

## FORMING OF METALLIC GLASS BY RAPID CAPACITOR DISCHARGE

### ABSTRACT

An apparatus and method of uniformly heating, Theologically softening, and thermoplastically forming metallic glasses rapidly into a net shape using a rapid capacitor discharge forming (RCDF) tool are provided. The RCDF method utilizes the discharge of electrical energy stored in a capacitor to uniformly and rapidly heat a sample or charge of metallic glass alloy to a predetermined "process temperature" between the glass transition temperature of the amorphous material and the equilibrium melting point of the alloy in a time scale of several milliseconds or less. Once the sample is uniformly heated such that the entire sample block has a sufficiently low process viscosity it may be shaped into high quality amorphous bulk articles via any number of techniques including, for example, injection molding, dynamic forging, stamp forging, and blow molding in a time frame of less than 1 second.

FIG. 1