

CLAIMS

1. Method for manufacturing a film (12) on a support (20) having a non-flat surface, characterised in that it comprises:
- 5 - the supply of a donor substrate (10) having a non-flat surface,
 - the formation of an embrittlement zone (11) in the donor substrate (10) so as to delimit said film (12) to transfer,
 - the formation of the support (20) by deposition on the non-flat surface of the film (12) to transfer,
- 10 - the detachment of the donor substrate (10) along the embrittlement zone (11), so as to transfer said film (12) onto the support (20).
2. Method according to claim 1, further comprising the deposition of an intermediate layer (21) on the non-flat surface before the deposition of the support (20).
- 15 3. Method according to one of claims 1 or 2, wherein the formation of the embrittlement zone (11) is carried out by implantation of ionic species in the donor substrate (10).
- 20 4. Method according to claim 3, wherein the implanted ionic species are hydrogen and/or helium.
5. Method according to one of claims 1 to 4, wherein the detachment of the donor substrate (10) is caused by a heat treatment.
- 25 6. Method according to claim 5, wherein the deposition of the support (20) is implemented with a thermal budget less than that of the detachment heat treatment.
7. Method according to one of claims 1 to 6, wherein the transferred film (12) is
- 30 made of a material selected from: semiconductor materials, piezoelectric materials, magnetic materials and functional oxides.
8. Method according to one of claims 1 to 7, wherein the transferred film (12) is monocrystalline.
- 35 9. Method according to one of claims 1 to 8, wherein the thickness of the transferred film (12) is comprised between 100 nm and 10 μ m, preferably between 100 nm and 1 μ m.

10. Method according to one of claims 1 to 9, wherein the support (20) is made of a material selected from metals, glasses and ceramics.

5 11. Method according to one of claims 1 to 10, wherein the support (20) has a thickness comprised between 1 and 50 μm .

12. Method according to one of claims 1 to 11, wherein the material of the support (20) is chosen to have a difference in thermal coefficient vis-à-vis the material of
10 the transferred film (12) less than $5 \times 10^{-6} \text{ K}^{-1}$ in absolute value.

13. Method according to one of claims 1 to 12, wherein the deposition of the support (20) is implemented by one of the following techniques: physical vapour deposition, chemical vapour deposition, electrochemical deposition, spin coating,
15 lacquering and spraying.

14. Method according to one of claims 1 to 13, wherein the surface of the film (12) to transfer has at least one curved portion.

20 15. Method according to one of claims 1 to 14, wherein the surface of the film (12) to transfer has at least one recessed or relief pattern (100).

16. Method according to one of claims 1 to 15, wherein the surface of the film (12) to transfer has a texture characterised by a roughness greater than 1 nm rms.
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17. Method according to one of claims 1 to 16, wherein the non-flat surface of the film (12) to transfer is obtained after the formation of the embrittlement zone (11).

18. Method according to one of claims 1 to 16, wherein the non-flat surface of
30 the film (12) to transfer is obtained before the formation of the embrittlement zone (11).

19. Method according to claim 18, wherein the residue (10') of the donor substrate at the end of the detachment is recycled with a view to the implementation of a new film (12) having a non-flat surface on a support (20), and, before said recycling, the
35 residue of the donor substrate is subjected to an operation of regeneration of its surface involving a removal of material that is substantially zero or conforming to the topology of said residue (10').

20. Method according to one of claims 1 to 19, wherein the deposition of the support (20) includes the successive deposition of at least two layers of different materials.

5 21. Method according to one of claims 1 to 20, further comprising, after the detachment of the donor substrate, the deposition of an additional film (13) on the face of the transferred film (12) opposite to the support (20).

10 22. Method according to one of claims 1 to 21, wherein the donor substrate comprises a plurality of pads (1001) laid out on the surface of a wafer (1000), each pad (1001) comprising an embrittlement zone (1011) delimiting a respective film to transfer, and the support (20) is deposited on the surface of all of said pads (1001).

15 23. Structure comprising:
- a donor substrate (10) including an embrittlement zone (11) delimiting a superficial film (12) and
- a support (20) covering said film (12),
in which the interface between the film (12) and the support (20) is not flat.