



Analysis Of Permanent Magnetic Materials By Cold Sintering Process for 3D Printing Application

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Abstract:

The development of 3D printing application magnetic materials will open doors to new applications in magnetic properties and will lead to significant opportunities. Metallic powder materials, such as Fe-based powder, Al-based powder and Ti-based powder, are mainly applied in high-temperature 3D printing. The techniques including Selective Laser Sintering(SLS), Selective Laser Melting(SLM). NdFeB is the organic-based composites The purpose of this paper is to densify the NdFeB bulk by Cold Sintering Process in a hydrothermal environment. Unlike the high temperature sintering method, it can reduce the cost and increase the production speed to solve the traditional manufacturing limitations. The sintered sample will be further analyzed by means of microwave annealing to improve sample characteristics. Finally, will applied to 3D printing technology. This research focuses on the concept of the low-temperature sintering process to the NdFeB materials by its characteristics analysis. First analyzing the two types NdFeB powders MQPS11-9 and MQU-F and then finding suitable additives. These two different Nd-FeB powders were synthesized using cold sintering temperature at 150°C - 250°C with a bulk density of 80% relative to theoretical density and also better magnetic properties were



obtained after microwave annealing. Thereby the research of these two types of MQPS11-9 and MQU-F powders shows how to obtain samples with great magnetic properties at low pressure which is applicable for 3D printing technology

Biography:

Pandi Divya, doing 3rd year Ph.D. research scholar at National Cheng Kung University, Tainan, Taiwan (R.O.C). My Research focus on Semiconductor as well in Material science based topics.

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