

Komitet za termodinamiku i fazne dijagrame Srbije

u saradnji sa:

Fakultetom tehničkih nauka u Kosovskoj Mitrovici,

Tehničkim fakultetom u Boru i

Associated Phase Diagram and Thermodynamics Committee
(Poland, Czech Republic, Hungary, Bulgaria, Slovenia, Serbia,
Montenegro, Romania, Croatia, Bosnia and Herzegovina)

JEDANAESTI SIMPOZIJUM O TERMODINAMICI I FAZNIM DIJAGRAMIMA

sa međunarodnim učešćem



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Izdavač:

Fakultet Tehničkih nauka
Kneza Miloša br.7, 38220 Kosovska
Mitrovica
Tel/Fax: (+381 28) 425-320 / 425-322
office@ftn.pr.ac.rs



Za izdavača:

Dekan,
Prof. dr Srđan Jović

Urednik:

Prof. dr Duško Minić

Kompjuterska obrada:

Doc. dr Aleksandar Đorđević

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Jedanaesti simpozijum o termodinamici i faznim dijagramima

Naučni odbor

Prof. dr D. Minić, Srbija, predsednik,
Prof. dr M. Zečević, Srbija
Prof. dr D. Manasijević, Srbija
Prof. dr Y. Du, Kina
Prof. dr G. Kaptay, Mađarska
Prof. dr J. Vreštal, Češka Republika
Prof. dr I. Katayama, Japan
Prof. dr G.P. Vassilev, Bugarska
Prof. dr J. Medved, Slovenija
Prof. dr J. Lamut, Slovenija
Prof. dr A. Udovsky, Rusija
Doc. dr T. Holjevac Grgurić, Hrvatska
Prof. dr D. Blečić, Crna Gora
Prof. dr D. Ćubela, BiH
Dr V. Ćosović, Srbija
Dr N. Talijan, Srbija
Prof. dr N. Štrbac, Srbija
Dr A. Kostov, Srbija
Dr M. Sokić, Srbija
Dr B. Marković, Srbija

Organizacioni odbor

Doc. dr. A. Đorđević, predsednik
Prof. dr D. Minić,
Prof. dr M. Zečević,
Prof. dr D. Manasijević,
Doc. dr Lj. Balanović,
dipl. inž. J. Petrović
dipl. inž. M. Mitrović

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Analysis of the thermal properties of particle-reinforced aluminum composites

**Jasmina Petrović, Srba Mladenović, Ivana Marković, Uroš Stamenković,
Milan Nedeljković, Milijana Mitrović**

University of Belgrade, Technical Faculty in Bor, VJ 12, Bor, Serbia

Abstract

In recent years, there has been a lot of interest in aluminum composites because of their improved mechanical properties, higher thermal stability, and lower weight than standard aluminum alloys. The thermal behavior of aluminum composites was examined during continuous heating, and thermal diffusivity and conductivity were measured.

The experimental procedure involved the reinforcement of the aluminum matrix AN EW 6061 with ceramic particles Al_2O_3 to create aluminum composites. The reinforcer was used in size 80 μm and three different fractions of 2 mas%, 5 mas% and 8 mas%. Stir casting was used to produce the composite. The thermal characteristics of solidified composite samples were measured using the flash method during continuous heating in a protected nitrogen environment at a heating rate of 10 $^{\circ}C/min$.

The thermal diffusivity and thermal conductivity values were found to be slightly lower compared to the matrix alloy. In addition, as the mass fraction of reinforcement in the composite increased, the thermal diffusivity values decreased, while the thermal conductivity values first decreased and then increased.

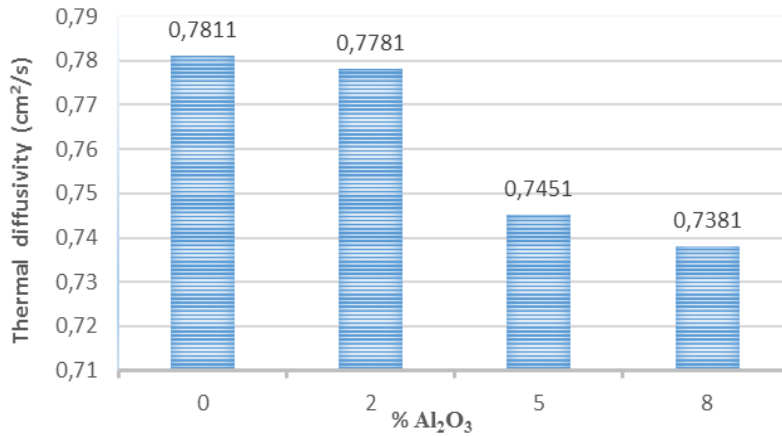
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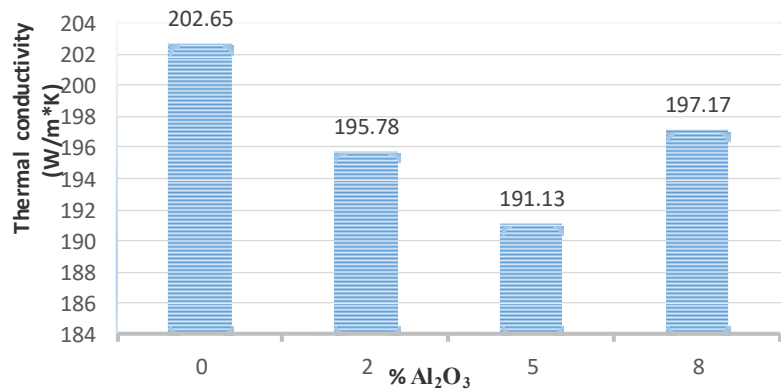
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Graphical abstract:



Thermal diffusivity of aluminium composites.



Thermal conductivity of aluminium composites.