

**DETACHABLE TEMPORARY SUBSTRATE COMPATIBLE WITH VERY HIGH
TEMPERATURES AND PROCESS FOR TRANSFERRING A WORKING LAYER FROM
SAID SUBSTRATE**

ABSTRACT

The invention relates to a temporary substrate, which is detachable at a detachment temperature higher than 1000°C and comprises:

- a semiconductor working layer extending along a main plane,
- a carrier substrate,
- an intermediate layer arranged between the working layer and the carrier substrate, and having a thickness, along an axis normal to the main plane, less than 20 nm,
- a bonding interface located in the intermediate layer or adjacent thereto,
- atoms of at least one gaseous species that are distributed according to a concentration profile along the axis normal to the main plane, with a maximum concentration higher than $10^{21}/\text{cm}^3$, said atoms remaining trapped in the intermediate layer and/or in an adjacent layer of the carrier substrate with a thickness less than or equal to 10 nm and/or in an adjacent sublayer of the working layer with a thickness less than or equal to 10 nm when the temporary substrate is subjected to a temperature lower than the detachment temperature, and said atoms being intended to diffuse to a detachment interface when the temporary substrate is subjected to a temperature higher than or equal to the detachment temperature.

The invention also relates to a process for producing said temporary substrate.

Lastly, the invention relates to a process for transferring a working layer to a receiver substrate, from the detachable temporary substrate, in order to form a composite structure.

Fig. 1a