عنوان مقاله:

Investigation of Functionally Graded Materials (FGM) and a study on their application and properties in different industries

محل انتشار:

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خلاصه مقاله:

In materials science Functionally Graded Materials (FGMs) may be characterized by the variation in composition and structure gradually over volume, resulting in corresponding changes in the properties of the material. The materials can be designed for specific function and applications. Various approaches based on the bulk (particulate processing), preform processing, layer processing and melt processing are used to fabricate the functionally graded materials. Functionally gradient materials (FGM) are innovative materials in which final properties varies gradually with dimensions. It is the recent development in traditional composite materials which retains their strengths and eliminates their weaknesses. It can be formed by varying chemical composition, microstructure or design attributes from one end to other as per requirement. This feature allows FGM to have best material properties in required quantities only where it is needed. Though there are several methods available for manufacturing FGMs, additive based metal deposition (by laser, electron beam, plasma etc.) technologies are reaping particular interest owing to their recent developments. This paper presents evolution, current status and challenges of functionally gradient materials (FGMs). Various manufacturing processes of different types of FGMs are also presented. In addition, applications of FGMs in various fields including aerospace, defence, mining, power and tools manufacturing sectors .are discussed in detail

کلمات کلیدی:

(Titanium/Hydroxyapatite, Functionally graded materails, Powder metallurgy, Spark plasma sintering (SPS