



Özgür Aslan

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Academic Posts & Education

2022-Present	Professor at Atılım University and Director of Computational Science and Engineering Laboratory (CSE-Lab)
2017-2022	Assoc. Prof. & Assoc. Dean, Atılım University , Faculty of Engineering, Mechanical Engineering Department, (Asst. Prof. 2013-2017)
2012-2013	PostDoc, Fluid Dynamics and Solid Mechanics Group - T3, Los Alamos National Laboratory - NM, USA
2010-2012	PostDoc, Mechanical Engineering, Prof. Lallid Anand's Group, Massachusetts Institute of Technology - MA, USA
2006-2010	PhD., Mechanical Engineering, Computational Mechanics, Paris Institute of Technology - Mines ParisTech, France
2004-2006	M.Sc., Computational Mechanics of Materials and Structures (COMMAS), University of Stuttgart , Germany
2001-2004	Minor degree, Physics, Faculty of Arts and Sciences, Middle East Technical University , Ankara, Turkey
1999-2004	B.Sc., Civil Engineering, Faculty of Engineering, Middle East Technical University , Ankara, Turkey

Honors & Awards

2020	TUBITAK - 2244 Grant (Budget: ~ 1,5M ₺)
2017-2020	TUBITAK - 1001 Grant (Budget: ~ 350K ₺)
2015-2018	TUBITAK - 3501 Grant (Budget: ~ 300K ₺)
2013-2015	Reverse Brain Drain Fellowship, TUBITAK - 2232
2012-2014	Los Alamos National Laboratory, Postdoctoral Fellowship
2010	Massachusetts Institute of Technology, Postdoctoral Fellowship
2012	Graduation with High Honors (Tres honorable avec félicitations du jury) Ph.D. from Ecoles des Mines, Paris Institute of Technology
2010	Awarded with HILTI scholarship, COMMAS program, University of Stuttgart
2004	Graduation with Honors, B.Sc. from Middle East Technical University
2001-2004	Awarded with Civil Engineering Department Scholarship, Middle East Technical University
1999	Ranked 911th over 1.5 million students in Nationwide University Entrance Exam, Turkey

Academic Experience

2013-Present	Associate Professor and the Director of Computational Science and Engineering Laboratory at Atilim University
	Ongoing Projects:
	TUBITAK - Turkish National Science Foundation 2244 (PI) -Development of Advanced Numerical Methods for Design, Analysis and Testing for Aerospace Industry in cooperation with TUSAS Engine Industries- TEI
	Currently, developing simulation methods for the most critical parts of the jet engine by implementing numerical methods for design, analysis, validation and optimization.
	SSB - SAYP (PI) Zırhlı Muharebe Araçlarında Kullanılan Döküm Parçaların Balistik ve Mayın Koruma Performanslarının Bilgisayar Benzetimleri ile Yüksek Başarımlı Hesaplanması
	Currently creating a continuum based material models of cast materials, which are FNSS's own unique design, used in armored combat vehicles, including ballistic and mine protection conditions.
	Completed Projects:
	TUBITAK - Turkish National Science Foundation 1001 (PI) - Modeling and Simulation of Thermomechanical Behavior of Shape Memory Alloys Based on continuum mechanics and taking microstructural property of Shape Memory Alloys into consideration, developing a discrete behavior model including the coupled thermal and mechanical properties and large deformations for 3D.
	TUBITAK - Turkish National Science Foundation 3501 (PI) - Numerical modeling and simulation of heat-resistant coatings Developed a robust numerical simulation capabilities for the thermo-mechanical structural design of coating systems which can predict damage, failure and the durability of such heterogeneous multi-layered systems for the desired prolonged service-life.
	TAI - SSM - The Rotary Wing Technology Center (DKTM) (PI) Numerical modeling and simulation of TBC systems Developed a mechanism-based continuum model that incorporate time-dependent diffusion, oxidative phase transformation, elastic-viscoplastic deformation and realistic interface behaviour which are considered as the local conditions responsible for TBC failure
	TUBITAK 1005 (Researcher) - Design of a Warm/Hot electromagnetic forming system for the forming of brittle sheet metals Developed a novel numerical method and an analysis technique coupling electro-magnetics with mechanics based on continuum mechanics
2012-2013	Postdoctoral Scholar at Fluid Dynamics and Solid Mechanics Group, Los Alamos National Laboratory, USA
	Worked on the development of a material models library for a ALE based in-house numerical simulation tool in order to simulate multiscale-multiphysics problems for solids and fluids
2010-2012	Postdoctoral Scholar at Mechanical Engineering Department, MIT, USA
	Mentor: Prof. Lallit Anand Created a numerical model for a chemo-thermo-mechanically coupled theory accounting for large elastoviscoplastic deformation, diffusion of a chemically reacting species and volumetric swelling due to a chemical reaction for finite element analysis (FEA) Constructed a new gradient theory for large deformation elasto-plastic materials and implemented the corresponding numerical model for FEA

2006-2010	Research Associate at CdM, Mines ParisTech, France
	<p>Thesis: "Numerical modeling of thermomechanical crack growth in single crystals based on higher order continua"</p> <p>Supervisor: Prof. Samuel Forest</p> <p>Represented Mines ParisTech in the European Project PREMECCY (some of the participants: Rolls Royce, SIEMENS, SNECMA, MTU, VOLVO)</p> <p>Constructed a strain-based damage model coupled with crystal plasticity based on Microdamage theory in order to simulate crack initiation and propagation in single crystals and created the corresponding fully implicit material code for ZeBuLoN</p> <p>Invented a new numerical scheme to deal with fatigue closure effects for rapid fatigue crack growth simulations</p> <p>Created a new hybrid finite element formulation for Microdamage continuum in order to spare degrees of freedoms and achieve faster convergence rates. The formulation is successfully implemented for ZeBuLoN</p>
2005-2006	Research Engineer at HILTI Corp. Schaan, Liechtenstein
	<p>Thesis: "Material Modelling of Metallic Sand under Impact Loads"</p> <p>Supervisor: Prof. Dr.-Ing. Ekkehard Ramm</p> <p>Modelled the mechanical behaviour of metallic sand by using a multi-surface plasticity model coupling FE and Smoothed Particle Hydrodynamics.</p>
2004-2005	Research Assistant at the Institute for Statics and Dynamics of Aerospace Structures, University of Stuttgart, Germany
	Created an interface module transforming material routines written in C into an ABAQUS user material routine, UMAT

Teaching Experience

2021	Instructor, Theory of Continuous Media, Atilim University / METU
2013-2018	Instructor, Fracture Mechanics, Atilim University
2013-2020	Instructor, Strength of Materials, Atilim University
2013-2016	Instructor, Numerical Methods, Atilim University
2013-2020	Instructor, Statics, Atilim University
2010	Teaching Assistant, Continuum Mechanics, MIT
2009	Teaching Assistant, Non Linear Computational Mechanics, Mines ParisTech
2008	Teaching Assistant, Physics and Mechanics of Random Media, Mines ParisTech

Academic Activities

	Supervisor (PhD)
June 2022 - Present	Okan Deniz Y_Imaz, PhD Thesis,
September 2021 - Present	Barkın Şenel, PhD Thesis
September 2020 - Present	Çagatay Kasar, PhD Thesis
September 2020 - Present	Utku Kaftancıoğlu, PhD Thesis,

September 2020 - Present	Caner Çamalan, PhD Thesis
January 2019 - Present	Bariş Çetin, PhD Thesis
January 2019 - Present	Gamze Çakır Kabakcı, PhD Thesis
July 2014 - Present	Kamil Armağan Gul, PhD Thesis
March 2014 - 2020	Farid Saeidi, PhD Thesis
	Supervisor (MSc)
January 2019 - 2021	Barkın Şenel, MSc Thesis
November 2017 - 2019	Gizem Bulanik, MSc Thesis
November 2016 - 2018	Caner Camalan, MSc Thesis
September 2016 - 2018	Vahid Rezazadeh, MSc Thesis
	Co-Supervisor
	Prajwal-Ajit Sabnis, PhD Thesis, October 2009-2013, Mines ParisTech, (Supervisor: Prof. Samuel Forest)
	Memberships:
	American Society of Mechanical Engineers (ASME)
	Turkish American Scientists and Scholars Association (TASSA)
	Groupe Francais de Mecanique des Materiaux (MECAMAT)

Special Skills

	Languages: Turkish (Native), English (Fluent), French (Conversational), German (Conversational)
	Knowledge of the programming languages FORTRAN, Java, C, C++
	Knowledge of the scientific computing software, ABAQUS, ANSYS, LS-Dyna, PATRAN, MATLAB, MAPLE, ZeBuLoN
	Knowledge of Windows, MacOS, Linux/Unix operating systems

Publications

	Journal Publications
	F. Sait, O. Aslan, "Numerical Modeling of Damage Evolution Coupled with Phase Transformation in Thermal Barrier Coatings", Surface and Coatings Technology, 2022 (Q1 - IF: 3.784) (submitted)
	G. Cakir, F. Sait, B. Baranoglu, O. Aslan "Modeling and Simulation of Electromagnetic Sheet Metal Forming for Large Deformations", Applied Science, 2022 (Q2 - IF: 2.474) (submitted)
	G. C. Kabakci, O. Aslan, E. Bayraktar, "A review on Analysis of Recycled Rubber Composites Reinforced with Micro Scale Reinforcements", Journal of Composite Science, Vol. 6(8), pp.225, 2022 (Q2 - SC: 3.6) doi.org/10.3390/jcs6080225

	G. C. Kabakci, O. Aslan, E. Bayraktar, "Toughening Mechanism Analysis of Recycled Rubber-Based Composites Reinforced with Glass Bubbles, Glass Fibers and Alumina Fibers", <i>Polymers</i> , Vol. 13, 2022, pp.4215 (Q1 - IF: 4.329). doi.org/10.3390/polym13234215.
	O. Aslan, E. Bayraktar, "Analytical Solutions of Model Problems for Large-Deformation Micromorphic Theory for Gradient Plasticity", <i>Applied Sciences</i> , 2021(Q2 - IF: 2.474) doi.org/10.3390/app11052361
	O. Aslan, E. Bayraktar, "A Large-Deformation Gradient Damage Model for Single Crystals Based on Microdamage Theory", <i>Applied Sciences</i> , Vol 10(24), 2020, pp.9142; (Q2 - IF: 2.474) doi.org/10.3390/app10249142
	F. Sait, E. Gurses, O. Aslan, "Modeling and Simulation of Coupled Phase Transformation and Stress Evolution in Thermal Barrier Coatings", <i>International Journal of Plasticity</i> , vol.134, 2020, pp.102790 (Q1 - IF: 6.490) doi:10.1016/j.ijplas.2020.102790
	O. Aslan. "Numerical modeling of hydrogen diffusion in metals accounting for large deformations", <i>International Journal of Hydrogen Energy</i> , Vol.40, 2015, pp. 15227-15235. (Q1- IF: 4.939) doi:10.1016/j.ijhydene.2015.04.081
	L. Anand, O. Aslan, S.A. Chester, "A gradient theory for large-deformation isotropic elastoplastic materials", <i>International Journal of Plasticity</i> , 2012. (Q1- IF: 6.490) doi:10.1016/j.ijplas.2011.10.002
	O. Aslan, N. Cordero, A. Gaubert and S. Forest, "The micromorphic approach to crystal plasticity and damage". <i>International Journal of Engineering Science</i> , Vol. 49, 2011, pp. 1311-1325. (Q1- IF: 9.219) doi:10.1016/j.ijengsci.2011.03.008
	O. Aslan, S. Quilici, S. Forest, "Numerical modeling of fatigue crack growth in single crystals based on microdamage theory", <i>International Journal of Damage Mechanics</i> , Vol. 20, pp. 2011, 681-705. (Q1 - IF: 3.125) doi: 10.1177/1056789510395738
	O. Aslan and S. Forest, "Crack growth modeling in single crystals based on higher order continua", <i>Computational Materials Science</i> , Vol. 45, 2009, pp. 756-761. (Q1- IF: 2.863) doi:10.1016/j.commatsci.2008.09.016
	Book Chapters
	O.Aslan, "Modeling of Damage in Turbine Blades for Large Deformations", <i>Fundamental Concepts and Models for the Direct Problem, Book Series in Discrete Models, Inverse Methods, & Uncertainty Modeling in Structural Integrity</i> , University of Brasilia Central Library, Volume II, 2022, pp 209-230. doi.org/10.4322/978-65-86503-83-8.c08
	G. C. Kabakci, O. Aslan, E. Bayraktar, "Numerical Modeling of Recycled Rubber Based Composites Reinforced with Glass Fibers at High Strain Rates", <i>Mechanics of Composite, Hybrid and Multifunctional Materials, Fracture, Fatigue, Failure and Damage Evolution</i> , Springer, Volume 3, 2022, pp 81-84. doi.org/10.1007/978-3-030-86741-6
	G. C. Kabakci, O. Aslan, E. Bayraktar, "Toughening Mechanism of Recycled Rubber Based Composites Reinforced with Glass Fibers+ Alumina Fibers for Military Applications", <i>Mechanics of Composite, Hybrid and Multifunctional Materials, Fracture, Fatigue, Failure and Damage Evolution</i> , Springer, Volume 3, 2022, pp 99-109. doi.org/10.1007/978-3-030-86741-6
	M. Douiri, M Boujelbene, O. Aslan, E. Bayraktar, "Optimization of Surface Integrity of Recycled Ti{Al Intermetallic-Based Composite on the Machining by Water Jet Cutting via Taguchi and Response Surface Methodology",

	Recycling of Plastics, Metals, and Their Composites, Taylor and Francis, 2021 pp 295-314. doi.org/10.1201/9781003148760
	H. M. Enginsoy, O. Aslan, F. Gatamorta, D. Katundi, E. Bayraktar, "A Comprehensive Study on the Recycled Aluminum Matrix Composites Reinforced with NiAl Intermetallics and TiB ₂ -TiC Ceramic Powders", Recycling of Plastics, Metals, and Their Composites, Taylor and Francis, 2021 pp 59-73. doi.org/10.1201/9781003148760
	F. Saeidi, E. Gurses, O. Aslan, "A Numerical Approach to Simulate Oxidation in Thermal Barrier Coatings", Nanotechnology used in coating techniques, Encyclopedia of Renewable and Sustainable Materials, Elsevier 2019. doi:10.1016/B978-0-12-803581-8.11194-4
	O.Aslan and S. Forest, "The micromorphic approach versus phase field approach to gradient plasticity and damage with application to cracking in metal single crystals", Lecture Notes in Applied and Computational Mechanics, Springer, vol 55, 2011. doi:10.1007/978-90-481-9809-2
	Conferences and Proceedings
	O. Aslan, "Modeling and Simulation of Electro- magnetic Sheet Metal Forming for Large Deformations", 19th International Conference On Machine Design And Production – UMTİK 2022, Capadoccia, Turkiye
	O. Aslan, V. Rezazadeh, "Numerical Modeling of Coupled Thermo-Mechanical Behavior of Ni-Ti Shape Memory Alloys for Large Deformations", The 15th US National Congress in Computational Mechanics, 2019, Austin, TX, USA
	O. Aslan, F. Saeidi, "Numerical Simulation of a Thermally Growing Oxide In a Thermal Barrier Coating", International Conference on Plasticity, Damage, and Fracture, Puerto Vallarta, Mexico, January 3-9, 2017
	S. Forest, D. Colas, S. Flouriort, O. Aslan (2014), Fatigue Crack Initiation and Propagation in Metal Single and Poly, 11th World Congress on Computational Mechanics, WCCM XI, Barcelona
	O. Aslan, Numerical modeling of Hydrogen diffusion in metals accounting for large deformations, 4th International Conference on Nuclear and Renewable Energy Resources, NURER 2014, Antalya
	O. Aslan and D. Zhang, "Material Point Method for Finite Strain Plasticity and Cavitation problems", 23rd International Workshop on Computational Mechanics of Materials, IWCM23, Singapore, 2013
	O. Aslan and D. Zhang, "Material Point Method for Large Deformation Plasticity and Failure", 12th U.S. National Congress on Computational Mechanics, USNCCM12 , Raleigh, North Carolina, 2013
	O. Aslan, "A Large-Deformation Gradient Damage Model for Single Crystals Based on Microdamage theory", 22nd International Workshop on Computational Mechanics of Materials, IWCM22, 24 September { 26 September, 2012, Baltimore, Maryland, USA.
	O. Aslan and L. Anand "A gradient theory for large-deformation isotropic elastic-plastic materials", 2nd International Conference on Material Modelling, ICMM2, 31 August - 2 September, 2011, Paris, France.
	O. Aslan and L. Anand "A fully coupled thermo-mechanical model for hydrogen diffusion in metals accounting for large elastoviscoplastic deformations", 11th US National Congress on Computational Mechanics, 25{27 July, 2011, Minneapolis, Minnesota, USA.
	O. Aslan and S. Forest, "Microdamage approach to crystal plasticity with application to fatigue crack growth", EUROMECH colloquium 505 "Multiscale effects in fatigue of metals", 7{9 July, 2010, Ecole Polytechnique, Palaiseau, France.

	O. Aslan and S. Forest, "Generalized continuum modeling of crack propagation in single crystals under fatigue", Proceedings of 1st International Conference on Material Modelling, ICMM-1, 15-17 September, 2009, Dortmund, Germany.
	O. Aslan and S. Forest, "Numerical Modeling of Fatigue Crack Growth in Single Crystals Based on Microdamage Theory", Proceedings of X International Conference on Computational Plasticity Fundamentals and Applications, COMPLAS-X, 2-4 September, 2009, Barcelona, Spain.
	O. Aslan, S. Quilici and S. Forest, "Crack Growth Modelling in Single Crystals based on Microdamage Continuum", Proceedings of 12th International Conference on Fracture, ICF-12, 12-17 July, 2009, Ottawa, Canada.
	O. Aslan, S. Quilici and S. Forest, "Fatigue crack growth modeling in single crystals based on higher-order continua", Proceedings of 6th International Conference on Low Cycle Fatigue, LCF-6, 8-12 September, 2008, Berlin, Germany.
	O. Aslan and S. Forest, "Crack growth modelling in single crystals based on higher-order continua", 18th International Symposium on Computational Mechanics of Materials, IWCM-18, 6-10 October, 2008, Beijing, China.
	O. Aslan and S. Forest, "Regularization of crack growth modelling based on micromorphic continua", International Union of Theoretical and Applied Mechanics Symposium, IUTAM, 5-9 November 2007, Eindhoven, Netherlands.