assembly at a temperature of about 175 to about 400 °C for about 0.25 seconds to about 30 minutes. In some embodiments, a pressure of about 2.0 to about 10 MPa may be applied.

In one aspect, there is provided a method for attachment, comprising: a step of applying a film of metal particles comprising a layer of a composition on a release coating film on a substrate so as to have a thickness of 100 μm to 300 μm after drying; a step of forming an overcoat layer of any one of at least a polymer and a resin on the film of the metal particles; a step of placing a die on the film of the metal particles to form an assembly; a step of applying a pressure of higher than 0 MPa, less than 40 MPa to the assembly; and a step of sintering the assembly at a temperature of 175°C to 400°C for 0.25 seconds to 30 minutes, wherein the composition comprises a paste, and the paste comprises: a metal powder having a d_{50} range of 0.001 μm to 10 μm, the metal powder comprising 30 wt% to 95 wt% of the paste, and silver; a binder having a softening point between 50°C and 170°C, the binder comprising 0.1 wt% to 5 wt% of the paste; and a solvent which dissolves at least the binder, wherein any one of at least the polymer and the resin is decomposed during sintering.

In another aspect, there is disclosed a method for attachment, comprising a step of applying a film of metal particles comprising a layer of a composition on a back side of a wafer so as to have a thickness of 100 μm to 300 μm after drying; a step of forming an overcoat layer of any one of at least a polymer and a resin on the film of the metal particles; a step of dicing the wafer to form a plurality of die; a step of placing at least one die on a release coating film on a substrate to form an assembly; a step of applying a pressure of higher than 0 MPa, less than 40 MPa to the assembly; and a step of sintering the assembly at a temperature of 175°C to 400°C for 0.25 seconds to 30 minutes, wherein the composition comprises a paste, and the paste comprises: a metal powder having a d_{50} range of 0.001 μm to 10 μm, the metal powder comprising 30 wt% to 95 wt% of the paste, and silver; a binder having a softening point between 50°C and 170°C, the binder comprising 0.1 wt% to 5 wt% of the paste; and a solvent which dissolves at least the binder, wherein any one of at least the polymer and the resin is decomposed during sintering.

In yet another aspect, there is provided a method for attachment, comprising a step of applying a film of metal particles comprising a layer of a composition on a back side of a die so as to have a thickness of 100 μm to 300 μm after drying; a step of forming an overcoat layer of any one of at least a polymer and a resin on the film of the metal particles; a step of placing the die on a release coating film on a substrate to form an assembly; a step of applying a pressure of higher than 0 MPa, less than 40 MPa to the assembly; and a step of sintering the assembly at a temperature of 175°C to 400°C for 0.25 seconds to 30 minutes, wherein the composition comprises a paste, and the paste comprises: a metal powder having a d_{50} range of 0.001 μm to 10 μm, the metal powder comprising 30 wt% to 95 wt% of the paste, and silver; a binder having a

softening point between 50°C and 170°C the binder comprising 0.1 wt% to 5 wt% of the paste; and a solvent which dissolves at least the binder, wherein any one of at least the polymer and the resin is decomposed during sintering.

Still other aspects, embodiments, and advantages of these exemplary aspects and embodiments, are discussed in detail below. Embodiments disclosed herein may be combined with other embodiments in any manner consistent with at least one of the principles disclosed herein, and references to "an embodiment," "some embodiments," "an alternate embodiment," "various embodiments," "one embodiment" or the like are not necessarily mutually exclusive and are intended to indicate that a particular feature, structure, or characteristic described may be included in at least one embodiment. The appearances of such terms herein are not necessarily all referring to the same embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

Various aspects of at least one embodiment are discussed below with reference to the accompanying figures, which are not intended to be drawn to scale. The figures are included to provide illustration and a further understanding of the various aspects and embodiments, and are incorporated in and constitute a part of this specification, but are not intended as a definition of the limits of the invention. Where technical features in the figures, detailed description or any claim are followed by references signs, the reference signs have been included for the sole purpose of increasing the intelligibility of the figures and description. In the figures, each identical or nearly identical component that is illustrated in various figures is represented by a like numeral. For purposes of clarity, not every component may be labeled in every figure. In the figures:

FIGS. 1A-1D illustrate non-limiting examples of a formulation applied to a substrate in accordance with one or more embodiments;

FIG. 2 illustrates a stamping process in accordance with one or more embodiments;

FIG. 3 illustrates a stamping support in accordance with one or more embodiments;

FIG. 4 illustrates examples of stamping foils in accordance with one or more embodiments;

FIG. 5 illustrates a die lamination process in accordance with one or more embodiments;

FIG. 6 presents a schematic of a die attachment approach in accordance with one or more embodiments;