

CLAIMS

1. Layer transfer process comprising the following steps:

a step of providing an initial substrate;

a step of providing an intermediate substrate;

a first step of joining the intermediate substrate and the initial substrate;

a step of thinning the initial substrate after having been joined to the intermediate substrate;

a step of providing a final substrate;

a second step of joining the thinned initial substrate and the final substrate;

a step of detaching the intermediate substrate after the second joining step;
characterized in that

the intermediate substrate comprises silicon on the surface that is intended to be joined to the initial substrate;

the initial substrate comprises substantially no silicon on the surface that is intended to be joined to the intermediate substrate;

depositing a first bonding layer, referred to as temporary, of SOG type comprising methylsiloxane in the liquid state by spin coating carried out on the surface of the initial substrate which comprises substantially no silicon followed by a first heat treatment for densifying this first, temporary, bonding layer before the first joining step;

the second joining step is carried out via a second bonding layer of SOG type comprising silicate or methylsilsexioquane in the liquid state and deposited by spin coating followed by a second densifying heat treatment;

and in that the final substrate is designed such that it would deteriorate on application of a heat treatment exceeding 300°C.

2. Process for transferring a layer according to the preceding claim, wherein the initial substrate comprises components designed such that they would deteriorate on application of a heat treatment exceeding 300°C.

3. Transfer process according to one of the preceding claims, wherein the first and/or the second densifying heat treatment is carried out at a temperature of less than 300°C, preferably less than 200°C, or more preferably less than 100°C.

4. Transfer process according to one of the preceding claims, wherein the first and/or the second joining step is carried out by direct bonding by molecular adhesion.
5. Transfer process according to one of the preceding claims, wherein the initial substrate is chosen from the group of lithium niobate and lithium tantalate.
6. Transfer process according to Claims 1 to 4, wherein the initial substrate is chosen from the group of GaAs, InP and Ge.
7. Transfer process according to one of the preceding claims, wherein the intermediate substrate is silicon.
8. Transfer process according to one of the preceding claims, wherein the final substrate is silicon comprising components designed such that they would deteriorate on application of a heat treatment exceeding 300°C.
9. Transfer process according to one of Claims 1 to 7, wherein the final substrate is a flexible plastic.
10. Transfer process according to one of the preceding claims, wherein the detaching step is carried out by a heat treatment at a temperature of less than 300°C, more preferably less than 200°C, or more preferably less than 100°C.