equipment. A high level of contamination in an item of equipment may subsequently reduce the production yield.

The contamination problem can also have a negative impact on the production lines of a manufacturer as contamination by a certain element in an item of equipment can result in a ban on carrying out various types of processes on one and the same item of equipment, which greatly reduces the flexibility of manufacture and requires the manufacturer to install several separate manufacturing lines according to the process and the materials used.

Embodiments of the invention seek to provide the installation of a decontamination process which may make it possible to reduce the level of contamination by a metal element in an item of equipment carrying out a heat treatment.

An aspect of the invention provides a process for the treatment of substrates comprising: a stage of treatment of a first substrate comprising at least one stage carried out in an item of equipment carrying out a heat treatment, the first substrate being a substrate comprising a semiconductor material or a piezoelectric material, subsequently a stage of reduction in the level of contamination of the item of equipment carrying out a heat treatment by a contaminating metal element by carrying out a heat treatment of a decontamination substrate, in particular a silicon-based substrate, more particularly still a substrate made of mono- or polycrystalline silicon, of porous silicon or of SiOCH, and subsequently a stage of treatment of a second substrate comprising at least one stage carried out in the item of equipment carrying out a heat treatment, the second substrate being a substrate comprising a semiconductor material or a piezoelectric material. Measurements by VPD-ICPMS have shown that the use of such a