cooling the molten alloy particles to a temperature that is no greater than a solidus temperature of the molten alloy particles so that the molten alloy particles solidify while accelerating;

impacting the solid alloy particles onto a substrate, wherein the impacting particles deform and metallurgically bond to the substrate to produce a solid alloy preform.

20. A system comprising:

a melting assembly configured to produce at least one of a stream of molten alloy and a series of droplets of molten alloy;

producing at least one of a stream of molten alloy and a series of droplets of molten alloy;

an atomizing assembly configured to produce electrically-charged particles of the molten alloy by impinging electrons on at least one of the stream of molten alloy and the series of droplets of molten alloy to atomize the molten alloy;

a field producing assembly configured to produce an electrostatic field to accelerate the electrically-charged molten alloy particles;

a thermal control zone configured to cool the molten alloy particles to a temperature that is no greater than a solidus temperature of the molten alloy particles so that the molten alloy particles solidify while accelerating; and

a substrate comprising an alloy that is the same alloy as that forming the alloy particles, wherein the electrostatic field accelerates the alloy particles so that solid alloy particles impact the substrate, deform, and metallurgically bond to the substrate to produce a solid alloy preform.

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a field producing assembly configured to produce an electrostatic field to accelerate the electrically-charged molten alloy particles;

a thermal control zone configured to cool the molten alloy particles to a temperature that is no greater than a solidus temperature of the molten alloy particles so that the molten alloy particles solidify while accelerating; and

a substrate comprising an alloy that is the same alloy as that forming the alloy particles, wherein the electrostatic field is configured to accelerate the alloy particles so that solid alloy particles impact the substrate, deform, and metallurgically bond to the substrate to produce a solid alloy preform.