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Effect of Serpentine Grooves on Heat Transfer Characteristics of Microchannel Heat Sink with Different Nanofluids

Article

Nov 2015

✉ A. Sivakumar · 👤 Alagumurthi Natarajan · 📄 T. Senthilvelan

An experimental and numerical investigation of the thermal performance of three different nanofluids ethylene glycol-based CuO, water-based CuO, and Al₂O₃ is done in a serpentine-shaped microchannel heat sink. The microchannels considered ranged from 810 μ m to 890 μ m in hydraulic diameter and were made of copper material. The experiments were conducted...

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Experimental investigation of forced convective heat transfer performance in nanofluids of Al₂O₃/water and CuO/water in a serpentine shaped micro channel heat sink

Article

Aug 2015

● A. Sivakumar · ● Alagumurthi Natarajan · ● T. Senthilvelan

The microchannels are device used to remove high heat fluxes from smaller area. In this experimental research

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The microchannels are used to remove high heat fluxes from engine area. In this experimental research, work the heat transfer performance of nanofluids of Al₂O₃/water and CuO/water were compared. The important character of such fluids is the enhanced thermal conductivity, in comparison with base fluid without considerable alteration in physi...

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Experimental and numerical investigation of forced convective heat transfer coefficient in nanofluids of Al₂O₃/water and CuO/EG in a serpentine shaped microchannel heat sink

Article

Mar 2015

● A. Sivakumar · ● Alagumurthi Natarajan · ● T. Senthilvelan

Nanofluid is the suspension of solid nanosized particles in conventional fluids. The important character of such fluids is the enhanced thermal conductivity, in comparison with base fluid without considerable alteration in physical and chemical properties. In this investigation nanofluids of Al₂O₃/water and CuO/Ethylene glycol were prepared separat...

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Investigation of Heat Transfer in Serpentine Shaped Microchannel Using Al₂O₃/Water Nanofluid

Article

Oct 2014

● Alagumurthi Natarajan · ● T. Senthilvelan

An experimental investigation was conducted to explore the maximum heat transfer in a serpentine shaped microchannel by varying the hydraulic diameter, flow rates and with influence of Al₂O₃ nanofluid. Microconvection is an important area in heat transport phenomena. Surface area is one of the important factors in high heat transfer in a microchann...

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Multi-Objective Optimization in Wire-Cut Electric Discharge Machining of Al₆₀₆₃/Al₂O₃ Metal Matrix Composite through Response Surface Methodology

Article

Jul 2014

● K. Hemalatha · ● V.S.K. Venkatachalapathy · ● Alagumurthi Natarajan

This paper proposed a response surface methodology technique to optimize the multi-response of wire-cut electric discharge machining process. The machining was done on Al 6063 plate is casted with varying mass of Al₂O₃ (3%, 6%, 9%). Stir casting process is adopted for casting the composite plate. Design Expert is used to identify the effect of key...

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Performance, Combustion, and Emission Characteristics of a Low Heat Loss Diesel Engine Operated on Eucalyptus Oil and Diesel Fuel Blends

Article

Jun 2014

● K. Anandavelu · ● Alagumurthi Natarajan · ● C. G. Saravannan

The aim of this study is to apply low heat rejection to an engine to improve engine performance using Eucalyptus oil and diesel fuel blend as a fuel. For this purpose a direct injection diesel engine was converted into a low heat rejection engine, and its performance, emission, and combustion characteristics were investigated experimentally. The ex...

investigated experimentally. The ex...

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Experimental comparative study of heat pipe performance using CuO and TiO₂ nanofluids

[Article](#)

Apr 2014

 R. Manimaran ·  K. Palaniradja ·  Alagumurthi Natarajan ·  J. Hussain

SUMMARY In recent years, developing an energy efficient conventional heat pipe is more important because of the development of electronics and computer industries. To enhance the thermal performance of heat pipe, different nanofluids have been widely used. In this paper, an experimental investigation of heat transfer performance of heat pipe has be...

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Wear Studies on plasma sprayed Al₂O₃-40 wt%8YSZ composite ceramic coating on Ti-6Al-4V alloy used for biomedical applications

[Article](#)

Mar 2014

 G. Perumal ·  Geetha Manivasagam ·  Asokamani Rajamanickam ·  Alagumurthi Natarajan

The relative wear resistance of three candidate coatings for titanium alloy-based orthopaedic applications was compared using a reciprocating test method. Micrometer-sized powders of the following compositions were plasma sprayed onto Ti-6Al-4V (TAV) alloy: (i) Al₂O₃ (AO) (ii) 8 mol% yttria stabilized Zirconia (8YSZ) and (iii) Al₂O₃-40 wt%8YSZ (A4Z...

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A comparative Study on the Wear Behavior of Al₂O₃ and SiC Coated Ti-6Al-4V Alloy Developed Using Plasma Spraying Technique

[Article](#)

Apr 2013

 G. Perumal ·  Geetha Manivasagam ·  Asokamani Rajamanickam ·  Alagumurthi Natarajan

This paper reports the wear characteristics of the ceramic coatings made with Al₂O₃ and also with SiC which were performed using atmospheric plasma spraying technique on the Ti-6Al-4V biomedical alloy with the aim of

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Preparation and characterization of copper oxide nanofluid for heat transfer applications

[Article](#)[Full-text available](#)

Feb 2013

 R. Manimaran ·  K. Palaniradja ·  Alagumurthi Natarajan · [...] ·  J. Hussain

Copper oxide nanofluid has been prepared by single-step wet chemical precipitation method. The preparation of nanofluid is carried out by reducing copper chloride with sodium hydroxide as reducing agent in deionised water as base fluid by means of conventional heating. The characterization of sample nano powder is done by X-ray diffraction (XRD), E...

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Effect of cryogenic treatment on microstructure and wear characteristics of AISI M35 HSS

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