

CLAIMS

1. A method for forming a high resistivity handle substrate
(1) for a composite substrate, the method comprising :
5 - providing a base substrate (3) made of monocrystalline
 silicon;
 - exposing the base substrate (3) to a carbon single
 precursor at a pressure below atmospheric pressure to form
 a polycrystalline silicon carbide layer (4) of at least 10
10 nm on the surface of the base substrate; and then
 - growing a polycrystalline charge trapping layer (2) on
 the polycrystalline silicon carbide layer.
2. The method of claim 1 wherein the base substrate (3) has a
15 resistivity greater than 1000 ohm.cm.
3. The method of claim 1 wherein the base substrate (3) has a
 resistivity smaller than 1000 ohm.cm.
- 20 4. The method of claim 3 wherein the method further comprises
 forming a silicon intrinsic epitaxial layer directly on the
 base substrate (3) before exposing the base substrate (3)
 to the carbon single precursor.
- 25 5. The method of any preceding claims, wherein the charge
 trapping layer (2) has a thickness greater than 5 or 10
 microns.
6. The method of any preceding claims, wherein the charge
30 trapping layer (2) is made of polycrystalline silicon.
7. The method of any preceding claims wherein the carbon single
 precursor presents a temperature comprised between 700°C
 and 1200°C.
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8. The method of any preceding claims further comprising,
 exposing the base substrate to a reducing atmosphere at a

temperature of at least 900°C to remove a native oxide layer from the base substrate (3), before exposing the base substrate (3) to the carbon single precursor.

- 5 9. The method of any preceding claims wherein the polycrystalline silicon carbide layer is stoichiometric.