

[0013]

According to a first aspect, there is provided a method for preparing a composite substrate, comprising the steps of:

coating a polysilazane-containing coating composition
5 on the surface of a support substrate to be bonded, to form a polysilazane-containing coating, wherein the support substrate is a substrate selected from the group consisting of single crystal substrates of SiC and GaN, and polycrystalline substrates of p-Si, SiC, Si₃N₄ and AlN,
10 subjecting the coating to firing treatment of heating at 600°C to 1,200°C to form a silicon-containing insulating film, and thereafter, bonding ~~the~~ a semiconductor substrate to the support substrate via the insulating film, while keeping the thickness of the insulating film as of the firing treatment,
15 and thinning the semiconductor substrate for thereby yielding the composite substrate having a semiconductor layer on the support substrate.

Preferably, the polysilazane is a perhydropolysilazane.

Preferably, the firing treatment is carried out in an
20 atmosphere containing oxygen and/or steam.

Preferably, the firing treatment is carried out in an inert atmosphere containing nitrogen or under reduced pressure.

Preferably, the method comprises the steps of implanting ions into the surface of the semiconductor substrate to form an
25 ion-implanted region, forming the silicon-containing insulating film on the surface of the

CLAIMS:

1. A method for preparing a composite substrate, comprising the steps of:

5 coating a polysilazane-containing coating composition on the surface of a support substrate to be bonded, to form a polysilazane-containing coating, wherein the support substrate is a substrate selected from the group consisting of single crystal substrates of SiC and GaN, and
10 polycrystalline substrates of p-Si, SiC, Si₃N₄ and AlN, subjecting the coating to firing treatment of heating at 600°C to 1,200°C to form a silicon-containing insulating film, and thereafter,
15 bonding ~~the~~ a semiconductor substrate to the support substrate via the insulating film, while keeping the thickness of the insulating film as of the firing treatment, and
20 thinning the semiconductor substrate for thereby yielding the composite substrate having a semiconductor layer on the support substrate.

2. The method for preparing a composite substrate of claim 1 wherein the polysilazane is a perhydropolysilazane.

25 3. The method for preparing a composite substrate of claim 1 or 2 wherein the firing treatment is carried out in an atmosphere containing oxygen and/or steam.