ABSTRAK

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Program Studi : Teknik Metalurgi dan Material
Judul : Pengaruh Temperatur Sinter dan Fraksi Volume Penguat Al_2O_3 Terhadap Karakteristik Komposit Laminat Hibrid Al/SiC-Al/Al_2O_3 Produk Metalurgi Serbuk

Kebutuhan material yang semakin tinggi mendorong manusia untuk menciptakan sebuah rekayasa material, maka dikembangngkanlah komposit laminat hibrid dengan Al sebagai matriks dan SiC serta Al_2O_3 sebagai penguatnya. Pembuatan komposit laminat hibrid Al/SiC-Al/Al_2O_3 ini menggunakan proses metalurgi serbuk dengan proses pelapisan *electroless plating* logam Mg untuk meningkatkan keterbasahan. Pada penelitian ini dilakukan variasi temperatur sinter 600ºC, 650ºC dan 700ºC serta variasi fraksi volume penguat Al_2O_3 10%, 20%, 30%, dan 40% untuk mengetahui karakteristik material komposit laminat hibrid Al/SiC-Al/Al_2O_3. Hasil menunjukkan bahwa peningkatan temperatur sinter dan fraksi volume penguat Al_2O_3 akan meningkatkan densitas dan modulus elastisitas serta menurunkan porositas pada komposit laminat hibrid Al/SiC-Al/Al_2O_3.

Kata kunci: komposit laminat hibrid Al/SiC-Al/Al_2O_3, temperatur sinter, fraksi volume Al_2O_3, *electroless plating*, difusi

ABSTRACT

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Study Programme	:	Metallurgy and Materials Engineering
Title	:	The Effect of Sintering Temperature and Al_2O_3 Reinforcement Volume Fraction on the Characteristic of Al/SiC-Al/Al_2O_3 Hybrid Laminate Composite as a Powder Metallurgy Product

The increasing demand of material has motivated human being to create a material design. This stimulates the developing of hybrid laminate composite by the use of Al as the matrix and SiC and Al_2O_3 as the reinforcements. The Al/SiC-Al/Al_2O_3 hybrid laminate composite is done by using powder metallurgy process by means of Mg metal electroless plating process in order to increase wettability. In this research, the variations of 600ºC, 650ºC and 700ºC sintering temperature and the variations of 10%, 20%, 30% and 40% Al_2O_3 reinforcement volume fraction were done to find out the characteristic of Al/SiC-Al/Al_2O_3 hybrid laminate composite material. The result showed that the raising of the sintering temperature and the Al_2O_3 reinforcement volume fraction increases the density and the modulus elasticity and decreases the porosity of the Al/SiC-Al/Al_2O_3 hybrid laminate composite.

Key words : Al/SiC-Al/Al_2O_3 hybrid laminate composite, sintering temperature, Al_2O_3 volume fraction, electroless plating, diffusion