

Assoc. Prof. MÜJDAT BALANTEKİN

Personal Information

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International Researcher IDs

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ScopusID: 15922349000

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Education Information

Doctorate, Ihsan Dogramaci Bilkent University, Institute Of Engineering And Natural Sciences, Elektrik-Elektronik Mühendisliği (Dr), Turkey 2001 - 2005

Postgraduate, Ihsan Dogramaci Bilkent University, Institute Of Engineering And Natural Sciences, Elektrik Ve Elektronik Mühendisliği (YI) (Tezli), Turkey 1999 - 2001

Undergraduate, Gaziantep University, Faculty Of Engineering, Department Of Electrical And Electronics Engineering (English), Turkey 1994 - 1999

Dissertations

Doctorate, Nanomechanical characterization of materials by enhanced higher harmonics of a tapping cantilever, Ihsan Dogramaci Bilkent University, Mühendislik Ve Fen Bilimleri Enstitüsü, Elektrik-Elektronik Mühendisliği (Dr), 2005

Postgraduate, Design of driver electronics for 32 cantilevers in atomic force microscopy, Ihsan Dogramaci Bilkent University, Mühendislik Ve Fen Bilimleri Enstitüsü, Elektrik Ve Elektronik Mühendisliği (YI) (Tezli), 2001

Research Areas

Nanotechnology, MEMS

Academic Titles / Tasks

Associate Professor, Gazi University, Mühendislik Fakültesi, Elektrik - Elektronik Mühendisliği, 2020 - Continues

Associate Professor, Izmir Institute Of Technology, Faculty Of Engineering, Department Of Electrical And Electronics Engineering, 2016 - 2020

Assistant Professor, Izmir Institute Of Technology, Faculty Of Engineering, Department Of Electrical And Electronics Engineering, 2011 - 2016

Assistant Professor, Bahcesehir University, Faculty Of Engineering, Department Of Electrical And Electronics Engineering, 2011 - 2011

Lecturer PhD, Bahcesehir University, Faculty Of Engineering, Department Of Electrical And Electronics Engineering, 2009 - 2011

Researcher, Georgia Institute of Technology, 2005 - 2009

Advising Theses

BALANTEKİN M., Graphene transfer approaches with different support materials on the substrates with cavities, Postgraduate, S.DUMAN(Student), 2019

BALANTEKİN M., Nonlinear controller design for high-speed dynamic atomic force microscope system, Postgraduate, A.COŞAR(Student), 2018

BALANTEKİN M., Analysis of cantilevers for high-speed atomic force microscopy, Postgraduate, H.SINGH(Student), 2018

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Manipulating the frequency response of small high-frequency atomic force microscope cantilevers**
Brar H. S., BALANTEKİN M.
MEASUREMENT SCIENCE AND TECHNOLOGY, vol.31, no.9, 2020 (SCI-Expanded)
- II. **High-speed dynamic atomic force microscopy by using a Q-controlled cantilever eigenmode as an actuator**
Balantekin M.
ULTRAMICROSCOPY, vol.149, pp.45-50, 2015 (SCI-Expanded)
- III. **High-speed tapping-mode atomic force microscopy using a Q-controlled regular cantilever acting as the actuator: Proof-of-principle experiments**
Balantekin M., Satir S., Torello D., Degertekin F. L.
REVIEW OF SCIENTIFIC INSTRUMENTS, vol.85, no.12, 2014 (SCI-Expanded)
- IV. **Optimizing the driving scheme of a self-actuated atomic force microscope probe for high-speed applications**
Balantekin M., Degertekin F. L.
ULTRAMICROSCOPY, vol.111, no.8, pp.1388-1394, 2011 (SCI-Expanded)
- V. **Controlling tip-sample interaction forces during a single tap for improved topography and mechanical property imaging of soft materials by AFM**
Parlak Z., Hadizadeh R., Balantekin M., Degertekin F. L.
ULTRAMICROSCOPY, vol.109, no.9, pp.1121-1125, 2009 (SCI-Expanded)
- VI. **Characterization of dual-electrode CMUTs: Demonstration of improved receive performance and pulse echo operation with dynamic membrane shaping**
Guldiken R. O., Balantekin M., Zahorian J., Degertekin F. L.
IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL, vol.55, no.10, pp.2336-2344, 2008 (SCI-Expanded)
- VII. **Quantitative mechanical characterization of materials at the nanoscale through direct measurement of time-resolved tip-sample interaction forces**
Balantekin M., Onaran A. G., Degertekin F. L.
NANOTECHNOLOGY, vol.19, no.8, 2008 (SCI-Expanded)
- VIII. **A new atomic force microscope probe with force sensing integrated readout and active tip**
Onaran A., Balantekin M., Lee W., Hughes W., Buchine B., Guldiken R., Parlak Z., Quate C., Degertekin F.
REVIEW OF SCIENTIFIC INSTRUMENTS, vol.77, no.2, 2006 (SCI-Expanded)
- IX. **Enhanced higher-harmonic imaging in tapping-mode atomic force microscopy**
Balantekin M., Atalar A.
APPLIED PHYSICS LETTERS, vol.87, no.24, 2005 (SCI-Expanded)
- X. **Sensor for direct measurement of interaction forces in probe microscopy**
Degertekin F., Onaran A., Balantekin M., Lee W., Hall N., Quate C.
APPLIED PHYSICS LETTERS, vol.87, no.21, 2005 (SCI-Expanded)
- XI. **Enhancing higher harmonics of a tapping cantilever by excitation at a submultiple of its resonance frequency**
Balantekin M., Atalar A.

- PHYSICAL REVIEW B, vol.71, no.12, 2005 (SCI-Expanded)
- XII. **Power dissipation analysis in tapping-mode atomic force microscopy**
Balantekin M., Atalar A.
PHYSICAL REVIEW B, vol.67, no.19, 2003 (SCI-Expanded)
- XIII. **Simulations of switching vibrating cantilever in atomic force microscopy**
Balantekin M., Atalar A.
APPLIED SURFACE SCIENCE, vol.205, pp.86-96, 2003 (SCI-Expanded)

Refereed Congress / Symposium Publications in Proceedings

- I. **High speed imaging in tapping mode atomic force microscopy**
BALANTEKİN M.
IVC-19/ICSS-15 & ICN+T 2013, France, 9 - 13 September 2013
- II. **High speed operating method for tapping mode atomic force microscopes with regular cantilevers**
BALANTEKİN M.
15th International Scanning Probe Microscopy Conference, 30 June - 03 July 2013
- III. **High speed imaging in noncontact atomic force microscopy**
BALANTEKİN M.
Nanotech 2013, United States Of America, 12 - 16 May 2013, pp.1-4
- IV. **Evaluation of CMUT Annular Arrays for Side Looking IVUS**
ŞIŞMAN A., Zahorian J., Gürün G., KARAMAN M., BALANTEKİN M., Değertekin F. L., Hasler P.
2009 IEEE International Ultrasonics Symposium, 19 - 23 September 2009, pp.2774-2777
- V. **Real time Topography and Mechanical Property Mapping of Soft Materials by FIRAT using Actively Controlled Transient Tap Forces**
Parlak Z., BALANTEKİN M., Değertekin F. L.
MRS Spring Meeting, 14 - 17 April 2009
- VI. **Single chip CMUT arrays with integrated CMOS electronics Fabrication process development and experimental results**
Zahorian J., Güldiken R. O., Gürün G., Qureshi M. S., BALANTEKİN M., Hasler P., Değertekin F. L.
2008 IEEE Ultrasonics Symposium, Beijing, China, 2 - 05 November 2008, pp.386-389
- VII. **Front end CMOS electronics for monolithic integration with CMUT arrays Circuit design and initial experimental results**
Gürün G., Qureshi M. S., BALANTEKİN M., Güldiken R. O., Zahorian J., Peng S. Y., Basu A., KARAMAN M., Hasler P., Değertekin F. L.
2008 IEEE Ultrasonics Symposium, Beijing, China, 2 - 05 November 2008, pp.390-393
- VIII. **Accurate modeling of capacitive micromachined ultrasonic transducers in pulse echo operation**
BALANTEKİN M., Değertekin F. L.
2008 IEEE Ultrasonics Symposium, Beijing, China, 2 - 05 November 2008, pp.2107-2110
- IX. **Dual electrode CMUT optimization for CMUTs with uniform and non uniform membranes**
Guldiken R. O., Zahorian J., BALANTEKİN M., Değertekin F. L.
2008 IEEE Ultrasonics Symposium, Beijing, China, 2 - 05 November 2008, pp.2096-2099
- X. **Optimizing the Driving Scheme of the FIRAT probe for High speed Operation**
BALANTEKİN M., Değertekin F. L.
International Conference on Nanoscience and Technology, United States Of America, 20 - 25 July 2008
- XI. **Active Micromachined Probe Structures for Fast Atomic Force Microscopy and Material Property Characterization**
Onaran A. G., BALANTEKİN M., Değertekin F. L.
Integration and Commercialization of Micro and Nanosystems International Conference & Exhibition, Hong Kong, 3 - 05 June 2008
- XII. **Analysis of Dual electrode CMUT Designs for Improved Operation and Performance**

- Güldiken R. O., Zahorian J., BALANTEKİN M., Değertekin F. L.
International Workshop on Mi-cromachined Ultrasonic Transducers, Norway, 8 - 09 May 2008
- XIII. **Simulation of Large Signal Operation of Capacitive Micromachined Ultrasonic Transducers**
BALANTEKİN M., Değertekin F. L.
International Workshop on Micromachined Ultra-sonic Transducers, Norway, 8 - 09 May 2008
- XIV. **Novel AFM Probes for Fast Imaging and Quantitative Material Characterization**
Değertekin F. L., Onaran A. G., BALANTEKİN M., TORUN H.
MRS Fall Meeting, United States Of America, 26 - 30 November 2007
- XV. **Multiple Annular Ring Capacitive Micromachined Ultrasonic Transducer Arrays for Forward Looking Intravascular Ultrasound Imaging Catheters**
Güldiken R. O., Zahorian J., BALANTEKİN M., KARAMAN M., Değertekin F. L.
ASME International Mechanical Engineering Congress and Exposition, United States Of America, 11 - 15 November 2007, pp.179-180
- XVI. **Design and Experimental Characterization of a Dual Electrode CMUT Array for Intra Cardiac Ultrasound Imaging**
Güldiken R. O., Zahorian J., BALANTEKİN M., Değertekin F. L.
2007 IEEE Ultrasonics Symposium, New York, NY, USA, 28 - 31 October 2007, pp.416-419
- XVII. **Forward Looking IVUS Imaging Using a Dual Annular Ring CMUT Array Experimental Results**
Güldiken R. O., Zahorian J., Gürün G., Qureshi M. S., BALANTEKİN M., Tekeş C., Hasler P., KARAMAN M., Carlier S., Değertekin F. L.
2007 IEEE Ultrasonics Symposium, New York, United States Of America, 28 - 31 October 2007, pp.1247-1250
- XVIII. **Annular CMUT Arrays for Side Looking Intravascular Ultrasound Imaging**
Zahorian J., Güldiken R. O., Gürün G., Qureshi M. S., BALANTEKİN M., Değertekin F. L., Carlier S., ŞİŞMAN A., KARAMAN M.
2007 IEEE Ultrasonics Symposium, New York, NY, USA, 28 - 31 October 2007, pp.84-87
- XIX. **Design Optimization and Integrated Electronics for Dual Electrode CMUTs**
Değertekin F. L., Hasler P., BALANTEKİN M., KARAMAN M., Basu A., Güldiken R. O., Gürün G., Peng S., Qureshi S., Zahorian J.
2007 IEEE Ultrasonics Symposium, United States Of America, 28 - 31 October 2007
- XX. **A Fast AFM Probe with Integrated Interferometric Sensing and Electrostatic Actuation**
Değertekin F. L., Onaran A. G., BALANTEKİN M., Gorp B. V., Parlak Z.
ECS Meeting, United States Of America, 7 - 12 October 2007
- XXI. **Quantitative Material Characterization and Imaging at Nanoscale using a New AFM Probe**
Değertekin F. L., BALANTEKİN M., Onaran A. G.
International Symposium on Acoustical Imaging, Japan, 15 - 18 April 2007, vol.29, pp.215-222
- XXII. **AFM Probe Structures with Integrated Interferometric Sensing and Electrostatic Actuation**
Değertekin F. L., Onaran A. G., TORUN H., BALANTEKİN M., Sarangapani K., Zhu C.
Kanazawa Workshop on Atomic Force Microscopy, Japan, 12 - 18 January 2007
- XXIII. **Dual Annular Ring CMUT Array for Forward Looking IVUS Imaging**
Güldiken R. O., Zahorian J., BALANTEKİN M., Değertekin F. L., Tekeş C., ŞİŞMAN A., KARAMAN M.
2006 IEEE Ultrasonics Symposium, Canada, 3 - 06 October 2006, pp.698-701
- XXIV. **Extracting and Mapping Nanoscale Material Properties with TRIF mode using FIRAT probe**
BALANTEKİN M., Onaran A. G., Değertekin F. L.
International Conference on Nanoscience and Technology, Switzerland, 31 July - 04 August 2006
- XXV. **An Active Membrane Based Probe Structure for Tapping Mode Atomic Force Microscope Imaging**
Onaran A. G., BALANTEKİN M., Değertekin F. L.
International Conference on Nanoscience and Technology, Switzerland, 31 July - 04 August 2006
- XXVI. **Analysis and Design of Dual Electrode CMUTs**
Güldiken R. O., BALANTEKİN M., Değertekin F. L.
2005 IEEE International Ultrasonics Symposium, Netherlands, 18 - 21 September 2005, pp.581-584
- XXVII. **Mapping Nanoscale Material Elasticity using Higher Harmonics of a Tapping Cantilever**

BALANTEKİN M., ATALAR A.

ESF Nanotribology Workshop, Turkey, 20 - 23 October 2003

XXVIII. Imaging Material Elasticity with Atomic Force Microscope

BALANTEKİN M., ATALAR A.

Scanning Probe Microscopy, Sensors and Nanostructures, United Kingdom, 23 - 26 May 2003

Supported Projects

Balantekin M., TUBITAK Project, Grafen mikromembranların üretimi ve mikrobiyoparçacık tesbitinde kullanılabilirliğinin incelenmesi, 2017 - 2020

BALANTEKİN M., TUBITAK Project, Atomik Kuvvet Mikroskobu Uygulamaları için Yüksek Hızlı Aktüatörsüz ve Dinamik Görüntüleme Metodunun Geliştirilmesi, 2011 - 2013

Metrics

Publication: 41

Citation (WoS): 238

Citation (Scopus): 258

H-Index (WoS): 8

H-Index (Scopus): 9

Non Academic Experience

Georgia Institute of Technology