

- removing part of the donor substrate to form the thin layer;
the manufacturing method exposing the structure to a temperature below a maximum temperature of 1000°C at least during and after the joining step.

Another aspect of the present invention provides a structure ~~that cannot be exposed to high temperatures, for example higher than 600°C or 1000°C, the structure~~ comprising:

- a base substrate;
- a trapping layer placed on the base substrate and having a hydrogen concentration of less than 10^{18} at/cm³;
- a dielectric layer arranged on the trapping layer, the dielectric layer comprising a silicon oxide having nitrogen in a nitrogen/oxygen ratio of between 0.01 and 0.25;
- a thin layer placed on the dielectric layer composed of a piezoelectric and/or ferroelectric material.

There is also disclosed a method for manufacturing a structure comprising a thin layer transferred onto a support provided with a charge trapping layer, the method comprising the following steps:

- preparing the support comprising forming the trapping layer on a base substrate, the trapping layer having a hydrogen concentration of less than 10^{18} at/cm³;
- joining the support to a donor substrate by means of a dielectric layer having a hydrogen concentration of less than 10^{20} at/cm³ or comprising a barrier preventing the diffusion of hydrogen toward the trapping layer or having low hydrogen diffusivity;

CLAIMS

1. A Method for manufacturing a structure ~~(1)~~ comprising a thin layer ~~(5)~~ which is composed of a piezoelectric and/or ferroelectric material and is transferred onto a support ~~(2)~~ provided with a charge trapping layer ~~(3)~~, the method comprising the following steps:
 - preparing the support ~~(2)~~ comprising forming the trapping layer ~~(3)~~ on a base substrate ~~(6)~~, the trapping layer ~~(3)~~ having a hydrogen concentration of less than 10^{18} at/cm³;
 - joining the support ~~(2)~~ to a donor substrate by means of a dielectric layer ~~(4)~~ comprising a silicon oxide having nitrogen in a nitrogen/oxygen ratio of between 0.01 and 0.25;
 - removing part of the donor substrate to form the thin layer ~~(5)~~;
 the manufacturing method exposing the structure ~~(1)~~ to a temperature below a maximum temperature of 1000°C at least during and after the joining step.
2. The Manufacturing method according to the preceding claim, wherein the trapping layer ~~(3)~~ is deposited at a deposition temperature between 600°C and 950°C, and the step of preparing the support ~~(2)~~ comprises a first stage of annealing the trapping layer ~~(3)~~ in a hydrogen depleted atmosphere and at a temperature between the deposition temperature and 1000°C.
3. The Manufacturing method according to ~~the preceding~~ claim 2, wherein the deposition of the trapping layer implements an LPCVD technique.
4. The Manufacturing method according to claim 1, wherein the trapping layer ~~(3)~~ is formed by deposition at a temperature between 950°C and 1100°C.
5. The Manufacturing method according to ~~the preceding~~ claim 4, wherein the deposition of the trapping layer ~~(3)~~ is implemented in an epitaxy frame.
6. The Manufacturing method according to any of the preceding claims, wherein the nitrogen/oxygen ratio is between 0.05 and 0.1.

7. ~~The Manufacturing~~ method according to any of the preceding claims, comprising, before the joining step, a step of forming an embrittlement plane in the donor substrate and wherein the removal step is carried out by fracturing the donor substrate at the embrittlement plane.
8. ~~The M~~method according to any of the preceding claims, wherein the thin layer ~~(5)~~ is made of lithium tantalate or lithium niobate.
9. ~~A S~~structure ~~(1) that cannot be exposed to high temperatures, for example higher than 600°C or 1000°C, the structure (1)~~ comprising:
 - a base substrate ~~(6)~~;
 - a trapping layer ~~(3)~~ placed on the base substrate ~~(6)~~ and having a hydrogen concentration of less than 10^{18} at/cm³;
 - a dielectric layer ~~(4)~~ arranged on the trapping layer ~~(3)~~, the dielectric layer ~~(4)~~ comprising a silicon oxide having nitrogen in a nitrogen/oxygen ratio of between 0.01 and 0.25;
 - a thin layer ~~(5)~~ placed on the dielectric layer ~~(4)~~ composed of a piezoelectric and/or ferroelectric material.
10. ~~The S~~structure ~~(1)~~ according to ~~the preceding~~ claim 9, wherein the thin layer ~~(5)~~ consists of a ferroelectric material having a permanent polarization and a Curie temperature between 600°C and 1000°C.
11. ~~The S~~structure ~~(1)~~ according to one of claims 9 and 10, wherein the dielectric layer ~~(4)~~ is in contact with the trapping layer ~~(3)~~ and with the thin layer ~~(5)~~.
12. ~~The S~~structure ~~(1)~~ according to one of claims 9 to 11, wherein the nitrogen/oxygen ratio is between 0.05 and 0.1.