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Nanomagnetic Materials Processed by Plasma Cold spraying

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Abstract : Cold spraying (CS) is a radical departure from conventional thermal spray (TS) techniques in that the deposition process relies purely on kinetic energy rather thanon a combination of thermal and kinetic components[1-3]. The most advantage of this process over TS is the ability togenerate dense coatings retaining initial materialchemistry and phase composition with a very little oxidation. Also, low temperature process (no bulk particle melting) eliminates solidification stresses and enables thicker coatings [4]. However, hard brittle materials like ceramics can not be sprayed without using ductile binders. In this study, magnetic alloys such as FeSiBNbCu also called Finemet and FeSiBNbCu-Al with various percentages of Aluminum coatings were synthesized using cold spraytechnique in order to produce ferromagnetic materials. Ultrafine grain coatings were obtained using FINEMET nanostructured powders mixed with Aluminum as ductile binder in order to improve adherence

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