

## Assoc. Prof. BİLSAY SÜMER

### Personal Information

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### Education Information

Doctorate, Carnegie Mellon University, Mühendislik Fakültesi, Makine Mühendisliği , United States Of America 2006 - 2009

Masters (Non-Thesis), Carnegie Mellon University, Mühendislik Fakültesi, Makine Mühendisliği , United States Of America 2004 - 2006

Undergraduate, Middle East Technical University, Faculty Of Engineering, Makina Mühendisliği , Turkey 1998 - 2003

### Foreign Languages

English, C1 Advanced

### Research Areas

Electrical and Electronics Engineering, Electronic, Sensing Devices and Transducers, MEMS, Mechanical Engineering, Pressure Vessels and Piping, Fluid Machinery, Construction and Manufacturing, Tribology, System Dynamics and Control, Robotics, Mechatronics, Acoustics and Noise Control, Mechanical Vibrations, Mechanical, Solid Mechanics, Mechanical Testing, Computational fluid dynamics, Engineering and Technology

### Academic Titles / Tasks

Associate Professor, Hacettepe University, Mühendislik Fakültesi, Makina Mühendisliği Bölümü, 2021 - Continues

Assistant Professor, Hacettepe University, Mühendislik Fakültesi, Makina Mühendisliği Bölümü, 2013 - 2020

### Academic and Administrative Experience

Hacettepe Üniversitesi, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, 2014 - 2019

### Advising Theses

Sümer B., Geniş bantlı ve düşük frekanslı mekanik titreşimler için esnek piezoelektrik enerji hasadı sistemi tasarımı ve üretimi, Postgraduate, H.GÖKSENİN(Student), 2015

SÜMER B., MEMS teknikleri kullanarak esnek piezoelektrik dokunsal algılayıcı dizini üretimi, Postgraduate, Z.KORKMAZ(Student), 2015

## Jury Memberships

Post Graduate, Post Graduate, Orta Doğu Teknik Üniversitesi, November, 2019  
Post Graduate, Post Graduate, Orta Doğu Teknik Üniversitesi, September, 2019  
Post Graduate, Post Graduate, Orta Doğu Teknik Üniversitesi, September, 2019  
Doctorate, Doctorate, Hacettepe Üniversitesi, May, 2018

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

- I. **Comparative study on Well-to-Wheels emissions between fully electric and conventional automobiles in Istanbul**  
Ozdemir A., Koç İ. M. , SÜMER B.  
Transportation Research Part D: Transport and Environment, vol.87, 2020 (Journal Indexed in SCI)
- II. **Investigation of adhesion and friction of an isotropic composite pillar**  
Eray T., Koç İ. M. , SÜMER B.  
PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART J-JOURNAL OF ENGINEERING TRIBOLOGY, vol.233, no.4, pp.520-531, 2019 (Journal Indexed in SCI)
- III. **Friction force evaluation for grasping in minimally invasive surgery**  
Özin M. C. , SÜMER B., Koç İ. M.  
TRIBOLOGY INTERNATIONAL, vol.131, pp.167-173, 2019 (Journal Indexed in SCI)
- IV. **Influence of preload control on friction force measurement of fabric samples**  
SÜMER B.  
TRIBOLOGY INTERNATIONAL, vol.127, pp.446-456, 2018 (Journal Indexed in SCI)
- V. **The undamaged tissue grasping in a laparoscopic surgical grasper via distributed pressure measurement**  
SÜMER B., Özin M. C. , Eray T., Koç İ. M.  
TRIBOLOGY INTERNATIONAL, vol.113, pp.330-337, 2017 (Journal Indexed in SCI)
- VI. **Alteration of friction force of a harmonically excited elastomeric pillar**  
SÜMER B., Eray T., Koç İ. M.  
TRIBOLOGY INTERNATIONAL, vol.113, pp.297-305, 2017 (Journal Indexed in SCI)
- VII. **Analytical and experimental analysis on frictional dynamics of a single elastomeric pillar**  
Eray T., SÜMER B., Koç İ. M.  
TRIBOLOGY INTERNATIONAL, vol.100, pp.293-305, 2016 (Journal Indexed in SCI)
- VIII. **An active force controlled laparoscopic grasper by using a smart material actuation**  
Koç İ. M. , Eray T., SÜMER B., Çerçi N.  
TRIBOLOGY INTERNATIONAL, vol.100, pp.317-327, 2016 (Journal Indexed in SCI)
- IX. **Piezoelectric Polymer Fiber Arrays for Tactile Sensing Applications**  
Suemer B., Aksak B., Sahin K., Chuengsatiansup K., Sitti M.  
SENSOR LETTERS, vol.9, no.2, pp.457-463, 2011 (Journal Indexed in SCI)
- X. **An experimental analysis of elliptical adhesive contact**  
Suemer B., Onal C. D. , Aksak B., Sitti M.  
JOURNAL OF APPLIED PHYSICS, vol.107, no.11, 2010 (Journal Indexed in SCI)
- XI. **Cross-talk compensation in atomic force microscopy**  
Onal C. D. , Sumer B., Sitti M.  
REVIEW OF SCIENTIFIC INSTRUMENTS, vol.79, no.10, 2008 (Journal Indexed in SCI)
- XII. **Rolling and spinning friction characterization of fine particles using Lateral Force Microscopy based contact pushing**  
Sumer B., Sitti M.  
JOURNAL OF ADHESION SCIENCE AND TECHNOLOGY, vol.22, pp.481-506, 2008 (Journal Indexed in SCI)

## Refereed Congress / Symposium Publications in Proceedings

- I. **Pinch Force Measurement in Minimally Invasive Surgery with Tactile Sensors**  
ÖZİN M. C. , SÜMER B., KOÇ İ. M.  
6th International Symposium on Innovative Technologies in Engineering and Science 09-11 November 2018 (ISITES2018 Antalya - Turkey), 9 - 11 November 2018
- II. **Estimation of Friction Force in Minimally Invasive Surgery with Tactile Sensors**  
ÖZİN M. C. , SÜMER B., KOÇ İ. M.  
6th International Symposium on Innovative Technologies in Engineering and Science 09-11 November 2018 (ISITES2018 Antalya - Turkey), 9 - 11 November 2018
- III. **DAĞITILMIŞ HAVA JETİ KULLANARAK HASSAS CİSİMLERİN MANİPÜLASYONUNUN SAYISAL OLARAK İNCELENMESİ**  
YILDIZELİ A., KARABAY A. Y. , COŞKUN U. C. , ÇADIRCI S., VATANSEVER E., SÜMER B., KOÇ İ. M.  
8. Ulusal Hidrolik Pnömatik Kongresi, Turkey, 22 - 25 November 2017
- IV. **ADHESION AND FRICTION OF A METAL-POLYMER MATRIX COMPOSITE PILLAR**  
ERAY T., ÖZİN M. C. , KOÇ İ. M. , SÜMER B.  
44th Leeds-Lyon Symposium on Tribology, Lyon, France, 4 - 06 September 2017
- V. **PERFORMANCE EVALUATION OF GRASPING FORCE MEASUREMENT SYSTEM OF A LAPAROSCOPIC SURGICAL TOOL**  
ÖZİN M. C. , ERAY T., SÜMER B., KOÇ İ. M.  
44th Leeds-Lyon Symposium on Tribology, Lyon, France, 4 - 06 September 2017
- VI. **Hyperelastic Model of a Spacer Fabric**  
SÖYLEMEZ E., SÜMER B., KOÇ İ. M.  
44th Leed-Lyon Symposium on Tribology, Lyon, France, 4 - 06 September 2017
- VII. **EFFECT OF FABRIC PATTERN ON FRICTION FORCE UNDER REGULATED PRELOAD**  
SÜMER B.  
44th Leeds-Lyon Symposium on Tribology, Lyon, France, 3 - 06 September 2017, pp.194
- VIII. **Grasper Force Control of SMA based Air Cooled Actuator for Laparoscopic Surgical Device**  
ÖZİN M. C. , ERAY T., KOÇ İ. M. , SÜMER B.  
2nd African Congress in Tribology - 3rd Euro-Mediterranean Congress on Bioengineering, Biomaterials and Biomedicine, MARAKESH, Morocco, 16 - 19 April 2017
- IX. **Measuring the Friction Force of Bio-inspired Fiber Array**  
ERAY T., KOÇ İ. M. , SÜMER B.  
2nd African Congress in Tribology - 3rd Euro-Mediterranean Congress on Bioengineering, Biomaterials and Biomedicine, MARAKESH, Morocco, 16 - 19 April 2017
- X. **Measuring the Adhesion Force of Soft Tissue-Laparoscopic Grasper Using a Tactile Sensor**  
ÖZİN M. C. , ERAY T., SÜMER B., KOÇ İ. M.  
2nd African Congress in Tribology - 3rd Euro-Mediterranean Congress on Bioengineering, Biomaterials and Biomedicine, MARAKESH, Morocco, 16 - 19 April 2017
- XI. **Analytical and experimental analysis on kinetics of a laparoscopic surgery tool**  
Özin M. C. , Vatansever E., Eray T., Koç İ. M. , SÜMER B.  
2017 International Conference on Mechatronics Systems and Control Engineering, ICMSCE 2017, Kayseri, Turkey, 2 - 04 February 2017, pp.20-23
- XII. **Assessment of friction force between a PDMS pillar and a flat glass substrate**  
Eray T., Koç İ. M. , SÜMER B., OZIN M. C.  
2017 International Conference on Mechatronics Systems and Control Engineering, ICMSCE 2017, Kayseri, Turkey, 2 - 04 February 2017, pp.1-5
- XIII. **Investigation of Laparoscopic Grasper-Tissue Interaction via Pressure Mapping**  
ÖZİN M. C. , ERAY T., SÜMER B., KOÇ İ. M.  
Proceedings of the 2017 International Conference on Mechatronics Systems and Control Engineering - ICMSCE '2017, Kayseri, Turkey, 2 - 04 February 2017
- XIV. **Alteration of friction force for a harmonically excited bioinspired elastomeric pillar**  
ERAY T., KOÇ İ. M. , SÜMER B.

- 43rd Leeds-Lyon Symposium on Tribology, Leeds, United Kingdom, 6 - 09 September 2016
- XV. **Distributed pressure measurement for an unharmed grasped tissue in a laparoscopic surgery**  
ÖZİN M. C. , SÜMER B., ERAY T., KOÇ İ. M.  
43rd Leeds-Lyon Symposium on Tribology, Leeds, United Kingdom, 6 - 09 September 2016
- XVI. **Investigation of Damping Mechanism of Elastomeric Pillar in Frictional Contact**  
SÜMER B., ERAY T., KOÇ İ. M. , ÖZİN M. C.  
43rd LEEDS-LYON SYMPOSIUM on TRIBOLOGY, Leeds, United Kingdom, 4 - 09 September 2016
- XVII. **Design of a Thermoelectric Energy Harvesting Module for a Wireless Pressure Measurement in Vehicles**  
SÜMER B., SAN E. K. , SANCAKDAR K.  
30th Eurosensors Conference, Budapest, Hungary, 4 - 07 September 2016, vol.168, pp.63-66
- XVIII. **Akıllı Malzeme ile PID Kuvvet Kontrollü Laparoskopik Alet Tasarımı ve Analizi**  
ERAY T., ÇERÇİ N., VATANSEVER E., OZIN M. C. , GÖKDAL O., SÜMER B., KOÇ İ. M.  
TOK'2015, Turkey, 10 - 12 September 2015
- XIX. **Measurement of The Friction Force of A Pillar Structure on A Smooth Surface**  
ERAY T., SÜMER B., KOÇ İ. M.  
42. Leeds-Lyon Symposium on Tribology, 7 - 09 September 2015
- XX. **Adhesive Pillar Based Air Levitation System for Contactless Manipulation of Fine Objects**  
Türkmen D., Koç İ. M. , SÜMER B.  
Conference on EUROSENSORS, Freiburg, Germany, 6 - 09 September 2015, vol.120, pp.1124-1127
- XXI. **Fabrication of a Flexible Tactile Sensor with Micro-Pillar Array**  
SÜMER B., Koç İ. M.  
Conference on EUROSENSORS, Freiburg, Germany, 6 - 09 September 2015, vol.120, pp.134-137
- XXII. **A Flexible Piezoelectric Energy Harvesting System for Broadband and Low-frequency Vibrations**  
CETIN H. G. , SÜMER B.  
Conference on EUROSENSORS, Freiburg, Germany, 6 - 09 September 2015, vol.120, pp.345-348
- XXIII. **Elastic contact of fibrillar features on rough surface**  
ANSARI P., SÜMER B.  
5th World Tribology Congress, WTC 2013, Torino, Italy, 8 - 13 September 2013, vol.2, pp.1436-1439
- XXIV. **Dynamic Analysis of an Adhesive Fibrillar Contact**  
ERAY T., SÜMER B., KOÇ İ. M.  
5th World Tribology Congress, WTC 2013, Torino, Italy, 8 - 13 September 2013, vol.4, pp.3287-3290
- XXV. **Towards the Fabrication of Tactile Sensor Using a Piezoelectric Polymer**  
KAÇMAZ Ç., KORKMAZ Z., SÜMER B.  
NANOTR-09, Turkey, 24 - 28 June 2013, pp.441
- XXVI. **Tip based Robotic Precision Micro/Nanomanipulation Systems**  
Onal C., Sumer B., Ozcan O., Nain A., Sitti M.  
Conference on Independent Component Analyses, Wavelets, Neural Networks, Biosystems, and Nanoengineering IX, Florida, United States Of America, 27 - 29 April 2011, vol.8058
- XXVII. **A Novel Artificial Hair Receptor Based on Aligned PVDF Micro/Nano Fibers**  
Weiting Liu W. L. , Bilsay S., CESARE S., ARIANNA M., Fei Li F. L. , Dajing Chen D. C. , Paolo D., Metin S., Xin Fu X. F.  
IEEE International Conference on Robotics and Biomimetics (ROBIO), Bangkok, Thailand, 22 - 25 February 2009, pp.49-50

## Expert Reports

- I. **Technical Report for the Barrel Straightening Machine.**  
Sümer B.  
Commercial Court Zurich , pp.16, Zürich, 2018

## Supported Projects

BAŞLAMIŞLI S. Ç. , ÖNDER E. T. , SÜMER B., Project Supported by Higher Education Institutions, Şekil Bellek Alaşım bir Telin Parametere Karakterizasyonu, 2018 - 2019

SÜMER B., KÖKSAL M., YILDIRIM B., GÖRTAN M. O. , Project Supported by Higher Education Institutions, Makina Mühendisliği Bölümü Lisans Programı Deney Ölçüm ve Test Altyapısının Geliştirilmesi, 2017 - 2018

SÜMER B., Project Supported by Higher Education Institutions, Ön Yükleme Kuvvet Kontrolünün Örüntü Tanıma Etkisinin Desenli Yüzeyler Üzerinde Araştırılması, 2017 - 2017

SÜMER B., ÖZİN M. C. , KOÇ İ. M. , ERAY T., Project Supported by Higher Education Institutions, METAL-POLİMER KOMPOZİT SİLİNDİRİK KİRİŞLERİN YAPIŞMA VE SÜRTÜNME ÖZELLİKLERİ, 2017 - 2017

SÜMER B., Project Supported by Higher Education Institutions, BİR BASINÇ ALGILAYICISI İÇİN TERMOELEKTRİK ENERJİ HASADI SİSTEMİ TASARIMI VE ÜRETİMİ, 2016 - 2016

SÜMER B., KOÇ İ. M. , Project Supported by Higher Education Institutions, Mikro-Kiriş Dizinine Sahip Esnek Dokunsal Sensör Üretimi, 2015 - 2016

## Patent

SÜMER B., YENİLİKÇİ LAPAROSKOPİK KAVRAMA CİHAZI, Patent, CHAPTER A Human Needs, Initial Registration, 2018

SÜMER B., BİR DOKUNSA ALGILAYICI DİZİSİ VE ÜRETİM YÖNTEMİ, Patent, CHAPTER G Physics, Initial Registration, 2018

SÜMER B., Yakınlık sensörü bazlı yakın mesafe iletişim sistemi ve yöntemi, Patent, CHAPTER G Physics, Initial Registration, 2017

SÜMER B., Lokasyon bazlı bilinçlendirme sistemi, Patent, CHAPTER G Physics, Initial Registration, 2016

## Scientific Refereeing

APPLIED ENERGY, SCI Journal, October 2019

IEEE SENSORS JOURNAL, SCI Journal, October 2019

IEEE SENSORS JOURNAL, SCI Journal, August 2019

IEEE Sensor 2019, Conference Paper (Abstract), July 2019

IEEE SENSORS JOURNAL, SCI Journal, July 2019

BRAZILIAN JOURNAL OF PHYSICS, SCI Journal, June 2019

TUBİTAK Project, 1507 - TÜBİTAK SME R&D Start Support Program, Hacettepe University, Turkey, June 2019

TUBİTAK Project, 1507 - TÜBİTAK SME R&D Start Support Program, Hacettepe University, Turkey, April 2019

SENSORS AND ACTUATORS A-PHYSICAL, SCI Journal, October 2018

TRIBOLOGY LETTERS, SCI Journal, September 2018

TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE, National Scientific Refreed Journal, May 2018

TRIBOLOGY LETTERS, SCI Journal, November 2017

TÜBİTAK - AB COST Project, European Cooperation in Science and Technology, Turkey, November 2017

PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART J-JOURNAL OF ENGINEERING TRIBOLOGY, SCI Journal, December 2016

TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE, National Scientific Refreed Journal, September 2016

SCIENTIFIC REPORTS, SCI Journal, September 2016

## Edit Congress and Symposium Activities

EUROSENSOR2015, Attendee, Freiburg, Germany, 2015

World Tribology Congress 2013, Attendee, Turin, Italy, 2013

## **Citations**

Total Citations (WOS):121

h-index (WOS):6