

WHAT IS CLAIMED IS:

1. A test wafer using method for using a test wafer including a test substrate and a metal foil formed on a front side of said test substrate, said test wafer using method comprising:

a modified layer forming step of applying a laser beam having a transmission wavelength to said test substrate from a back side of said test wafer in the condition where a focal point of said laser beam is set inside said test substrate, thereby forming a modified layer inside said test substrate;

a damage detecting step of observing a front side of said test wafer after performing said modified layer forming step, thereby detecting damage to said metal foil; and

a processing conditions adjusting step of adjusting at least one of the laser processing conditions adopted in said modified layer forming step according to the result of detection of said damage obtained in said damage detecting step, said at least one of the laser processing conditions being selected from the group consisting of the wavelength of said laser beam, average power of

said laser beam, repetition frequency of said laser beam, pulse width of said laser beam, numerical aperture of a focusing lens for focusing said laser beam, focal position of said laser beam, and relative feed speed of said test wafer.

2. The test wafer using method according to claim 1, wherein the test wafer includes:

a base layer formed on the front side of said test substrate, the material of said base layer being selected from the group consisting of Ti and Cr, the material of said metal foil being formed on the front side of said base layer and being selected from the group consisting of Al, Sn, Pt, Au, Ag, In, Pb, and Cu.

3. The test wafer using method according to claim 2, wherein said metal foil is formed on the whole of the front side of said test substrate, said metal foil having a melting point lower than or equal to a melting point of a metal forming a wiring layer included in each device.

4. The test wafer using method according to claim 2, wherein said metal foil is formed on the front side of said test substrate so as to have a pattern selected from the group consisting of a dot pattern, lattice pattern, rectangular pattern, and stripe pattern, said metal foil

having a melting point lower than or equal to a melting point of a metal forming a wiring layer included in each device.

5. The test wafer using method according to claim 2, further comprising:

an oxidation preventing film formed on a front side of said metal foil.

6. The test wafer using method according to claim 5, wherein the material of said oxidation preventing film is selected from the group consisting of SiO_2 , TiO_2 , Ta_2O_5 , and polyethylene terephthalate.

7. The test wafer using method according to claim 1, wherein the material of said test substrate is selected from the group consisting of Si, SiC, Al_2O_3 , and GaN.

8. A test wafer using method for using a test wafer including a test substrate and a metal foil formed on a front side of said test substrate, wherein said test wafer lacks devices, and instead the metal foil functions as a substitute for devices formed on an actual wafer, said test wafer using method comprising:

a modified layer forming step of applying a laser beam having a transmission wavelength to said test substrate from a back side of said test wafer in the condition where a focal point of said laser

beam is set inside said test substrate, thereby forming a modified layer inside said test substrate;

a damage detecting step of observing the metal foil after performing said modified layer forming step, thereby detecting damage to said metal foil; and

a laser processing step of performing laser processing on an actual wafer including devices, wherein the laser processing step is performed under laser processing conditions determined based on the damage detecting step.