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Skills and Expertise

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Publications

Publications (75)

Mechanical, ballistic impact, and water absorption behavior of luffa/graphene reinforced epoxy composites

[Article](#)

Aug 2020

Ashok K G · K. Kalaichelvan

The mechanical, ballistic, and moisture intake properties of luffa fiber reinforced with graphene-modified epoxy composites were experimentally investigated. The nanofiller graphene particles were modified with a matrix using the mechanical stirring process. The filler (graphene) of size 20 nm is modified with the matrix of different weight percent...

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Mechanical and morphological properties of luffa/carbon fiber reinforced hybrid composites

[Article](#)

Jul 2020

Ashok K G · K. Kalaichelvan · V Elango · [...] · M.C. Raju

This study investigates the mechanical performance and highlights the failure mechanisms of luffa/carbon fiber hybrid polymer composites. The luffa and carbon fibers are added in the weight percentage of 40/0, 20/20, 25/15, and 15/25 with an epoxy matrix. The fabricated samples are machined as per ASTM standards. The Mechanical tests were done usi...

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Effect of Nano Fillers on Mechanical Properties of Luffa Fiber Epoxy Composites

[Article](#)

Jun 2020

Ashok K G · K. Kalaichelvan · Ajith Damodaran

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Influence of Process Parameters on Machinability of Inconel 718 by Electrochemical Micromachining Process using TOPSIS Technique

[Article](#)

Jun 2019

T. Geethapriyan · T. Muthuramalingam · K. Kalaichelvan

Accurate and precise micromachining with intricate features is an essential requirement for various

applications of engineering materials in the present scenario. This is effectively achieved by the enhancing the electrochemical machining process, since it is a new and promising technique offering distinct advantages in overall machining quality. T...

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Enhancement of vibration characteristics in filament wound FRP composite shafts using nitinol wires

[Article](#)

Aug 2018

✉ Kannan Murugesan · 📸 K. Kalaichelvan · 📸 Jenarthanan mp · 📸 T. Sornakumar

Purpose The purpose of this paper is to investigate the use of embedded Shape Memory Alloy (SMA) nitinol wire for the enhancement of vibration and damping characteristics of filament-wound fiber-reinforced plastic composite hollow shafts. Design/methodology/approach The plain Glass Fiber-Reinforced Plastic (GFRP) and plain Carbon Fiber-Reinforce...

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Formability Analysis on Superplastic Forming of AZ91 Magnesium Alloy Sheet

[Article](#)

Jul 2018

✉ G. Kumaresan · 📸 K. Kalaichelvan

Superplastic sheet metal forming allows the production of complex parts that are not formable under normal conditions. Superplastic sheet metal forming processes are normally based on the same common principle: the sheet metal is firmly clamped between the die halves and is blow-formed by means of gas pressure. Generally superplastic forming can on...

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Comparative study of effect of surface texturing on cutting tool in dry cutting

[Article](#)

Sep 2017

✉ Jesudass Thomas · 📸 K. Kalaichelvan

Recent researches in the field of dry machining have indicated that surface texture has the potential to influence tribological conditions. Researchers have studied the application of controlled surface micro textures on cutting tool surfaces to improve machining performance by changing the tribological conditions at the interfaces of tool-chip and...

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Taguchi-Grey Multi-Response Optimization on Structural Parameters of Honeycomb Core Sandwich Structure for Low Velocity Impact Test

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

May 2018

✉ J. Suresh Kumar · 📸 K. Kalaichelvan

In this study, aluminum honeycomb core sandwich structures was investigated to find the effect of various structural parameters like cell size, cell wall thickness and core height for the low velocity impact test. The effect of these structural parameters on the response characteristics like energy absorption, impact force and honeycomb core densit...

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Influence of Coated Tool Electrode on Drilling Inconel Alloy 718 in Electrochemical Micro Machining

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

Dec 2016

✉ T. Geethapriyan · 📸 K. Kalaichelvan · 📸 T. Muthuramalingam

Since Inconel-718 alloy is high hardened material, it is very difficult to machine the alloy with complex shape using conventional machining process. In the present study, an endeavor has been made to drill the Inconel alloy 718 in micro level using electro chemical machining processes. It has been attempted to find the influence of coatings over c...

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Performance analysis of process parameters on machining - titanium alloy in electrochemical micromachining process

[Article](#)

Oct 2016

✉ T. Geethapriyan · 📸 K. Kalaichelvan · 📸 T. Muthuramalingam · 📸 Arunachalam Rajadurai

Due to inherent properties of Ti-6Al-4V alloy, it is being used in the application of fuel injector nozzle for diesel engine, aerospace and marine industries. Since the electrochemical micromachining process involves the no heat-affected zone, no tool wear, stress- and burr-free process compared to other micromachining processes, it is widely used...

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Experimental investigation and multiphysics simulation on the influence of micro tools with various end profiles on diametrical overcut of holes machined using electrochemical micromachining for a predetermined optimum combination of process parameters

[Article](#)

Oct 2016

 [M. R. Pratheesh Kumar](#) · [K. Prakasan](#) · [K. Kalaichelvan](#)

Electrochemical micromachining (EMM) process is generally applied to shaping of electrically conductive materials which has been gaining popularity in the production of biomedical, MEMS, aerospace and nuclear components. The dimensional accuracy is affected by various process parameters of EMM and by the end profile of the cathode (tool) used to ma...

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Experimental Investigation of Electrochemical Micromachining Process Parameters on Pure-Titanium Using Taguchi-Grey Relational Analysis

[Article](#)

Sep 2016

 [T. Geethapriyan](#) · [K. Kalaichelvan](#)

Non-conventional machine are nowadays plays a vital role in manufacturing complex shaped products and to produce the product with high accuracy the electrochemical machining is widely used to machine complicated shapes for electrically conducting difficult-to-machine materials such as super alloys, Ti-alloys, alloy steel, tool steel, stainless stee...

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Multi performance optimization of electrochemical micro-machining process surface related parameters on machining Inconel 718 using Taguchi-grey relational analysis

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

Jun 2016

 [T. Muthuramalingam](#) · [geethapriyan Thangamani](#) · [K. Kalaichelvan](#)

Due to several merits such as higher machining rate and high machining accuracy, electrochemical micromachining (ECMM) is used to machine high strength materials with complex shapes. In this experimental investigation, Inconel 718 specimens have been machined with brass electrode of 500 µm diameter using ECMM. Since electrochemical micromachining i...

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Multi performance optimization of electrochemical micro-machining process surface related parameters on machining inconel 718 using taguchi-grey relational analysis

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Jun 2016

 [Geethapriyan Thangamani](#) · [K. Kalaichelvan](#) · [T. Muthuramalingam](#)

Due to several merits such as higher machining rate and high machining accuracy, electrochemical micromachining (ECMM) is used to machine high strength materials with complex shapes. In this experimental investigation, Inconel 718 specimens have been machined with brass electrode of 500 µm diameter using ECMM. Since electrochemical micromachining i...

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An Analysis of Superplastic Forming in a Re-Entrant Shape

[Article](#)

Jan 2016

 [G. Kumaresan](#) · [K. Kalaichelvan](#)

Superplasticity is the ability of a polycrystalline material to exhibit, very large elongations without necking prior to failure in generally isotropic manner. Elongations in excess of 400% are usually referred to as Superplasticity. As the limitations of sheet metal fabrication are most often determined by the tensile ductility, superplasticity in...

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Fabrication and Testing of Hybrid Composite plates for Stealth Aircraft using Microwave Oscillator

[Article](#)

Jan 2016

 [K. Mohamed Bak](#) · [Ambika](#) · [Belsi](#) · [...] · [K. Kalaichelvan](#)

The objective of this project is to implement the absorption properties of carbon nanotubes and natural fiber together in the stealth technology. It is carried out by designing two Aluminium plates each one with different natural fiber and to test it using a microwave oscillator. The two types of natural fiber that are used are Coconut fiber (Coir)...

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Influence of thermal conductivity and thermal stability on the fade and recovery characteristics of non-asbestos semi-metallic disc brake pad

[Article](#)

Oct 2015

 [Vengatesen Thiagarajan \(Rajan\)](#) · [K. Kalaichelvan](#) · [Vijay R](#) · [D. Lenin Singaravelu](#)

Thermal conductivity and thermal stability are the key requirements for friction materials. In this present work, three non-asbestos semi-metallic brake pads were developed using the same ingredients in the same

proportion except by varying steel fibre by 30, 35, 41 wt%, synthetic barites contents by 11, 6, 0 wt% and designated as Na01, Na02, and N...

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Evaluation of Failure Modes of Pure Resin and Single Layer of Adhesively Bonded Lap Joints Using Acoustic Emission Data

[Article](#)

Aug 2015

K. Mohamed Bak · K. Kalaichelvan

The purpose of this present study is to monitor the failure modes of pure resin and single layer of adhesively bonded lap joints using acoustic emission (AE) technique under tensile loading. Parametric analysis is performed using AE count rate, cumulative counts, time, frequency, amplitude and duration on the AE data obtained during the tensile tes...

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Upshot of Ultrasonic Amplitude on Developing the AA6061/SiC Metal Matrix Nanocomposites

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

Aug 2015

Poovazhagan Lakshmanan · K. Kalaichelvan · Vignesh Balaji · [...] · Amith S C

In this work, AA6061/1.25 vol. % SiCp metal matrix nanocomposites (MMNCs) were fabricated using the ultrasonic cavitation assisted casting process. To investigate the effect of ultrasonic amplitudes on processing the MMNCs, the MMNC samples were processed with 15 µm, 30 µm and 50 µm of ultrasonic amplitudes. The results indicate that the ultrasonic...

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Development and Mechanical Testing of Filament Wound FRP Composite Components

[Article](#)

Aug 2015

M. Kannan · K. Kalaichelvan · T. Sornakumar

Glass Fiber Reinforced Plastic composites are used for pipes, high pressure vessels, aircrafts, automobiles, sport goods and Glass Fiber Reinforced Plastic composites are used for pipes, high pressure vessels, aircrafts, automobiles, sport goods and structural applications due to their high corrosion resistance, high specific strength, low density,...

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Hybrid Nanocomposites – A Review

[Article](#)

Jun 2015

T. Thomas Koilraj · K. Kalaichelvan

Since the last ten years, research happenings in the field of nanomaterials have been increased dramatically. Materials scientists and researchers have realized that the mechanical properties of materials can be altered at the fundamental level, i.e. at the atomic-scale. Carbon nanotubes have been well recognized as nanostructural materials that ca...

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Experimental Study on Mechanical Properties of PA66 Blended with MWNTs

[Conference Paper](#)

Jun 2015

T. Thomas Koilraj · K. Kalaichelvan

A composite material is a macroscopic consolidation of two or more materials, having a detectable interface between them. A nanocomposite is the one which consists of two or more nanosized materials which are dispersed in a matrix in order to perk up the properties of the primary material. Polymer composites are prepared by dispersing strengthening...

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A study on process parameters of electrochemical micromachining to reduce stray current

[Conference Paper](#)

Apr 2015

Rajendiraprasad.K.S · Geethapriyan.T · K. Kalaichelvan · G. Kumaresan

Accurate and precise micro machining of complex features in a wide range of engineering materials including metals and ceramics, is an essential requirement in present scenario, which can be served by electrochemical machining process, since it proves to be a promising technique providing various advantages and machining variety of materials. In th...

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Size effect on friction in forward extrusion process of AA6063/SiC 5 %

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

Apr 2015

Veerasundaram Jayaseelan · K. Kalaichelvan · Jayaraman Ponnambalathandi

Friction is a kind of response occurring during relative motion in extrusion process. Friction is varying with respect to interface condition, due to surface the friction may maximum or minimum. In metal forming, the determination of interface friction there are many methods existing. In the present work friction determined by forward extrusion, th...

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A Review on Investigating the Effects of Process Parameters in Electrochemical Machining

[Conference Paper](#)

Mar 2015

Geethapriyan Thangamani · K. Kalaichelvan · Arunachalam Rajadurai · [...] · S. Naveen

Nowadays, Non-conventional machine need has been increased due to their unique advantage of each machining process and especially the need for high precision, high machining rate, better control increased the need for ElectroChemical Machining process and ElectroChemical Micro-Machining process. In this paper, an overview on the current research, d...

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Processing and Performance Characteristics of Aluminum-Nano Boron Carbide Metal Matrix Nanocomposites

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

Mar 2015

Poovazhagan Lakshmanan · K. Kalaichelvan · T. Sornakumar

In this research work, ultrasonic cavitation-assisted casting process was used to fabricate the aluminum alloy-nano boron carbide metal matrix nanocomposites. The optical microscopy results revealed the refined matrix grains in the microstructure of the aluminum alloy-nano boron carbide composites. Boron carbide nanoparticles were uniformly distrib...

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Experimental Investigation of Machining Rate in Electrochemical Micromachining of Stainless Steel

[Conference Paper](#)

Mar 2015

Mani prabu SS · Natarajan U · Geethapriyan T · K. Kalaichelvan

Electrochemical micromachining (EMM) induces rising importance in advanced future micromachining techniques due to unique advantages such as no tool wear, stress free surface and absence of heat affected zone which is making it an inevitable manufacturing process for the production of precise medical equipments. The stainless steel (SS) 316 grades...

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Experimental Investigation of Electrochemical Machining (ECM) Process Parameters on Micro Holes in Inconel 718

[Conference Paper](#)

Feb 2015

Geethapriyan T · K. Kalaichelvan · T. Muthuramalingam · G. Kumaresan

Electro-chemical machining been practiced in aerospace, automobile and other heavy industries for shaping, milling, deburring and finishing operations. Application of ECM in micro fabrication and in the processing of thin films is referred to as Electro-chemical micro machining (EMM). A variety of metals and alloys including conducting ceramics and...

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Acoustic emission characterization of failure modes of single-lap joints in glass/epoxy specimens

[Article](#)

Feb 2015

K. Mohamed Bak · K. Kalaichelvan · A. Jothilingam · S. RajendraBoopathy

The main objective of this study is to predict the joint strength and frequency ranges for failure modes on single-lap joints of glass fiber/epoxy specimens under tensile loading, without causing much damage to the lap joint specimen. To design structural components using composite materials, a deep understanding about the material behavior and its...

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Influence of specific heat capacity on hybrid non-asbestos brake pad formulation

[Article](#)

Jan 2015

Vengatesen Thiagarajan (Rajan) · K. Kalaichelvan · K. Srinivasan · [...] · Vijay R

Specific heat capacity (SHc) plays an important role in the existence of brake pads. Higher SHc tends to increase the loosening of the organic ingredients affecting the braking level on the other while too low SHc will have a worse effect on the counter disc, so SHc should be optimum. In this work hybrid formulation consisting of organic ingredient...

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A review on investigating the effects of process parameters in electrochemical machining

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Jan 2015