CLAIMS

1. Method of fabricating a layer (10) of a monocrystalline piezoelectric layer, characterised in that it comprises:

- supply of a donor substrate (100) of said piezoelectric material,
- supply of a receiving substrate (110),
- transfer of a layer called a "germ layer" (102) from said donor substrate (100) onto the receiving substrate (110),
- implementation of an epitaxy of the piezoelectric material on the germ layer (102) until the required thickness for the monocrystalline piezoelectric layer (10) is obtained.

2. Method according to claim 1, in which the transfer of the germ layer (102) comprises the following steps:

- formation of a zone of weakness (101) in the donor substrate (100) so as to delimit the germ layer (102) to be transferred,
- bonding of the donor substrate (100) onto the receiving substrate (110), the germ layer (102) to be transferred being at the interface,
- detachment of the donor substrate (100) along the zone of weakness (101) so as to transfer the germ layer (102) onto the receiving substrate (110).

3. Method according to claim 2, in which the zone of weakness (101) is formed by ion implantation in the donor substrate (100).

4. Method according to one of claims 1 to 3, in which the piezoelectric material is chosen from among quartz and compounds with the formula $LiXO_3$, in which X is chosen from among niobium and tantalum.

5. Method according to one of claims 1 to 4, in which the thickness of the germ layer (102) is less than 2 µm, and preferably less than 1 µm.

6. Method according to one of claims 1 to 5 in which, before the epitaxy step, part of the thickness of the germ layer (102) transferred onto the receiving substrate (110) is removed.

7. Method according to one of claims 1 to 6 in which the thickness of the monocrystalline piezoelectric layer (10) at the end of the epitaxy step is between 0.2 and 20 µm.

8. Method according to one of claims 1 to 7 in which at least one electrically insulating layer and/or at least one electrically conducting layer is/are formed at the interface between the receiving substrate and the germ layer.

9. Method according to one of claims 1 to 8 in which the method includes the transfer of at least part of the monocrystalline piezoelectric layer (10) to a final substrate (111), after epitaxy.

10. Method according to claim 9 including removal of the germ layer (102), after said transfer onto the final substrate (111).

11. Method according to one of the previous claims, characterised in that the receiving substrate is made of a semiconducting material and it includes a trap rich layer located between the germ layer and the receiving substrate.

12. Substrate for a microelectronic, photonic or optical device, comprising a monocrystalline piezoelectric layer (10) on a receiving substrate (110), characterised in that the piezoelectric layer (10) has a first portion (102) located at the interface with the receiving substrate (110), and a second portion (103) extending from the first portion (102) and in that the characteristics of the second portion (103) are different from those of the first portion (102).

13. Method of manufacturing a bulk acoustic wave device, comprising the formation of electrodes (12, 13) on two main faces opposite a piezoelectric layer (10), characterised in that it comprises fabrication of said piezoelectric layer (10) using a method according to one of claims 1 to 11.

14. Bulk acoustic wave device characterised in that it comprises a piezoelectric layer (10) that can be obtained using a method according to one of claims 1 to 11, and two electrodes (12, 13) arranged on two principal opposite faces of said layer (10).

15. Method of manufacturing a surface acoustic wave device, comprising the formation of two inter-digitised electrodes (12, 13) on the surface of a piezoelectric layer (10), characterised in that it comprises fabrication of said piezoelectric layer by a method according to one of claims 1 to 11.

16. Surface acoustic wave device characterised in that it comprises a piezoelectric layer (10) that can be obtained by a method according to one of claims 1 to 11, and two inter-digitised electrodes (12, 13) arranged on one face of said piezoelectric layer (10).