

ABSTRACT**Process For Producing A Composite Structure Comprising A Thin Layer Of Monocrystalline SiC On A Carrier Substrate Of Crystalline SiC**

The invention relates to a process for producing a composite structure (1) comprising a thin layer (10) of monocrystalline silicon carbide arranged on a carrier substrate (20) of silicon carbide. The process comprises:

- a) a step of provision of an initial substrate (11) of monocrystalline silicon carbide,
- b) a step of epitaxial growth of a donor layer (110) of monocrystalline silicon carbide on the initial substrate (11), to form a donor substrate (111),
- c) a step of ion implantation of light species into the donor layer (110), to form a buried brittle plane (12) delimiting the thin layer (10),
- d) a step of formation of a carrier substrate (20) of silicon carbide on the free surface of the donor layer (110), comprising a deposition at a temperature of between 400°C and 1100°C,
- e) a step of separation along the buried brittle plane (12), to form the composite structure (1) on the one hand and the remnant of the donor substrate (111') on the other hand,
- f) a step of chemical-mechanical treatment(s) of the composite structure (1).

Figure 2e