

Title (en)
METHOD FOR MANUFACTURING A COMPOSITE STRUCTURE COMPRISING A THIN FILM OF MONOCRYSTALLINE SIC ON A CARRIER SUBSTRATE OF POLYCRYSTALLINE SIC

Title (de)
VERFAHREN ZUR HERSTELLUNG EINER VERBUNDSTRUKTUR MIT EINER DÜNN SCHICHT AUS MONOKRISTALLINEM SIC AUF EINEM TRÄGERSUBSTRAT AUS POLYKRISTALLINEM SIC

Title (fr)
PROCÉDÉ DE FABRICATION D'UNE STRUCTURE COMPOSITE COMPRENANT UNE COUCHE MINCE EN SIC MONOCRISTALLIN SUR UN SUBSTRAT SUPPORT EN SIC POLYCRISTALLIN

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Abstract (en)
[origin: WO2023052704A1] The invention relates to a method for producing a composite structure comprising a thin layer of monocrystalline silicon carbide (c-SiC) placed on a polycrystalline silicon carbide (p-SiC) carrier substrate, the method comprising: (a) a step of providing an initial c-SiC substrate; (b) a first deposition step at a temperature above 1100 °C so as to form a first p-SiC layer on a front face of the initial substrate, the first layer having a thickness of less than 1 µm and a concentration in dopants greater than 10¹⁹/cm³; (c) an ion implantation step wherein light species are implanted through the first layer so as to form a fracture plane embedded in the initial substrate, delimiting the thin film between said embedded fracture plane and the front face of the initial substrate; (d) a second deposition step at a temperature below 900 °C so as to form a second layer of amorphous and/or polycrystalline SiC on the first layer, the second layer having a thickness greater than or equal to 10 µm and a concentration in dopants, of the same type as those of the first layer, greater than 10¹⁹/cm³; (e) a third deposition step at a temperature above 1000 °C so as to form a third p-SiC layer on the second layer, the first, second and third layers forming the carrier substrate, separation along the embedded fracture plane being performed during the third deposition step.

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