## Claims

1. A process for fabricating a plurality of polycrystalline silicon carbide substrates, said process comprising the following steps:
    - forming a multilayer structure by alternating deposition of a plurality of polycrystalline silicon carbide layers and a plurality of separating layers on at least one face of a temporary support substrate,
    - detaching each polycrystalline silicon carbide layer from the multilayer structure by removing the temporary substrate and each separating layer to form a respective polycrystalline silicon carbide substrate.

2. The fabrication process according to Claim 1, wherein the deposition of each polycrystalline silicon carbide layer and of each separating layer is effected simultaneously over the entire outer surface of the temporary support substrate and/or of the respective underlying layer.

3. The process according to Claim 2, additionally comprising a step of removing the edges of the multilayer structure after the deposition of the final polycrystalline silicon carbide layer, so as to expose an edge of the temporary support substrate.

4. The fabrication process according to any one of the preceding claims, wherein the temporary support substrate is made of graphite.

5. The fabrication process according to any one of the preceding claims, wherein each separating layer is made of carbon, of graphite, of silicon or of silicon nitride ($Si_3N_4$).

6. The fabrication process according to any one of the preceding claims, wherein the removal of the temporary support substrate is carried out by combustion under a stream of oxygen at a temperature of between 700 and 1100°C, preferably between 800°C and 900°C.

7. The fabrication process according to Claim 5, wherein the removal of each separating layer is carried out by combustion.

8. The process according to one of claims 1 to 4, wherein the removal of each separating layer is carried out by sawing or by chemical etching or by laser cutting.

9. The fabrication process according to any one of the preceding claims, wherein the thickness of the temporary support substrate is between 1 and 15 mm.

10. The fabrication process according to any one of the preceding claims, wherein the thickness of each polycrystalline silicon carbide layer is between 300 and 1200 µm.

11. The fabrication process according to any one of the preceding claims, wherein the thickness of each separating layer is between 1 and 50 µm.

12. The fabrication process according to any one of Claims 1 to 10, wherein the thickness of each separating layer is between 1 and 500 nm.

13. The fabrication process according to any one of the preceding claims, wherein the thickness of each separating layer increases with the distance from the temporary support substrate.

14. A process for fabricating a plurality of substrates comprising a polycrystalline silicon carbide base substrate and a layer of a monocrystalline material, the process comprising in succession:

    - a process according to any one of the preceding claims for fabricating each polycrystalline silicon carbide substrate,
    - smoothing a front face of each polycrystalline silicon carbide base substrate, and
    - transferring a layer of a monocrystalline material to the front face of each polycrystalline silicon carbide base substrate.

15. The process according to Claim 14, wherein transferring the monocrystalline material layer comprises the following steps:
    - forming a weakened zone by implantation of atomic species into a donor substrate made of a monocrystalline material, to delimit a monocrystalline material layer to be transferred,
    - bonding said donor substrate to the front face of the base substrate,
    - detaching the donor substrate along the weakened zone so as to transfer the layer of the monocrystalline material to the base substrate.

16. An intermediate substrate, comprising:
    - a temporary support substrate,
    - on at least one face of the temporary substrate, an alternating stack of a plurality of polycrystalline silicon carbide layers and separating layers.

17. The intermediate substrate according to Claim 16, wherein the temporary support substrate is made of graphite.

18. The intermediate support substrate according to Claim 16 or Claim 17, wherein each separating layer is made of carbon, of graphite, of silicon or of silicon nitride.