

ABSTRACT

PROCESS FOR PRODUCING A COMPOSITE STRUCTURE COMPRISING A THIN
LAYER OF MONOCRYSTALLINE SIC ON A CARRIER SUBSTRATE MADE OF
POLYCRYSTALLINE SIC

The invention relates to a process for producing a composite structure comprising a thin layer of monocrystalline silicon carbide arranged on a carrier substrate made of polycrystalline silicon carbide, the process comprising:

- a step of providing an initial substrate made of monocrystalline silicon carbide,
- a first deposition step at a temperature higher than 1000°C to form an intermediate layer of polycrystalline silicon carbide on the initial substrate, the thickness of the intermediate layer being greater than or equal to 1.5 microns,
- a step of implanting light ionic species through the intermediate layer to form a buried brittle plane in the initial substrate, delimiting the thin layer between said buried brittle plane and the intermediate layer,
- a second deposition step at a temperature higher than 1000°C to form an additional layer of polycrystalline silicon carbide on the intermediate layer, said intermediate layer and the additional layer forming the carrier substrate, a separation along the buried brittle plane taking place during the second deposition step.

Fig. 2d