

## Dr. Öğr. Üyesi ALTUĞ ÖZÇELİKKALE

### Kişisel Bilgiler

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**Posta Adresi:** Orta Doğu Teknik Üniversitesi Makina Mühendisliği Bölümü  
Dumlupınar Caddesi No: 1 06800 Çankaya/Ankara

### Uluslararası Araştırmacı ID'leri

ScholarID: QsvfXE4AAAAJ

ORCID: 0000-0002-1783-4445

Publons / Web Of Science ResearcherID: ABA-2198-2020

ScopusID: 54972309800

Yoksis Araştırmacı ID: 317066



### Eğitim Bilgileri

2010 - 2015	Doktora, Purdue University, Amerika Birleşik Devletleri
2008 - 2010	Yüksek Lisans, Orta Doğu Teknik Üniversitesi, Türkiye
2004 - 2008	Lisans, Orta Doğu Teknik Üniversitesi, Mühendislik Fakültesi, Türkiye

### Yabancı Diller

İngilizce, C2 Ustalık

### Yaptığı Tezler

2015	Freezing-Induced Deformation of Biomaterials in Cryomedicine, Purdue University, Doktora
2010	Development of an incompressible, laminar flow solver based on least squares spectral element method with P-type adaptive refinement capabilities, Orta Doğu Teknik Üniversitesi, Yüksek Lisans

### Araştırma Alanları

Biyoenstrümantasyon ve MEMS, Biyoenstrümantasyon ve MEMS, Biyomedikal Görüntü İşleme, Biyomekanik, Yapay Organlar ve Biyomateryaller, Geleneksel olmayan imalat yöntemleri, Biyomekanik, Isı ve Madde Transferi

### Akademik Unvanlar / Görevler

2021 - Devam Ediyor	Dr. Öğr. Üyesi, Orta Doğu Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Biyomedikal Mühendisliği Anabilim Dalı
2020 - Devam Ediyor	Dr. Öğr. Üyesi, Orta Doğu Teknik Üniversitesi, Mühendislik Fakültesi, Makina Mühendisliği Bölümü

2017 - 2019	Arařtırmacı, University of Maryland, College Park, Institute for Physical Science and Technology, Department of Physics
2016 - 2017	Arařtırmacı, Johns Hopkins University, School of Engineering, Department of Mechanical Engineering
2015 - 2016	Arařtırmacı, Purdue University, College of Engineering, School of Mechanical Engineering
2010 - 2015	Arařtırma Görevlisi, Purdue University, College of Engineering, School of Mechanical Engineering

## Akademik İdari Deneyim

2024 - Devam Ediyor	Laboratory Committee Coordinator, Orta Doęu Teknik Üniversitesi, Mühendislik Fakültesi, Makina Mühendislięi Bölümü
2023 - Devam Ediyor	Kalite Koordinatörü , Orta Doęu Teknik Üniversitesi, Mühendislik Fakültesi, Makina Mühendislięi Bölümü
2022 - Devam Ediyor	Publicity and Communication Committee Member, Orta Doęu Teknik Üniversitesi, Mühendislik Fakültesi, Makina Mühendislięi Bölümü
2022 - Devam Ediyor	Biomechanics Track Representative, Orta Doęu Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Biyomedikal Mühendislięi Anabilim Dalı
2020 - Devam Ediyor	ODTÜ Uzaktan Eęitim Uygulama ve Arařtırma Merkezi (ÜZEM) Danıřma Kurulu Üyesi, Orta Doęu Teknik Üniversitesi, Mühendislik Fakültesi, Makina Mühendislięi Bölümü
2020 - Devam Ediyor	Distance Education Coordinator, Orta Doęu Teknik Üniversitesi, Mühendislik Fakültesi, Makina Mühendislięi Bölümü

## Yönetilen Tezler

2024	Acar A., Özçelikkale A., Yüksek Lisans, C.ILDIZ(Öęrenci), INVESTIGATION OF MIGRATION OF BREAST CANCER CELLS IN RELATION TO FIBROBLASTS ON A MICROFLUIDIC SYSTEM
2023	Özçelikkale A., Yüksek Lisans, A.AYKUT(Öęrenci), Modeling and characterization of fluid, macromolecule, and nanoparticle transport in fibrous collagen hydrogels
2023	Özçelikkale A., Yüksek Lisans, B.DEDEKARGINOęLU(Öęrenci), Rapid prototyping of microfluidic tissue culture systems via mask based photo polymerization
2023	Özçelikkale A., Yıldırım E., Yüksek Lisans, S.FARAHANI(Öęrenci), Development of a micro-well-based microfluidic 3D cell culture for cytotoxicity assays

## SCI, SSCI ve AHCI İndekslerine Giren Dergilerde Yayınlanan Makaleler

- Exploiting Matrix Stiffness to Overcome Drug Resistance**  
Aydin H. B., ÖZÇELİKKALE A., ACAR A.  
ACS BIOMATERIALS SCIENCE & ENGINEERING, cilt.10, sa.8, ss.4682-4700, 2024 (SCI-Expanded)
- Predictive Design and Analysis of Drug Transport by MultiScale Computational Models Under Uncertainty**  
AKALIN A. A., DEDEKARGINOęLU B., Choi S. R., Han B., ÖZÇELİKKALE A.  
Pharmaceutical Research, cilt.40, sa.2, ss.501-523, 2023 (SCI-Expanded)
- Migration and 3D Traction Force Measurements inside Compliant Microchannels**  
Athinos A., Bera K., Chen J., Ozcelikkale A., Amitrano A., Choudhury M. I., Huang R., Pachidis P., Mistriotis P., Chen Y., et al.  
NANO LETTERS, cilt.22, sa.18, ss.7318-7327, 2022 (SCI-Expanded)
- Cytotoxic T Lymphocyte Activation Signals Modulate Cytoskeletal Dynamics and Mechanical Force Generation**

Pathni A, Ozcelikkale A., Rey-Suarez I., Li L., Davis S., Rogers N., Xiao Z., Upadhyaya A.  
FRONTIERS IN IMMUNOLOGY, cilt.13, 2022 (SCI-Expanded)

- V. **An engineered pancreatic cancer model with intra-tumoral heterogeneity of driver mutations**  
Moon H., Ozcelikkale A., Yang Y., Elzey B. D., Konieczny S. F., Han B.  
LAB ON A CHIP, cilt.20, sa.20, ss.3720-3732, 2020 (SCI-Expanded)
- VI. **Differential response to doxorubicin in breast cancer subtypes simulated by a microfluidic tumor model**  
Ozcelikkale A., Shin K., Noe-Kim V., Elzey B. D., Dong Z., Zhang J., Kim K., Kwon I. C., Park K., Han B.  
JOURNAL OF CONTROLLED RELEASE, cilt.266, ss.129-139, 2017 (SCI-Expanded)
- VII. **Effects of dynamic matrix remodelling on en masse migration of fibroblasts on collagen matrices**  
Ozcelikkale A., Dutton J. C., Grinnell F., Han B.  
JOURNAL OF THE ROYAL SOCIETY INTERFACE, cilt.14, sa.135, 2017 (SCI-Expanded)
- VIII. **Enzyme-Induced Matrix Softening Regulates Hepatocarcinoma Cancer Cell Phenotypes**  
Liang Y., Clay N. E., Sullivan K. M., Leong J., Ozcelikkale A., Rich M. H., Lee M. K., Lai M., Jeon H., Han B., et al.  
MACROMOLECULAR BIOSCIENCE, cilt.17, sa.9, 2017 (SCI-Expanded)
- IX. **In vitro microfluidic models of tumor microenvironment to screen transport of drugs and nanoparticles**  
Ozcelikkale A., Moon H., Linnes M., Han B.  
WILEY INTERDISCIPLINARY REVIEWS-NANOMEDICINE AND NANOBIO TECHNOLOGY, cilt.9, sa.5, 2017 (SCI-Expanded)
- X. **Subcellular domain-dependent molecular hierarchy of SFK and FAK in mechanotransduction and cytokine signaling**  
Wan Q., ThucNhi TruongVo T. T., Steele H. E., Ozcelikkale A., Han B., Wang Y., Oh J., Yokota H., Na S.  
SCIENTIFIC REPORTS, cilt.7, 2017 (SCI-Expanded)
- XI. **Modulation of Matrix Softness and Interstitial Flow for 3D Cell Culture Using a Cell-Microenvironment-on-a-Chip System**  
Clay N. E., Shin K., Ozcelikkale A., Lee M. K., Rich M. H., Kim D. H., Han B., Kong H.  
ACS BIOMATERIALS SCIENCE & ENGINEERING, cilt.2, sa.11, ss.1968-1975, 2016 (SCI-Expanded)
- XII. **Role of intracellular poroelasticity on freezing-induced deformation of cells in engineered tissues**  
Ghosh S., Ozcelikkale A., Dutton J. C., Han B.  
JOURNAL OF THE ROYAL SOCIETY INTERFACE, cilt.13, sa.123, 2016 (SCI-Expanded)
- XIII. **DNA Walker-Regulated Cancer Cell Growth Inhibition**  
Li F., Cha T., Pan J., Ozcelikkale A., Han B., Choi J. H.  
CHEMBIOCHEM, cilt.17, sa.12, ss.1138-1141, 2016 (SCI-Expanded)
- XIV. **Thermal Destabilization of Collagen Matrix Hierarchical Structure by Freeze/Thaw**  
Ozcelikkale A., Han B.  
PLOS ONE, cilt.11, sa.1, 2016 (SCI-Expanded)
- XV. **Simulation of complex transport of nanoparticles around a tumor using tumor-microenvironment-on-chip**  
Kwak B., Ozcelikkale A., Shin C. S., Park K., Han B.  
JOURNAL OF CONTROLLED RELEASE, cilt.194, ss.157-167, 2014 (SCI-Expanded)
- XVI. **Role of Cells in Freezing-Induced Cell-Fluid-Matrix Interactions Within Engineered Tissues**  
Seawright A., Ozcelikkale A., Dutton C., Han B.  
JOURNAL OF BIOMECHANICAL ENGINEERING-TRANSACTIONS OF THE ASME, cilt.135, sa.9, 2013 (SCI-Expanded)
- XVII. **Multifaceted Transport Characteristics of Nanomedicine: Needs for Characterization in Dynamic Environment**  
Ozcelikkale A., Ghosh S., Han B.  
MOLECULAR PHARMACEUTICS, cilt.10, sa.6, ss.2111-2126, 2013 (SCI-Expanded)
- XVIII. **Least-squares spectral element solution of incompressible Navier-Stokes equations with adaptive refinement**  
Ozcelikkale A., SERT C.

## **Diğer Dergilerde Yayınlanan Makaleler**

- I. **Tumor-Microenvironment-on-Chip Platform for Assessing Drug Response in 3D Dynamic Culture**  
Aydin H. B., Moon H., Han B., ÖZÇELİKKALE A., ACAR A.  
Methods in molecular biology (Clifton, N.J.), cilt.2764, ss.265-278, 2024 (Scopus)
- II. **Spatiotemporal characterization of extracellular matrix microstructures in engineered tissue: A whole-field spectroscopic imaging approach**  
Xu Z., ÖZÇELİKKALE A., Kim Y. L., Han B.  
Journal of Nanotechnology in Engineering and Medicine, cilt.4, sa.1, 2013 (Scopus)

## **Hakemli Kongre / Sempozyum Bildiri Kitaplarında Yer Alan Yayınlar**

- I. **Prototyping of a Microfluidic Mechanochemical Gradient Chip by 3D Printed Molding for In Vitro Drug Testing**  
Fathi M., Mehrasa A., Özçelikkale A.  
SB3C2024 Summer Biomechanics, Bioengineering and Biotransport Conference, Wisconsin, Amerika Birleşik Devletleri, 10 - 14 Haziran 2024, ss.806-807
- II. **Parametric design and manufacturing of mammary carcinoma chip by stereolithography for simulating drug transport around the tumor**  
Fathi M., Dedekargınoğlu B., Akalın A. A., Özçelikkale A.  
The 2nd Microphysiological Systems World Summit, Berlin, Almanya, 26 - 30 Haziran 2023, cilt.11, sa.1, ss.235-236
- III. **Rapid prototyping of microfluidic co-culture platform based on a 3D printing workflow for systematic investigation of tumor stromal interactions**  
Dedekargınoğlu B., Ildız C., Acar A., Özçelikkale A.  
The 2nd Microphysiological Systems World Summit, Berlin, Almanya, 26 - 30 Haziran 2023, cilt.11, sa.1, ss.200
- IV. **Capillary pressure barriers for spatial confinement in organ-on-a-chip devices**  
Açıkgöz B. C., Dirmencioğlu U., Farahani S., Özçelikkale A., Yildirim E.  
5th NOVEL FLUIDIC TECHNOLOGIES WORKSHOP WITH AN EMPHASIS ON TISSUE ENGINEERING, İzmir, Türkiye, 4 - 05 Mayıs 2023, ss.29-31
- V. **Modeling and Characterization of Nanomedicine Transport within Tumor Microenvironment across Scales**  
Akalın A. A., Özçelikkale A.  
16th Nanoscience and Nanotechnology Conference, Ankara, Türkiye, 5 - 08 Eylül 2022, ss.338
- VI. **Rapid Low-Cost Prototyping of Organ-on-Chip Platforms by 3D-Printed Microfluidics**  
Dedekargınoğlu B., Akalın A. A., Özçelikkale A.  
3rd Annual European Organ-on-Chip Society Meeting, Uppsala, İsveç, 01 Temmuz 2021
- VII. **Regulation of Cytoskeletal Dynamics during T Cell Activation by Substrate Stiffness**  
Özçelikkale A., Upadhyaya A.  
American Physical Society March Meeting, California, Amerika Birleşik Devletleri, 07 Mart 2018, ss.1
- VIII. **NANOSCALE FLUID-STRUCTURE INTERACTIONS IN CYTOPLASM DURING FREEZING**  
Ozcelikkale A., Han B.  
ASME International Mechanical Engineering Congress and Exposition, Texas, Amerika Birleşik Devletleri, 9 - 15 Kasım 2012, ss.711-716
- IX. **EFFECTS OF FREEZING ON COLLAGEN NANOSCALE STRUCTURE IN ENGINEERED TISSUES**  
Ozcelikkale A., Li Y., Xu X., Han B.  
2nd ASME Global Congress on NanoEngineering for Medicine and Biology, Massachusetts, Amerika Birleşik Devletleri, 4 - 06 Şubat 2013, ss.29-30

- X. **FUNCTIONAL IMAGING OF MATRIX STRUCTURE OF CRYOPRESERVED ENGINEERED TISSUES USING BACK-DIRECTIONAL GATED MESOSCOPIC IMAGING**  
Kim Y. L., Xu Z., Ozcelikkale A., Han B.  
ASME Summer Bioengineering Conference (SBC), Fajardo, Porto Riko, 20 - 23 Haziran 2012, ss.259-260
- XI. **ROLE OF CELLS IN FREEZING-INDUCED CELL-FLUID MATRIX INTERACTIONS WITHIN ENGINEERED TISSUES**  
Seawright A., Ozcelikkale A., Dutton J. C., Han B.  
ASME Summer Bioengineering Conference (SBC), Fajardo, Porto Riko, 20 - 23 Haziran 2012, ss.409-410
- XII. **h- and p-Adaptive Incompressible Flow Solutions on Cartesian Grids Using Least Squares Spectral Element Method**  
Özçelikkale A., Sert C.  
5th European Conf. on CFD (ECCOMAS CFD), Lisbon, Portekiz, 14 - 17 Haziran 2010, ss.1-16

## Desteklenen Projeler

2023 - Devam Ediyor	Mikroakışkan Sistemlerin Biyomedikal Uygulamaları İçin Düşük Maliyetli Stereolitografi Mikro İmalat Yaklaşımları, Yükseköğretim Kurumları Destekli Proje
2023 - 2024	Stres Granül Bozulununun Zaman Aşamalı Mikroskopi ile Takibi, Yükseköğretim Kurumları Destekli Proje
2020 - 2023	Artificial Tissue Environments with Microfluidics for Next Generation Predictive Disease Models, TÜBİTAK Projesi

## Bilimsel Hakemlikler

Ağustos 2023	Türkiye Sağlık Enstitüleri Başkanlığı (TÜSEB) Araştırma Projesi, Orta Doğu Teknik Üniversitesi, Türkiye
Haziran 2023	Yükseköğretim Kurumları Destekli Proje, BAP Araştırma Projesi, Orta Doğu Teknik Üniversitesi, Türkiye

## Metrikler

Yayın: 32  
Atıf (WoS): 459  
Atıf (Scopus): 505  
H-İndeks (WoS): 11  
H-İndeks (Scopus): 12

## Davetli Konuşmalar

Eylül 2024	How to Stop Worrying and Love the Microscope: An Introduction to Microscopy Imaging Techniques and Analysis, Çalıştay, ODTÜ MEMS Merkezi, Türkiye
Kasım 2022	Next-Generation Engineered Models of Physiological Tissue Microenvironment in Health and Disease, Seminer, Sabancı Üniversitesi, Türkiye
Nisan 2022	Next Generation Engineered Models of Physiological Tissue Microenvironment in Health and Disease, Seminer, Orta Doğu Teknik Üniversitesi, Türkiye

## Burslar

2020 - 2023	2232 International Fellowship for Outstanding Researchers , TÜBİTAK
2010 - 2011	Ross Graduate Fellowship, Üniversite
2008 - 2010	National Scholarship for M.S. Students, TÜBİTAK