

Assoc. Prof. BARIŞ SABUNCUOĞLU

Personal Information

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Education Information

Doctorate, Loughborough University, Mechanical And Manufacturing Engineering, United Kingdom 2009 - 2012

Postgraduate, Orta Doğu Teknik Üniversitesi, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, Turkey 2003 - 2006

Undergraduate, Orta Doğu Teknik Üniversitesi, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, Turkey 1995 - 2000

Foreign Languages

English, B2 Upper Intermediate

Dissertations

Doctorate, Development of Parametric Finite Element Modelling Methods for Nonwoven Materials Including Rate Dependent Material Behaviour, Loughborough University, Mechanical And Manufacturing Engineering, 2012

Postgraduate, Fatigue crack growth analysis models for functionally graded materials, Orta Doğu Teknik Üniversitesi, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, 2006

Research Areas

Mechanical Engineering, Mechanical, Solid Mechanics, Fracture Mechanics, Finite Element Methods, Metallurgical and Materials Engineering, Material science and engineering, Composites, Engineering and Technology

Academic Titles / Tasks

Assistant Professor, Hacettepe Üniversitesi, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, 2018 - Continues

Assistant Professor, Hacettepe Üniversitesi, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, 2017 - 2018

Assistant Professor, Türk Hava Kurumu Üniversitesi, Mühendislik Fakültesi, Mekatronik Mühendisliği Bölümü, 2015 - 2017

Research Assistant, Katholieke Universiteit Leuven, Mühendislik Fakültesi, Malzeme Bilimi, 2012 - 2014

Research Assistant, Loughborough University, Engineering, Mechanical And Manufacturing Engineering, 2010 - 2011

Academic and Administrative Experience

Türk Hava Kurumu Üniversitesi, Mühendislik Fakültesi, Mekatronik Mühendisliği Bölümü, 2015 - 2016

Courses

STATICS, Undergraduate, 2016 - 2017

ENGINEERING MECHANICS, Undergraduate, 2016 - 2017

DYNAMICS, Undergraduate, 2016 - 2017

Advising Theses

SABUNCUOĞLU B., Meso-scale finite element modeling of microvascular channels in composites, Postgraduate, A.ALI(Student), 2017

Jury Memberships

Post Graduate, DEVELOPMENT OF AN ARTIFICIAL NEURAL NETWORK BASED, Tez savunma jürisi, ODTÜ, 2017, September, 2017

Post Graduate, Structural and Mechanical Characterization of Hybrid Composite Materials, Yüksek lisans tez jürisi, Türk Hava Kurumu Üniversitesi, 2017, May, 2017

Post Graduate, OPTIMIZATION OF COMPLIANT PARTS OF A HYBRID TRAILING EDGE, Yüksek lisans tez jürisi, January, 2017

Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

- I. **Stress analysis of vascularized glass fiber composites exposed to bending loading**
Tanabi H., Atasoy A. G., DEMİRAL M., SABUNCUOĞLU B.
ADVANCED COMPOSITE MATERIALS, 2021 (Journal Indexed in SCI)
- II. **Development of a procedure to model the mechanical behavior of composites with embedded element method by considering the matrix non-linearity**
ŞIK A., GÜRSES E., SABUNCUOĞLU B.
COMPOSITE STRUCTURES, vol.259, 2021 (Journal Indexed in SCI)
- III. **Development of an artificial neural network using parametric correlation technique for the determination of machined torsional spring stiffness**
SABUNCUOĞLU B., Demirtas O.
JOURNAL OF THE FACULTY OF ENGINEERING AND ARCHITECTURE OF GAZI UNIVERSITY, vol.36, no.1, pp.105-118, 2021 (Journal Indexed in SCI)
- IV. **A brief review on the mechanical behavior of nonwoven fabrics**
YILMAZ K. B., SABUNCUOĞLU B., YILDIRIM B., Silberschmidt V. V.
JOURNAL OF ENGINEERED FIBERS AND FABRICS, vol.15, 2020 (Journal Indexed in SCI)
- V. **Experimental and numerical investigation of transverse shear behavior of glass-fibre composites with embedded vascular channel**
Demiral M., Tanabi H., SABUNCUOĞLU B.
COMPOSITE STRUCTURES, vol.252, 2020 (Journal Indexed in SCI)
- VI. **Fiber/matrix interface stress analysis of flax-fiber composites under transverse loading considering material nonlinearity**
SABUNCUOĞLU B., Cakmakci O., KADIOĞLU F. S.
JOURNAL OF REINFORCED PLASTICS AND COMPOSITES, vol.39, pp.345-360, 2020 (Journal Indexed in SCI)
- VII. **Stress redistribution around fiber breaks in unidirectional steel fiber composites considering the nonlinear material behavior**
SABUNCUOĞLU B., MUTLU Ç., KADIOĞLU F. S., Swolfs Y.

COMPOSITE STRUCTURES, vol.239, 2020 (Journal Indexed in SCI)

- VIII. **Mesh stiffness of micro-spur gears by finite element formulations based on modified couple stress theory**
Pehlivanoglu Y., Aydogan M. O. , SABUNCUOĞLU B.
MICROSYSTEM TECHNOLOGIES-MICRO-AND NANOSYSTEMS-INFORMATION STORAGE AND PROCESSING SYSTEMS, 2020 (Journal Indexed in SCI)
- IX. **Micro-scale numerical study of fiber/matrix debonding in steel fiber composites**
SABUNCUOĞLU B., Lomov S.
JOURNAL OF ENGINEERED FIBERS AND FABRICS, vol.15, 2020 (Journal Indexed in SCI)
- X. **Micro-CT analysis of deviations in fiber orientation and composite stiffness near the microvascular channels embedded in glass-fiber reinforced composites**
SABUNCUOĞLU B., Tanabi H., Soete J., Lomov S.
COMPOSITE STRUCTURES, vol.237, 2020 (Journal Indexed in SCI)
- XI. **Deformation and damage of random fibrous networks**
Sozumert E., Farukh F., SABUNCUOĞLU B., Demirci E., Acar M., Pourdeyhimi B., Silberschmidt V. V.
INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES, vol.184, pp.233-247, 2020 (Journal Indexed in SCI)
- XII. **Investigation of stress distributions in the resin rich region and failure behavior in glass fiber composites with microvascular channels under tensile loading**
Al-Shawk A., Tanabi H., Sabuncuoglu B.
COMPOSITE STRUCTURES, vol.192, pp.101-114, 2018 (Journal Indexed in SCI)
- XIII. **Analysis of stress concentrations in transversely loaded steel-fiber composites with nano-reinforced interphases**
Sabuncuoglu B., GORBATIKH L., Lomov S. V.
INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES, vol.130, pp.248-257, 2018 (Journal Indexed in SCI)
- XIV. **Evaluation of Fatigue Behavior of Lead-Free Solder Joints in Four-Point Bending Test by Finite-Element Modeling**
Sabuncuoglu B., VANHEE F., WILLEMS G., VANDEVELDE B., VANDEPITTE D.
IEEE TRANSACTIONS ON COMPONENTS PACKAGING AND MANUFACTURING TECHNOLOGY, vol.7, no.12, pp.1957-1964, 2017 (Journal Indexed in SCI)
- XV. **Full-field strain measurements at the micro-scale in fiber-reinforced composites using digital image correlation**
Mehdikhani M., Aravand M., Sabuncuoglu B., Callens M. G. , Lomov S. V. , Gorbatikh L.
COMPOSITE STRUCTURES, vol.140, pp.192-201, 2016 (Journal Indexed in SCI)
- XVI. **Micro-scale finite element analysis of stress concentrations in steel fiber composites under transverse loading**
Sabuncuoglu B., Orlova S., Gorbatikh L., Lomov S. V. , Verpoest I.
JOURNAL OF COMPOSITE MATERIALS, vol.49, no.9, pp.1057-1069, 2015 (Journal Indexed in SCI)
- XVII. **Mechanical analysis of bi-component-fibre nonwovens: Finite-element strategy**
Farukh F., Demirci E., Sabuncuoglu B., Acar M., Pourdeyhimi B., Silberschmidt V. V.
COMPOSITES PART B-ENGINEERING, vol.68, pp.327-335, 2015 (Journal Indexed in SCI)
- XVIII. **Mechanical behaviour of nonwovens: Analysis of effect of manufacturing parameters with parametric computational model**
Farukh F., Demirci E., Sabuncuoglu B., Acar M., Pourdeyhimi B., Silberschmidt V. V.
COMPUTATIONAL MATERIALS SCIENCE, vol.94, pp.8-16, 2014 (Journal Indexed in SCI)
- XIX. **On the high stress concentrations in steel fiber composites under transverse loading**
Sabuncuoglu B.
JOURNAL OF REINFORCED PLASTICS AND COMPOSITES, vol.33, no.21, pp.1941-1953, 2014 (Journal Indexed in SCI)
- XX. **Numerical analysis of progressive damage in nonwoven fibrous networks under tension**
Farukh F., Demirci E., Sabuncuoglu B., Acar M., Pourdeyhimi B., Silberschmidt V. V.
INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES, vol.51, no.9, pp.1670-1685, 2014 (Journal Indexed in

- SCI)
- XXI. **Finite element modelling of fibrous networks: Analysis of strain distribution in fibres under tensile load**
Sabuncuoglu B., Acar M., Silberschmidt V. V.
COMPUTATIONAL MATERIALS SCIENCE, vol.79, pp.143-158, 2013 (Journal Indexed in SCI)
- XXII. **Parametric code for generation of finite-element model of nonwovens accounting for orientation distribution of fibres**
Sabuncuoglu B., Acar M., Silberschmidt V. V.
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING, vol.94, no.5, pp.441-453, 2013 (Journal Indexed in SCI)
- XXIII. **Characterisation and numerical modelling of complex deformation behaviour in thermally bonded nonwovens**
Farukh F., Demirci E., Sabuncuoglu B., Acar M., Pourdeyhimi B., Silberschmidt V. V.
COMPUTATIONAL MATERIALS SCIENCE, vol.71, pp.165-171, 2013 (Journal Indexed in SCI)
- XXIV. **Analysis of rate-dependent tensile properties of polypropylene fibres used in thermally bonded nonwovens**
Sabuncuoglu B., Demirci E., Acar M., Silberschmidt V. V.
JOURNAL OF THE TEXTILE INSTITUTE, vol.107, no.9, pp.965-971, 2013 (Journal Indexed in SCI)
- XXV. **Finite element modelling of thermally bonded nonwovens: Effect of manufacturing parameters on tensile stiffness**
Sabuncuoglu B., Acar M., Silberschmidt V. V.
COMPUTATIONAL MATERIALS SCIENCE, vol.64, pp.192-197, 2012 (Journal Indexed in SCI)
- XXVI. **Numerical modelling of damage initiation in low-density thermally bonded nonwovens**
Farukh F., Demirci E., Sabuncuoglu B., Acar M., Pourdeyhimi B., Silberschmidt V. V.
COMPUTATIONAL MATERIALS SCIENCE, vol.64, pp.112-115, 2012 (Journal Indexed in SCI)
- XXVII. **Three dimensional computational analysis of fatigue crack propagation in functionally graded materials**
Sabuncuoglu B., DAĞ S., YILDIRIM B.
COMPUTATIONAL MATERIALS SCIENCE, vol.52, no.1, pp.246-252, 2012 (Journal Indexed in SCI)
- XXVIII. **A parametric finite element analysis method for low-density thermally bonded nonwovens**
Sabuncuoglu B., Acar M., Silberschmidt V. V.
COMPUTATIONAL MATERIALS SCIENCE, vol.52, no.1, pp.164-170, 2012 (Journal Indexed in SCI)
- XXIX. **Analysis of Creep Behavior of Polypropylene Fibers**
SABUNCUOĞLU B., Svetlana O.
Applied Mechanics and Materials, vol.70, pp.410-415, 2011 (Journal Indexed in SCI)

Articles Published in Other Journals

- I. **Sonlu elemanlar yöntemi ile yorulma çatlağı ilerlemesi simülasyonu**
SABUNCUOĞLU B., DAĞ S., YILDIRIM B.
Makina Tasarım ve İmalat, vol.7, pp.87-95, 2005 (Other Refereed National Journals)

Refereed Congress / Symposium Publications in Proceedings

- I. **Stress Concentrations in Composites with Microvascular Channels**
AL SHAWK A., TANABİ H., SABUNCUOĞLU B.
Procedia Structural Integrity, 25 - 26 September 2017
- II. **Notches in fibrous materials: micro-mechanisms of deformation and damage**
Sozumert E., Farukh F., Sabuncuoglu B., Demirci E., Acar M., Pourdeyhimi B., Silberschmidt V. V.

27th International Conference on Mathematical and Computer Simulations in Mechanics of Solids and Structures - Fundamentals of Static and Dynamic Fracture (MCM), Saint Peter, Guernsey And Alderney, 25 - 27 September 2017, vol.6, pp.168-173

- III. **Digital image correlation and finite element analysis applied to fiber reinforced composites at the micro scale**
Mehdikhani M., Aravand M. A. , SABUNCUOĞLU B., Callens M. G. , Lomov S., Gorbatikh L.
20th International Conference on Composite Materials, Kopenhagen, Denmark, 19 - 24 July 2015
- IV. **The Effect of Nano-reinforced fiber matrix interface on stress in steel fiber composites**
SABUNCUOĞLU B., SÖKMEN Ö.
ECCM16 - 16TH EUROPEAN CONFERENCE ON COMPOSITE MATERIALS, Sevilla, Spain, 22 - 26 June 2014
- V. **Analysis of Stress Distributions in Steel Fibre Reinforced Composites in Micro Scale Including Large Deformations**
SABUNCUOĞLU B., Sökmen Ö.
IV ECCOMAS Thematic Conference on the Mechanical Response of Composites, Azorlar, Portugal, 25 - 27 September 2013
- VI. **Micro mechanical Analysis of Stresses in Steel Fibre Reinforced Composites**
SABUNCUOĞLU B., Sökmen Ö.
TEXCOMP-11 CONFERENCE, Leuven, Belgium, 16 September 2013 - 20 June 2014
- VII. **Micro scale computational analysis of the effect of matrix properties on the stress distribution of steel fiber composites**
SABUNCUOĞLU B., Sökmen Ö.
24th Annual International SICOMP Conference on Manufacturing and Design of Composites, 30 - 31 May 2013
- VIII. **Characterisation and Numerical Modelling of Deformation and Damage In Thermally Bonded Nonwovens**
SABUNCUOĞLU B., Acar M., Silberschmidt V.
22nd International Workshop on Computational Mechanics of Materials, Baltimore, United States Of America, 24 - 26 September 2012
- IX. **Finite element modeling of solder joint fatigue in four-point bending test**
Sabuncuoglu B., Vanhee F., Willems G., Vandeveldel B., Vandepitte D., De Wolf I.
2012 13th International Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Microsystems, EuroSimE 2012, Cascais, Portugal, 16 - 18 April 2012
- X. **Analysis of Creep Behavior of Polypropylene Fibers Edinburg**
SABUNCUOĞLU B., Acar M., Silberschmidt V.
International Conference on Advances in Experimental Mechanics: Integrating Simulation and Experimentation (ISEV2011), Edinburgh, United Kingdom, 7 - 09 September 2011
- XI. **Finite Element Modelling of Thermally Bonded Nonwoven Materials A Parametric Model with Orientation Based Distribution of Fibres**
SABUNCUOĞLU B., Acar M., Silberschmidt V.
21st International Workshop on Computational Mechanics of Materials, Limerick, Ireland, 21 - 24 August 2011
- XII. **Analysis of Creep Behavior of Polypropylene Fibers**
Sabuncuoglu B., Acar M., Silberschmidt V. V.
8th International Conference on Advances in Experimental Mechanics: Integrating Simulation and Experimentation for Validation, Edinburgh, Saint Helena, 7 - 09 September 2011, vol.70, pp.410-415
- XIII. **Finite Element Analysis of Thermally Bonded Nonwovens Under Large Deformation A Discontinuous Model with a Large Number of Fibres**
SABUNCUOĞLU B., Acar M., Silberschmidt V.
20th International Workshop on Computational Mechanics of Materials, Loughborough, United Kingdom, 8 - 10 September 2010
- XIV. **Three Dimensional Fatigue Crack Growth Analysis of Functionally Graded Materials**
SABUNCUOĞLU B., Sökmen Ö.
20th International Workshop on Computational Mechanics of Materials, Loughborough, United Kingdom, 8 - 10

September 2010

- XV. **Fatigue crack growth analysis models for functionally graded materials**
DAĞ S., Sabuncuoglu B., YILDIRIM B.
9th International Conference on Multiscale and Functionally Graded Materials, Hawaii, United States Of America, 15
- 18 October 2006, vol.973, pp.423-424
- XVI. **Elliptical cracks in functionally graded materials under repeated loading**
SABUNCUOĞLU B., Sökmen Ö.
The Third International Conference on Advances in Mechanical Engineering and Mechanics, Hammamet, Tunisia,
17 - 19 December 2006
- XVII. **A computational procedure for fatigue crack growth simulation in functionally graded composites**
SABUNCUOĞLU B., Sökmen Ö.
12th International Conference on Machine Design and Production, Kuşadası, Turkey, 5 - 08 September 2006
- XVIII. **Patlayıcı depolama koşulları yapısal analizleri ve isil çevrim altında ömrünün belirlenmesi**
SABUNCUOĞLU B., Sökmen Ö.
MSC Kullanici Kongresi 2006, İstanbul, Turkey, 21 - 23 June 2006
- XIX. **Fatigue Crack Growth Simulation Using ANSYS**
SABUNCUOĞLU B., Sökmen Ö.
Bilgisayar Destekli Mühendislik ve Sistem Modellemesi, İstanbul, Turkey, 25 November 2005
- XX. **Fonksiyonel derecelendirilmiş malzemelede için yorulma çatlakları ilerlemesi**
SABUNCUOĞLU B., Sökmen Ö.
14. Ulusal Mekanik Kongresi, Antakya, Turkey, 21 - 23 September 2005

Supported Projects

SABUNCUOĞLU B., TUBITAK Project, Tek yönlü çelik fiberli kompozit malzemelerde transvers hasar davranışının sonlu eleman yöntemi ile mikro seviyede incelenmesi, 2015 - Continues
SABUNCUOĞLU B., Project Supported by Higher Education Institutions, Doğal elyafli kompozitlerde enine yüklemde gerilme yığılmalarının incelenmesi, 2018 - 2019

Citations

Total Citations (WOS):218

h-index (WOS):9