Prof. HALUK KÜLAH

Personal Information

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International Researcher IDs
ScholarID: kppCv9YAAAAJ
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Publons / Web Of Science ResearcherID: E-8128-2011
ScopusID: 6602231834
Yoksis Researcher ID: 120121

Education Information

Doctorate, The University of Michigan, Engineering, EECS, United States Of America 1998 - 2003
Postgraduate, Middle East Technical University, Graduate School of Natural and Applied Sciences, Elektrik Ve Elektronik Mühendisliği (Yl) (Tezli), Turkey 1996 - 1998
Undergraduate, Middle East Technical University, Faculty of Engineering, Elektrik-Elektronik Mühendisliği Bölümü, Turkey 1991 - 1996

Foreign Languages

English, C1 Advanced

Dissertations

Doctorate, Closed-Loop Electromechanical Sigma-Delta Microgravity Accelerometers, The University Of Michigan, Eecs, 2003
Postgraduate, A CMOS integrated PtSi schottky-barrier infrared dedector for night applications, Middle East Technical University, Graduate School of Natural and Applied Sciences, Elektrik Ve Elektronik Mühendisliği (Yl) (Tezli), 1998

Research Areas

Electrical and Electronics Engineering, Electronic, MEMS, Engineering and Technology

Academic Titles / Tasks

Professor, Middle East Technical University, Faculty of Engineering, Department of Electrical and Electronics Engineering, 2014 - Continues
Associate Professor, Middle East Technical University, Faculty of Engineering, Department of Electrical and Electronics Engineering, 2009 - 2014
Assistant Professor, Middle East Technical University, Faculty of Engineering, Department of Electrical and Electronics

Engineering, 2005 - 2009
Lecturer, Middle East Technical University, Faculty of Engineering, Department of Electrical and Electronics Engineering, 2004 - 2005
Research Assistant, The University of Michigan, Engineering, EECS, 1998 - 2004
Research Assistant, Middle East Technical University, Faculty of Engineering, Department of Electrical and Electronics Engineering, 1996 - 1998

Courses

Introduction to Analog Integrated Circuits, Undergraduate, 2019 - 2020, 2018 - 2019, 2017 - 2018, 2012 - 2013

Advising Theses

Külah H., LARGE FRACTIONAL BANDWIDTH ELECTROMAGNETIC ENERGY HARVESTER AND INTERFACE CIRCUIT WITH 0.1-2 G ACCELERATION RANGE, Postgraduate, A.MERT(Student), Continues
KÜLAH H., Design and fabrication of piezoelectric energy harvesting micro devices for biomedical implants, Doctorate, A.KOYUNCUOĞLU(Student), 2022
KÜLAH H., Low power highly programmable analog front-end for 12-channel fully implantable cochlear implants, Postgraduate, A.BERKAY(Student), 2022
AKAR G., KÜLAH H., Automatic cell counting from microchannel images, Postgraduate, İ.FATİH(Student), 2022
KÜLAH H., Design of a microfluidic platform for real-time enumeration and retrieval of low concentration of cells, Postgraduate, B.ŞAHİN(Student), 2022
Külah H., LOW POWER HIGHLY PROGRAMMABLE ANALOG FRONT-END FOR 12-CHANNEL FULLY IMPLANTABLE COCHLEAR IMPLANTS, Postgraduate, A.Berkay(Student), 2021
Külah H., An adaptive converter for constant current stimulators, Postgraduate, M.KOÇ(Student), 2021
Külah H., Investigation of the permeability of the cell membrane for different cryoprotectant agents in a continuous thermo-fluidic micro-channel system, Postgraduate, A.HATİBOĞLU(Student), 2021
Külah H., Wireless data transmission for medical implants with fully digital non-coherent detection, Postgraduate, M.DOĞAN(Student), 2021
Külah H., Charge balanced neural stimulation interface circuit for fully implantable cochlear implants, Postgraduate, H.ANDAÇ(Student), 2020
Külah H., MEMS based multi-channel piezoelectric acoustic transducer for fully implantable cochlear implants, Postgraduate, M.BERAT(Student), 2020
Külah H., 13.56 MHz multi-mode rectifier circuit for wirelessly powered implantable medical devices, Postgraduate, Y.ENGÜR(Student), 2020
Külah H., Özgür E., MEMS based microbial fuel cell with microliter volume for microscale power generation, Doctorate, B.ŞEN(Student), 2020
Külah H., Fully autonomous piezoelectric energy harvesting interface circuit utilizing low profile nonlinear switching technique, Postgraduate, B.ÇİFTCİ(Student), 2020
Külah H., Işık Akçakaya D., System integration of mems devices on flexible substrate for fully implantable cochlear implant applications, Postgraduate, A.KAAN(Student), 2019
KÜLAH H., YILDIRIM E., DEVELOPMENT OF AN INTEGRATED LAB-ON-A-CHIP (LOC) PLATFORM FOR MULTIDRUG EFFECT ANALYSIS, Postgraduate, A.CAN(Student), 2019
Külah H., Bat E., Capture of circulating tumor cells from blood on modified gold surfaces inside the microfluidic channels, Postgraduate, D.ÇETİN(Student), 2019
KÜLAH H., Design and implementation of an interface circuit for piezoelectric energy harvesters, Doctorate, S.CHAMANIAN(Student), 2018
KÜLAH H., Ultra-low power interface electronics design for fully implantable cochlear implants, Doctorate, H.ULUŞAN(Student), 2018

KÜLAH H., A lab-on-a-chip system integrating dielectrophoretic detection and impedance counting units for chemotherapy guidance in leukemia, Doctorate, Y.DEMİRCAN(Student), 2018

KÜLAH H., Enrichment of MCF7 Breast Cancer Cells from Leukocytes Through Continuous Flow Dielectrophoresis, Postgraduate, Z.ÇAĞLAYAN(Student), 2018

KÜLAH H., Capture of rare circulating tumor cells from blood on bio-activated oxide surface inside microfluidic channels, Postgraduate, H.CEREN(Student), 2018

KÜLAH H., YILDIRIM E., A mems based drug effect analysis system utilizing droplet microfluidics, Postgraduate, M.DÜNDAR(Student), 2018

KÜLAH H., A microfluidic system for dielectrophoretic characterization of cancer cells, Postgraduate, K.SEL(Student), 2018

KÜLAH H., MEMS thin film piezoelectric acoustic transducer for cochlear implant applications, Postgraduate, B.İLİK(Student), 2018

KÜLAH H., Design of a radiation hardened PWM controller built on SOI, Postgraduate, E.KILIÇ(Student), 2018

KÜLAH H., Development of a parylene bonding based fabrication method for MEMS gravimetric resonant based mass sensors, Postgraduate, F.GÖKÇE(Student), 2017

KÜLAH H., Lateral mode resonators for in liquid biosensing applications with a second harmonic based read out method, Postgraduate, E.AYDIN(Student), 2017

KÜLAH H., Optimization of compact electromagnetic energy harvesters for wireless sensor applications, Postgraduate, O.YAŞAR(Student), 2017

KÜLAH H., Lens-free imaging of DEP manipulated cancer cells, Postgraduate, M.KAMİL(Student), 2017

KÜLAH H., A Comprehensive study on RF energy harvesters: modelling, design, and implementation, Doctorate, K.Gharehbaghi(Student), 2016

KÜLAH H., Rare cell enrichment from blood by using dielectrophoresis, Postgraduate, G.ÖZKAYAR(Student), 2015

KÜLAH H., Mems based resonant mass sensors with feedthrough current elimination for in-liquid cell detection applications, Postgraduate, M.KANGÜL(Student), 2015

KÜLAH H., Development of PDMS-based micromachining process for microfluidic reconfigurable antennas /, Postgraduate, S.Seyedpour(Student), 2015

KÜLAH H., Development of resonant mass sensors for MEMS based real time cell detection applications, Postgraduate, M.Kangül(Student), 2015

KÜLAH H., AZGIN K., Development of a high yield fabrication process for MEMS based resonant mass sensors for cell detection applications, Postgraduate, T.BERKİN(Student), 2014

KÜLAH H., Assessment of changes in the dielectric properties of multidrug resistant cancer cells by electrorotation technique /, Postgraduate, G.BAHRIEH(Student), 2014

KÜLAH H., A HIGH THROUGHPUT PARYLENE MICROCHANNEL COULTER COUNTER FOR CELL SIZING AND CELL COUNTING APPLICATIONS, Postgraduate, Ö.SÜMER(Student), 2014

KÜLAH H., A High throughput parylene microchannel coulter counter for cell sizing and cell counting applications /, Postgraduate, Ö.Sümer(Student), 2014

KÜLAH H., CMOS A/D converter implementation for IMU applications, Postgraduate, Ö.LÜTFİ(Student), 2013

KÜLAH H., ÖZGÜVEN H. N., MEMS piezoelectric energy harvester for cochlear implant applications, Postgraduate, L.BEKER(Student), 2013

KÜLAH H., A fully-integrated and battery-free interface electronics for low voltage vibration-based electromagnetic energy harvesters, Postgraduate, H.ULUŞAN(Student), 2013

KÜLAH H., Detection of imatinib and doxorubicin resistance in K562 leukemia cells by 3D-electrode contactless dielectrophoresis, Postgraduate, Y.DEMİRCAN(Student), 2013

ÖZGEN C., KÜLAH H., MEMS based electrochemical DNA sensor to detect methicillin resistant Staphylococcus aureus and vancomycin resistant Enterococcus species, Doctorate, H.Ceylan(Student), 2013

ÖZGEN C., KÜLAH H., Development of a new immobilization procedure for detection of stphylococcal enterotoxin B (SEB) and Candida Albicans, Postgraduate, D.Ertürkan(Student), 2012

KÜLAH H., ÖZGEN C., Development of a new immobilization procedure for detection of staphylococcal enterotoxin B (SEB) and Candida albicans, Postgraduate, D.ERTÜRKAN(Student), 2012

KÜLAH H., Development of a resonant mass sensor for MEMS based cell detection applications, Postgraduate,

D.EROĞLU(Student), 2012
KÜLAH H., Quantification of thermoelectric energy scavenging opportunity in notebook computers, Postgraduate, R.DENKER(Student), 2012
KÜLAH H., Design and implementation of low power interface electronics for vibration-based electromagnetic energy harvesters, Postgraduate, A.RAHİMİ(Student), 2011
KÜLAH H., Design and prototyping of an electromagnetic mems energy harvester for low frequency vibrations, Postgraduate, S.TÜRKYILMAZ(Student), 2011
BALKAN R. T., KÜLAH H., A MEMS thermoelectric energy harvester for energy generation in mobile systems, Postgraduate, E.TAN(Student), 2011
KÜLAH H., Design and implementation of low leakage MEMS microvalves, Doctorate, Y.ENDER(Student), 2011
KÜLAH H., AKIN T., Capacitive CMOS readouts for high performance MEMS accelerometers, Postgraduate, U.SÖNMEZ(Student), 2011
KÜLAH H., Design and implementation of a MEMS based spiral channel dielectrophoretic separator for cytometry applications, Postgraduate, G.YILMAZ(Student), 2010
KÜLAH H., Design and implementation of a MEMS based gravimetric detector for cytometry applications, Postgraduate, E.BAYRAKTAR(Student), 2010
KÜLAH H., Modelling and noise analysis of closed-loop capacitive sigma-delta MEMS accelerometer, Postgraduate, B.BOĞA(Student), 2009
BALKAN R. T., KÜLAH H., Design, fabrication and implementation of a vibration based MEMS energy scavenger for wireless microsystems, Doctorate, İ.SARI(Student), 2008
KÜLAH H., AKIN T., Capacitive cmos readout circuits for high performance MEMS accelerometers, Postgraduate, R.KEPENEK(Student), 2008
KÜLAH H., Design and Implementation of a dielectrophoretic Separator and a gravimetric detecttor for mems based cytometry applications, Postgraduate, A.TUNA(Student), 2008
KÜLAH H., SERT C., Design and fabrication of a DNA electrophoresis chip based on MEMS technology, Postgraduate, S.SUKAS(Student), 2007

Jury Memberships

Award, IEEE Türkiye Teşvik ve Doktora Ödülleri , IEEE, November, 2018

Published journal articles indexed by SCI, SSCI, and AHCI

I. **Pre-enrichment-free detection of hepatocellular carcinoma-specific ctDNA via PDMS and MEMS-based microfluidic sensor**
Çağlayan Arslan Z., Okan M., KÜLAH H.
Microchimica Acta, vol.191, no.5, 2024 (SCI-Expanded)
II. **Piezoelectric Multi-Channel Bilayer Transducer for Sensing and Filtering Ossicular Vibration**
YÜKSEL M. B., Atik A. C., KÜLAH H.
Advanced Science, vol.11, no.16, 2024 (SCI-Expanded)
III. **A pumpless monolayer microfluidic device based on mesenchymal stem cell-conditioned medium promotes neonatal mouse in vitro spermatogenesis**
Önen S., Atik A. C., Gizer M., KÖSE S., YAMAN M. Ö., KÜLAH H., KORKUSUZ P.
STEM CELL RESEARCH & THERAPY, vol.14, no.1, 2023 (SCI-Expanded)
IV. **Analytical Validation of a Spiral Microfluidic Chip with Hydrofoil-Shaped Pillars for the Enrichment of Circulating Tumor Cells**
Sen-Dogan B., Demir M. A., Sahin B., YILDIRIM E., Karayalcin G., Sahin S., Mutlu E., Toral T. B., Ozgur E., Zorlu O., et al.
BIOSENSORS-BASEL, vol.13, no.10, 2023 (SCI-Expanded)
V. **Microfluidic-based blood immunoassays**

TORUL H., Arslan Z. Ç., Tezcan T., Kayiş E. Ç., Çalımcı M., Gumustas A., YILDIRIM E., KÜLAH H., TAMER U.
JOURNAL OF PHARMACEUTICAL AND BIOMEDICAL ANALYSIS, vol.228, 2023 (SCI-Expanded)

VI. **Spheroid Engineering in Microfluidic Devices**
Tevlek A., Kecili S., Ozcelik O. S., KÜLAH H., Tekin H. C.
ACS OMEGA, vol.8, no.4, pp.3630-3649, 2023 (SCI-Expanded)

VII. **Label-free enrichment of MCF7 breast cancer cells from leukocytes using continuous flow dielectrophoresis**
Arslan Z. C., Yalcin Y. D., KÜLAH H.
ELECTROPHORESIS, vol.43, no.13-14, pp.1531-1544, 2022 (SCI-Expanded)

VIII. **Thin-Film PZT based Multi-Channel Acoustic MEMS Transducer for Cochlear Implant Applications**
Yüksel M. B., Koyuncuoglu A., Külah H.
IEEE Sensors Journal, vol.22, pp.3052-3060, 2022 (SCI-Expanded)

IX. **A microfluidic device enabling drug resistance analysis of leukemia cells via coupled dielectrophoretic detection and impedimetric counting**
Demircan Yalçın Y., Töral T. B., Sukas S., YILDIRIM E., Zorlu Ö., Gündüz U., KÜLAH H.
Scientific Reports, vol.11, no.1, 2021 (SCI-Expanded)

X. **A Low-Profile Autonomous Interface Circuit for Piezoelectric Micro-Power Generators**
ÇİFTCİ B., Chamanian S., Koyuncuoglu A., Muhtaroglu A., KÜLAH H.
IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS I-REGULAR PAPERS, vol.68, no.4, pp.1458-1471, 2021 (SCI-Expanded)

XI. **13.56 MHz Triple Mode Rectifier Circuit With Extended Coupling Range for Wirelessly Powered Implantable Medical Devices**
Engur Y., Yigit H. A., Kulah H.
IEEE TRANSACTIONS ON BIOMEDICAL CIRCUITS AND SYSTEMS, vol.15, no.1, pp.68-79, 2021 (SCI-Expanded)

XII. **A Self-Powered and Area Efficient SSHI Rectifier for Piezoelectric Harvesters**
Chamanian S., ÇİFTCİ B., Muhtaroglu A., KÜLAH H.
IEEE ACCESS, vol.9, pp.117703-117713, 2021 (SCI-Expanded)

XIII. **Single Supply PWM Fully Implantable Cochlear Implant Interface Circuit with Active Charge Balancing**
Yigit H. A., Ulusan H., Koc M., YÜKSEL M. B., Chamanian S., KÜLAH H.
IEEE Access, vol.9, pp.52642-52653, 2021 (SCI-Expanded)

XIV. **A Novel Microfluidic Method Utilizing a Hydrofoil Structure to Improve Circulating Tumor Cell Enrichment: Design and Analytical Validation**
Özkayar G., Mutlu E., Şahin Ş., Demircan Yalçın Y., Töral T., Külah H., Yıldırım E., Zorlu Ö., Özgür E.
MICROMACHINES, vol.11, no.11, 2020 (SCI-Expanded)

XV. **A Prominent Cell Manipulation Technique in BioMEMS: Dielectrophoresis**
Caglayan Z., Demircan Yalcin Y., KÜLAH H.
MICROMACHINES, vol.11, no.11, 2020 (SCI-Expanded)

XVI. **Modeling and fabrication of electrostatically actuated diaphragms for on-chip valving of MEMS-compatible microfluidic systems**
Atik A. C., Ozkan M. D., Ozgur E., Külah H., Yıldırım E.
JOURNAL OF MICROMECHANICS AND MICROENGINEERING, vol.30, no.11, 2020 (SCI-Expanded)

XVII. **Enhancement of the Start-Up Time for Microliter-Scale Microbial Fuel Cells (mu MFCs) via the Surface Modification of Gold Electrodes**
Sen-Dogan B., Okan M., Afsar-Erkal N., Ozgur E., Zorlu O., KÜLAH H.
MICROMACHINES, vol.11, no.7, 2020 (SCI-Expanded)

XVIII. **A comparative study on EpCAM antibody immobilization on gold surfaces and microfluidic channels for the detection of circulating tumor cells**
Cetin D., Okan M., BAT E., KÜLAH H.
Colloids and Surfaces B: Biointerfaces, vol.188, 2020 (SCI-Expanded)

XIX. **Examination of the dielectrophoretic spectra of MCF7 breast cancer cells and leukocytes**

Çağlayan Z., Demircan Yalçın Y., Külah H.
Electrophoresis, vol.41, pp.345-352, 2020 (SCI-Expanded)

XX. **A Self-Adapting Synchronized-Switch Interface Circuit for Piezoelectric Energy Harvesters**
Chamanian S., Muhtaroglu A., KÜLAH H.
IEEE TRANSACTIONS ON POWER ELECTRONICS, vol.35, no.1, pp.901-912, 2020 (SCI-Expanded)

XXI. **Exploring the relationship between cytoplasmic ion content variation and multidrug resistance in cancer cells via ion-release based impedance spectroscopy**
Demircan Yalçın Y., Sukas S., Töral T. B., Gündüz U., Külah H.
Sensors and Actuators, B: Chemical, vol.290, pp.180-187, 2019 (SCI-Expanded)

XXII. **Power-Efficient Hybrid Energy Harvesting System for Harnessing Ambient Vibrations**
Chamanian S., ÇİFTCİ B., Ulusan H., Muhtaroglu A., KÜLAH H.
IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS I-REGULAR PAPERS, vol.66, no.7, pp.2784-2793, 2019 (SCI-Expanded)

XXIII. **Fully Implantable Cochlear Implant Interface Electronics With 51.2-mu W Front-End Circuit**
Ulusan H., Chamanian S., Ilik B., Muhtaroglu A., KÜLAH H.
IEEE TRANSACTIONS ON VERY LARGE SCALE INTEGRATION (VLSI) SYSTEMS, vol.27, no.7, pp.1504-1512, 2019 (SCI-Expanded)

XXIV. **Implementation of Energy-Neutral Operation on Vibration Energy Harvesting WSN**
Chamanian S., Baghaee S., Ulusan H., Zorlu O., UYSAL BIYIKOĞLU E., KÜLAH H.
IEEE SENSORS JOURNAL, vol.19, no.8, pp.3092-3099, 2019 (SCI-Expanded)

XXV. **An Adaptable Interface Circuit With Multistage Energy Extraction for Low-Power Piezoelectric Energy Harvesting MEMS**
Chamanian S., Ulusan H., Koyuncuoglu A., Muhtaroglu A., KÜLAH H.
IEEE TRANSACTIONS ON POWER ELECTRONICS, vol.34, no.3, pp.2739-2747, 2019 (SCI-Expanded)

XXVI. **A Sub-500 mu W Interface Electronics for Bionic Ears**
Ulusan H., Muhtaroglu A., KÜLAH H.
IEEE ACCESS, vol.7, pp.132140-132152, 2019 (SCI-Expanded)

XXVII. **Thin film piezoelectric acoustic transducer for fully implantable cochlear implants**
Ilık B., Koyuncuoglu A., Sardan-Sukas O., Kulah H.
SENSORS AND ACTUATORS A-PHYSICAL, vol.280, pp.38-46, 2018 (SCI-Expanded)

XXVIII. **Optimization of AA-Battery Sized Electromagnetic Energy Harvesters: Reducing the Resonance Frequency Using a Non-Magnetic Inertial Mass**
Yasar O., Ulusan H., Zorlu O., Sardan-Sukas O., Külah H.
IEEE SENSORS JOURNAL, vol.18, pp.4509-4516, 2018 (SCI-Expanded)

XXIX. **A second harmonic based resonance characterization method for MEMS electrostatic resonators**
Aydin E., GOKCE F., Kangul M., ZORLU O., KÜLAH H.
SENSORS AND ACTUATORS A-PHYSICAL, vol.274, pp.220-230, 2018 (SCI-Expanded)

XXX. **Comparative study on antibody immobilization strategies for efficient circulating tumor cell capture**
ATES H. C., OZGUR E., KÜLAH H.
BIOINTERPHASES, vol.13, no.2, 2018 (SCI-Expanded)

XXXI. **A triple hybrid micropower generator with simultaneous multi-mode energy harvesting**
ULUSAN H., CHAMANIAN S., PATHIRANA W. P. M. R., ZORLU O., MUHTAROGLU A., KÜLAH H.
SMART MATERIALS AND STRUCTURES, vol.27, no.1, 2018 (SCI-Expanded)

XXXII. **Analysis and Elimination of the Capacitive Feedthrough Current on Electrostatically Actuated and Sensed Resonance-Based MEMS Sensors**
Kangul M., Aydin E., Gokce F., Zorlu O., KÜLAH H.
JOURNAL OF MICROELECTROMECHANICAL SYSTEMS, vol.26, no.6, pp.1272-1278, 2017 (SCI-Expanded)

XXXIII. **Optimization of Power Conversion Efficiency in Threshold Self-Compensated UHF Rectifiers With Charge Conservation Principle**
Gharehbaghi K., KOÇER F., KÜLAH H.
IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS I-REGULAR PAPERS, vol.64, no.9, pp.2380-2387, 2017 (SCI-

Expanded)

XXXIV. **Highly Integrated 3 V Supply Electronics for Electromagnetic Energy Harvesters With Minimum 0.4 V-peak Input**
Ulusan H., Zorlu O., Muhtaroglu A., KÜLAH H.
IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, vol.64, no.7, pp.5460-5467, 2017 (SCI-Expanded)

XXXV. **Threshold Compensated UHF Rectifier With Local Self-Calibrator**
Gharehbaghi K., Zorlu O., Kocer F., KÜLAH H.
IEEE MICROWAVE AND WIRELESS COMPONENTS LETTERS, vol.27, no.6, pp.575-577, 2017 (SCI-Expanded)

XXXVI. **Modelling and efficiency optimisation of UHF Dickson rectifiers**
Gharehbaghi K., Zorlu O., Kocer F., KÜLAH H.
IET CIRCUITS DEVICES & SYSTEMS, vol.10, no.6, pp.504-513, 2016 (SCI-Expanded)

XXXVII. **Wearable battery-less wireless sensor network with electromagnetic energy harvesting system**
Chamanian S., Ulusan H., Zorlu O., Baghaee S., UYSAL BIYIKOĞLU E., KÜLAH H.
SENSORS AND ACTUATORS A-PHYSICAL, vol.249, pp.77-84, 2016 (SCI-Expanded)

XXXVIII. **Characterization of the distribution of rotational torque on electrorotation chips with 3D electrodes**
Bahrieh G., Ozgur E., Koyuncuoglu A., ERDEM M., GÜNDÜZ U., KÜLAH H.
ELECTROPHORESIS, vol.36, no.15, pp.1785-1794, 2015 (SCI-Expanded)

XXXIX. **A Fully Integrated and Battery-Free Interface for Low-Voltage Electromagnetic Energy Harvesters**
Ulusan H., Gharehbaghi K., Zorlu O., Muhtaroglu A., KÜLAH H.
IEEE TRANSACTIONS ON POWER ELECTRONICS, vol.30, no.7, pp.3712-3719, 2015 (SCI-Expanded)

XL. **Label-free detection of multidrug resistance in K562 cells through isolated 3D-electrode dielectrophoresis**
Demircan Y., Koyuncuoglu A., ERDEM M., Ozgur E., GÜNDÜZ U., KÜLAH H.
ELECTROPHORESIS, vol.36, pp.1149-1157, 2015 (SCI-Expanded)

XLI. **Breath sensors for lung cancer diagnosis**
Adiguzel Y., KÜLAH H.
BIOSENSORS & BIOELECTRONICS, vol.65, pp.121-138, 2015 (SCI-Expanded)

XLII. **Reconfigurable Nested Ring-Split Ring Transmitarray Unit Cell Employing the Element Rotation Method by Microfluidics**
Erdil E., TOPALLI K., Esmaeilzad N. S., Zorlu O., KÜLAH H., AYDIN ÇİVİ H. Ö.
IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION, vol.63, no.3, pp.1164-1169, 2015 (SCI-Expanded)

XLIII. **A Sigma Delta micro accelerometer with 6 mu g/root Hz resolution and 130 dB dynamic range**
Sonmez U., Kulah H., Akin T.
ANALOG INTEGRATED CIRCUITS AND SIGNAL PROCESSING, vol.81, no.2, pp.471-485, 2014 (SCI-Expanded)

XLIV. **Powering-up Wireless Sensor Nodes Utilizing Rechargeable Batteries and an Electromagnetic Vibration Energy Harvesting System**
Chamanian S., Baghaee S., Ulusan H., Zorlu O., KÜLAH H., UYSAL BIYIKOĞLU E.
ENERGIES, vol.7, no.10, pp.6323-6339, 2014 (SCI-Expanded)

XLV. **A parylene coating based room temperature wafer-level attachment method for MEMS integration with zero applied force**
Beker L., Zorlu O., KÜLAH H.
SENSORS AND ACTUATORS A-PHYSICAL, vol.215, pp.1-7, 2014 (SCI-Expanded)

XLVI. **Capturing and detection of MCF-7 breast cancer cells with a CMOS image sensor**
Musayev J., Altiner C., Adiguzel Y., KÜLAH H., Eminoglu S., AKIN T.
SENSORS AND ACTUATORS A-PHYSICAL, vol.215, pp.105-114, 2014 (SCI-Expanded)

XLVII. **A Fully Microfabricated Electrochemical Sensor and its Implementation for Detection of Methicillin Resistance in Staphylococcus aureus**
Koydemir H. C., KÜLAH H., ALP A., ÜNER A., HASÇELİK A. G., ÖZGEN C.
IEEE SENSORS JOURNAL, vol.14, no.6, pp.1844-1851, 2014 (SCI-Expanded)

XLVIII. **Studies on visual detection and surface modification testing of glass microfiber filter paper based biosensor**

Adiguzel Y., KÜLAH H.
BIOSENSORS & BIOELECTRONICS, vol.54, pp.27-34, 2014 (SCI-Expanded)

XLIX. **Solvent Compatibility of Parylene C Film Layer**
Koydemir H. C., KÜLAH H., ÖZGEN C.
JOURNAL OF MICROELECTROMECHANICAL SYSTEMS, vol.23, no.2, pp.298-307, 2014 (SCI-Expanded)

L. **Assessment of effects of multi drug resistance on dielectric properties of K562 leukemic cells using electrorotation**
Bahrieh G., ERDEM M., Ozgur E., GÜNDÜZ U., KÜLAH H.
RSC ADVANCES, vol.4, no.85, pp.44879-44887, 2014 (SCI-Expanded)

LI. **Glucose determination based on a two component self-assembled monolayer functionalized surfaceenhanced Raman spectroscopy (SERS) probe**
TORUL H., ÇİFTÇİ H., Dudak F. C., Adiguzel Y., KÜLAH H., BOYACI İ. H., TAMER U.
ANALYTICAL METHODS, vol.6, no.14, pp.5097-5104, 2014 (SCI-Expanded)

LII. **A MEMS-based energy harvester for generating energy from non-resonant environmental vibrations**
Zorlu O., KÜLAH H.
SENSORS AND ACTUATORS A-PHYSICAL, vol.202, pp.124-134, 2013 (SCI-Expanded)

LIII. **Dielectrophoresis: Applications and future outlook in point of care**
Demircan Y., Ozgur E., KÜLAH H.
ELECTROPHORESIS, vol.34, no.7, pp.1008-1027, 2013 (SCI-Expanded)

LIV. **An electromagnetic energy harvesting system for low frequency applications with a passive interface ASIC in standard CMOS**
Rahimi A., Zorlu O., Muhtaroglu A., Kulah H.
SENSORS AND ACTUATORS A-PHYSICAL, vol.188, pp.158-166, 2012 (SCI-Expanded)

LV. **CMOS Cell Sensors for Point-of-Care Diagnostics**
Adiguzel Y., KÜLAH H.
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Memberships / Tasks in Scientific Organizations

EEEAG Danışma Kurulu, Member of Advisory Board, 2023 - Continues, Turkey
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Metrics

Publication: 245
Citation (WoS): 2757
Citation (Scopus): 3622
H-Index (WoS): 27
H-Index (Scopus): 31

Awards

Külah H., MEMS based microbial fuel cell with microliter volume for microscale power generation, Orta Doğu Teknik Üniversitesi Yılın Tezi Ödülü (Eş Danışman), September 2021
Külah H., “Elginkan Vakfı Teknoloji Ödülü”, Elginkan Vakfı , December 2020
Külah H., A lab-on-a-chip system integrating dielectrophoretic detection and impedance counting units for chemotherapy guidance in leukemia, Orta Doğu Teknik Üniversitesi Fen Bilimleri Enstitüsü Yılın Tezi Ödülü (Danışman), September 2019
Külah H., Özgür E., Yılın Tezi Ödülü, Prof. Dr. Mustafa Parlar Eğitim Ve Araştırma Vakfı, December 2018
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Non Academic Experience

METU
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The University of Michigan, Ann Arbor
The University of Michigan, Ann Arbor
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