CLAIMS

1. A method for transferring an InP film (11) onto a stiffener substrate (9), the method comprising the steps consisting of:

a) Providing a structure (6) comprising a surface layer (5) of InP and an underlying doped thin InP layer (4);

b) Implanting hydrogen ions through the surface layer (5) so as to create a weakened plane (7) in the doped thin layer (4), delimiting a film (11) comprising the surface layer (5),

c) Placing the surface layer (5) in close contact with a stiffener substrate (9); and

d) Applying heat treatment to obtain splitting at the weakened plane (7) and transfer of the film (11) onto the stiffener substrate (9).

2. The method according to claim 1, characterized in that the surface layer (5) is doped with the same dopant as the dopant of the doped thin layer (4).

3. The method according to one of claims 1 to 2, characterized in that the doped thin layer (4) comprises a concentration of electrically active dopants of between 10^{17} and 10^{20} at/cm^3 so that the doped thin layer (4) has an emissivity of between 0.75 and 0.9.

4. The method according to one of claims 1 to 3, characterized in that step a) comprises the steps consisting of:

i) providing a substrate of resistive InP (1);

ii) implanting dopant ion species such as S, Sn, Zn, Si, Te, Ge or Se in the substrate (1) so as to form a doped buried layer (3) delimiting a surface layer (5) between the implanted surface and the buried layer (3);

iii) applying heat treatment to the buried layer (3) so as electrically to activate the dopant ion species and to form a doped thin layer (4) in InP material having an emissivity of between 0.75 and 0.9, in order to obtain the structure (6).

5. The method according to one of claims 1 to 3, characterized in that step a) comprises the steps consisting of:

j) – providing a substrate (1) comprising a seed layer (14) on its surface;

k) – epitaxying a doped thin InP layer (4) on the seed layer (14); and

l) – epitaxying an InP surface layer (5) on the doped thin layer (4), the doped thin layer (4) having an emissivity of between 0.75 and 0.9, so as to obtain the structure (6).

6. The method according to claim, 5 characterized in that the seed layer (14) comprises resistive InP.

7. The method according to one of claims 1 or 3 to 6, characterized in that the InP surface layer (5) is formed of resistive InP chosen from among intrinsic InP or InP whose doping is compensated by a concentration of electrically activated Fe dopants in the order of 10^{15} to 10^{16} Fe/cm^3.

8. The method according to one of claims 1 to 7, characterized in that step b) comprises a step to implant hydrogen ions at an energy and current density such that the implantation temperature in the doped thin layer (4) is between 120 and 180°C.

CLAIMS

1. A method for transferring an InP film onto a stiffener substrate, the method comprising:

a) Providing a structure comprising a surface layer of InP and an underlying doped thin InP layer;

b) Implanting hydrogen ions through the surface layer so as to create a weakened plane in the doped thin layer, delimiting a film comprising the surface layer,

c) Placing the surface layer in close contact with a stiffener substrate; and

d) Applying heat treatment to obtain splitting at the weakened plane and transfer of the film onto the stiffener substrate.

2. The method according to claim 1, wherein the surface layer is doped with the same dopant as the dopant of the doped thin layer.

3. The method according to claim 1, wherein the doped thin layer comprises a concentration of electrically active dopants of between 1017 and 1020 at/cm3 so that the doped thin layer has an emissivity of between 0.75 and 0.9.

4. The method according to claim 1, wherein step a) comprises:

i) providing a substrate of resistive InP;

ii) implanting dopant ion species such as S, Sn, Zn, Si, Te, Ge or Se in the substrate so as to form a doped buried layer delimiting a surface layer between the implanted surface and the buried layer;

iii) applying heat treatment to the buried layer so as electrically to activate the dopant ion species and to form a doped thin layer in InP material having an emissivity of between 0.75 and 0.9, in order to obtain the structure.

5. The method according to claim 1, wherein the InP surface layer is formed of resistive InP chosen from among intrinsic InP or InP whose doping is compensated by a concentration of electrically activated Fe dopants in the order of 10^{15} to 10^{16} Fe/cm^3.

6. The method according to claim 1, wherein step b) comprises a step to implant hydrogen ions at an energy and current density such that the implantation temperature in the doped thin layer is between 120 and 180°C.