a donor substrate of $LiNbO_3$ or $LiTaO_3$ so as to delineate the thin layer to transfer, by bonding said layer to transfer on a support substrate and by detaching the donor substrate along the weakened zone so as to transfer the thin layer onto the support substrate. However, the creation of the weakened zone by ion implantation in the donor substrate damages the transferred layer and deteriorates its piezoelectric properties. Healing methods (notably annealings) known for the transfer of silicon layers do not always make it possible to repair completely the piezoelectric layer, on account of the complex crystalline structure of said layer and damage mechanisms that seem different to those that intervene in silicon.

BRIEF DESCRIPTION OF THE INVENTION

Embodiments of the invention seek to conceive a method making it possible to heal more efficiently defects linked to the implementation of the Smart Cut™ method in an ABO_3 type substrate.

An aspect of the invention provides a method for healing defects in a layer of composition ABO_3 where A consists of at least one element selected from: Li, Na, K, H, Ca, Mg, Ba, Sr, Pb, La, Bi, Y, Dy, Gd, Tb, Ce, Pr, Nd, Sm, Eu, Ho, Zr, Sc, Ag, Tl and B consists of at least one element selected from: Nb, Ta, Sb, Ti, Zr, Sn, Ru, Fe, V, Sc, C, Ga, Al, Si, Mn, Zr, Tl, said layer being obtained by a layer transfer method in which ionic species are implanted into a substrate of composition ABO_3 so as to form a weakened zone delineating said layer, then said substrate is detached along the weakened zone to obtain a layer that is detached from the rest of the donor substrate, said method being characterised in that it comprises exposing said layer to a medium containing ions of

According to a particular embodiment, the element A is lithium.

The layer may be immersed in a bath comprising an acid solution of a lithium salt.

Lithium ions advantageously penetrate into the layer by a reverse proton exchange mechanism.

According to one embodiment of the invention, the layer of composition ABO_3 is monocrystalline.

Another aspect of the invention provides a method for producing a layer of composition ABO_3 where A consists of at least one element selected from: Li, Na, K, H, Ca, Mg, Ba, Sr, Pb, La, Bi, Y, Dy, Gd, Tb, Ce, Pr, Nd, Sm, Eu, Ho, Zr, Sc, Ag, Tl and B consists of at least one element selected from: Nb, Ta, Sb, Ti, Zr, Sn, Ru, Fe, V, Sc, C, Ga, Al, Si, Mn, Zr, Tl, characterised in that it comprises:

- providing a donor substrate of composition ABO_3,
- the formation of a weakened zone by implantation of ionic species in the donor substrate so as to delineate the layer,
- the detachment from the donor substrate along the weakened zone so as to obtain the layer detached from the rest of the donor substrate, said layer comprising defects,
- implementing the method for healing defects of the layer as described above.

Preferably, the implanted species comprises hydrogen and/or helium.

According to one embodiment, before the healing step, a part of the thickness of the layer of composition ABO_3 is removed.

According to one embodiment, the thickness of the layer is greater than 2 µm, preferably greater than 20 µm, said layer being self-supporting at the end of the detachment from the donor substrate.

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BRIEF DESCRIPTION OF THE INVENTION

~~One aim~~Embodiments of the invention ~~is thus~~seek to conceive a method making it possible to heal more efficiently defects linked to the implementation of the Smart Cut™ method in an ABO_3 type substrate.

~~In accordance with~~An aspect of the invention~~,~~ provides a method ~~is proposed~~ for healing defects in a layer of composition ABO_3 where A consists of at least one element selected from: Li, Na, K, H, Ca, Mg, Ba, Sr, Pb, La, Bi, Y, Dy, Gd, Tb, Ce, Pr, Nd, Sm, Eu, Ho, Zr, Sc, Ag, Tl and B consists of at least one element selected from: Nb, Ta, Sb, Ti, Zr, Sn, Ru, Fe, V, Sc, C, Ga, Al, Si, Mn, Zr, Tl, said layer being obtained by a layer transfer method in which ionic species are implanted into a substrate of composition ABO_3 so as to form a weakened zone delineating said layer, then said substrate is detached along the weakened zone to obtain a layer that is detached from the rest of the donor substrate, said method being characterised in that it comprises exposing said layer to a medium containing ions of~~a~~

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