

Assoc. Prof. EMRE YÜCE

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International Researcher IDs

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ScopusID: 35110769500

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Education Information

Doctorate, Universiteit Twente, Netherlands 2009 - 2013

Postgraduate, Koc University, Institute Of Science, Fizik (YI) (Tezli), Turkey 2007 - 2009

Undergraduate, Middle East Technical University, Faculty of Arts and Sciences, Department of Physics, Turkey 2002 - 2007

Dissertations

Doctorate, Ultimate-fast all-optical switching of a microcavity, Universiteit Twente, 2013

Postgraduate, Optical modulation and spectroscopy with silicon microspheres, Koç Üniversitesi, Fizik (YI) (Tezli), 2009

Research Areas

Physics, Interdisciplinary Physics and Related Science and Technology Areas, Intensive Article 2: Electronic Structure, Electric, Magnetic and Optical Properties, Optical Properties, Spectroscopy of Matter, Natural Sciences

Academic Titles / Tasks

Associate Professor, Middle East Technical University, Faculty of Arts and Sciences, Department of Physics, 2022 - Continues

Assistant Professor, Middle East Technical University, Faculty of Arts and Sciences, Department of Physics, 2018 - 2022

Assistant Professor, Middle East Technical University, Faculty of Arts and Sciences, Department of Physics, 2016 - 2018

Academic and Administrative Experience

Uygulama ve Araştırma Merkezi Yönetim Kurulu Üyesi, Middle East Technical University, Faculty of Economic and Administrative Sciences, GİMER, 2021 - Continues

Rektörlük Stratejik Plan Komisyonu Üyesi, Middle East Technical University, Faculty of Arts and Sciences, Department of Physics, 2021 - Continues

Advising Theses

- Yüce E., Optical classification and reconstruction through multimode fibers, Doctorate, Ş.KÜREKÇİ(Student), 2022
- Yüce E., Yerci S., Spectral and spatial control of broadband light using wavefront shaping, Doctorate, A.YOLALMAZ(Student), 2022
- Yüce E., Concept of single pixel fiber optical imaging via compressed sensing, Postgraduate, A.AZGIN(Student), 2022
- Yüce E., Wavefront shaping optimization algorithms for focusing light through a multimode fiber, Postgraduate, M.TABAK(Student), 2022
- Yüce E., Multifocal LIDAR systems, Doctorate, K.ÜRKMEN(Student), 2022
- Yüce E., Enhancing performance of solar cells via wavefront shaping, Postgraduate, S.ATİLA(Student), 2022
- Yüce E., Enhancing the resolution of multimode fiber based spectrometers, Postgraduate, S.SÜLEYMAN(Student), 2021
- YÜCE E., 3D imaging via binary wavefront modulation for lidar and machine vision applications, Postgraduate, Ç.Anıl(Student), 2020
- YÜCE E., Wavefront shaping assisted design and application of effective diffractive optical elements providing spectral splitting and solar concentration: splicons, Postgraduate, B.Nezir(Student), 2020
- KOCAMAN S., YÜCE E., Controlling light inside a multi-mode fiber by wavefront shaping, Postgraduate, H.İBRAHİM(Student), 2018
- YÜCE E., YERCİ S., Broadband spectral splitting of light using wavefront shaping, Postgraduate, Y.BAŞAY(Student), 2018
- KOCAMAN S., YÜCE E., Zero-n gap design via modulation of hexagonal photonic crystal lattice, Postgraduate, S.MORADI(Student), 2017

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Single-Pixel Multimode Fiber Spectrometer via Wavefront Shaping**
Yüce E., Kurekci S., Kahraman S. S.
ACS PHOTONICS, vol.10, pp.2488-2493, 2023 (SCI-Expanded)
- II. **Deep Learning-Based Fiber Bending Recognition for Sensor Applications**
Bender D., Cakir U., YÜCE E.
IEEE Sensors Journal, vol.23, no.7, pp.6956-6962, 2023 (SCI-Expanded)
- III. **On-demand continuous-variable quantum entanglement source for integrated circuits**
Günay M., Das P., Yüce E., Polat E. O., Bek A., Taşgın M. E.
NANOPHOTONICS, vol.12, no.2, pp.229-237, 2023 (SCI-Expanded)
- IV. **Design of a High-Resolution Multifocal LIDAR: Enabling Higher Resolution Beyond the Laser Pulse Rise Time**
Urkmen K., Yüce E.
IEEE Transactions on Instrumentation and Measurement, vol.72, 2023 (SCI-Expanded)
- V. **Laser Photochemical Nanostructuring of Silicon for Surface Enhanced Raman Spectroscopy**
Akbiyık A., Avishan N., Demirtaş Ö., Demir A. K., Yüce E., Bek A.
Advanced Optical Materials, vol.10, no.14, 2022 (SCI-Expanded)
- VI. **Hybrid design of spectral splitters and concentrators of light for solar cells using iterative search and neural networks**
Yolalmaz A., YÜCE E.
PHOTONICS AND NANOSTRUCTURES-FUNDAMENTALS AND APPLICATIONS, vol.48, 2022 (SCI-Expanded)
- VII. **Comprehensive deep learning model for 3D color holography**
Yolalmaz A., YÜCE E.
SCIENTIFIC REPORTS, vol.12, no.1, 2022 (SCI-Expanded)

- VIII. **Actively tunable photonic crystal-based switch via plasmon-analog of index enhancement**
YÜCE E., Artvin Z., ŞAHİN R., BEK A., TAŞGIN M. E.
Applied Physics Letters, vol.119, no.21, 2021 (SCI-Expanded)
- IX. **Spectral splitting and concentration of broadband light using neural networks**
Yolalmaz A., YÜCE E.
APL PHOTONICS, vol.6, no.4, 2021 (SCI-Expanded)
- X. **Wavefront shaping assisted design of spectral splitters and solar concentrators**
GÜN B. N., YÜCE E.
SCIENTIFIC REPORTS, vol.11, no.1, 2021 (SCI-Expanded)
- XI. **Effective bandwidth approach for the spectral splitting of solar spectrum using diffractive optical elements**
Yolalmaz A., YÜCE E.
OPTICS EXPRESS, vol.28, no.9, pp.12911-12921, 2020 (SCI-Expanded)
- XII. **Adaptive Control of Necklace States in a Photonic Crystal Waveguide**
Yuce E., Lian J., Sokolov S., Bertolotti J., Combrie S., Lehoucq G., De Rossi A., Mosk A. P.
ACS PHOTONICS, vol.5, pp.3984-3988, 2018 (SCI-Expanded)
- XIII. **Fano lines in the reflection spectrum of directly coupled systems of waveguides and cavities: Measurements, modeling, and manipulation of the Fano asymmetry**
Lian J., Sokolov S., Yuce E., Combrie S., De Rossi A., Mosk A. P.
PHYSICAL REVIEW A, vol.96, no.3, 2017 (SCI-Expanded)
- XIV. **Tuning out disorder-induced localization in nanophotonic cavity arrays**
Sokolov S., Lian J., YÜCE E., Combrie S., DE ROSSI A., Mosk A. P.
OPTICS EXPRESS, vol.25, no.5, pp.4598-4606, 2017 (SCI-Expanded)
- XV. **Measurement of the profiles of disorder-induced localized resonances in photonic crystal waveguides by local tuning**
Lian J., Sokolov S., Yuce E., COMBRÍÉ S., De Rossi A., Mosk A. P.
OPTICS EXPRESS, vol.24, no.19, pp.21939-21947, 2016 (SCI-Expanded)
- XVI. **Optimal all-optical switching of a microcavity resonance in the telecom range using the electronic Kerr effect**
Yuce E., CTÍSTÍS G., CLAUDON J., GÉRARD J., Vos W. L.
OPTICS EXPRESS, vol.24, no.1, pp.239-253, 2016 (SCI-Expanded)
- XVII. **Dispersion of coupled mode-gap cavities**
LIAN J., SOKOLOV S., Yuce E., COMBRÍÉ S., De Rossi A., Mosk A. P.
OPTICS LETTERS, vol.40, no.19, pp.4488-4491, 2015 (SCI-Expanded)
- XVIII. **Femtosecond-scale switching based on excited free-carriers**
SIVAN Y., CTÍSTÍS G., Yuce E., Mosk A. P.
OPTICS EXPRESS, vol.23, no.12, pp.16416-16428, 2015 (SCI-Expanded)
- XIX. **Local thermal resonance control of GaInP photonic crystal membrane cavities using ambient gas cooling**
Sokolov S., LIAN J., Yuce E., COMBRÍÉ S., LEHOUCQ G., De Rossi A., Mosk A. P.
APPLIED PHYSICS LETTERS, vol.106, no.17, 2015 (SCI-Expanded)
- XX. **Dynamical electrical tuning of a silicon microsphere: used for spectral mapping of the optical resonances**
Yuce E., Gürlü O., Thursby G. J., Serpenguzel A.
APPLIED OPTICS, vol.53, no.27, pp.6181-6184, 2014 (SCI-Expanded)
- XXI. **Differential ultrafast all-optical switching of the resonances of a micropillar cavity**
THYRRESTRUP H., Yuce E., CTÍSTÍS G., CLAUDON J., Vos W. L., GÉRARD J.
APPLIED PHYSICS LETTERS, vol.105, no.11, 2014 (SCI-Expanded)
- XXII. **Polarization behavior of elastic scattering from a silicon microsphere coupled to an optical fiber**
Murib M. S., Yuce E., Gürlü O., Serpenguzel A.
PHOTONICS RESEARCH, vol.2, no.2, pp.45-50, 2014 (SCI-Expanded)

- XXIII. **All-optical switching of a microcavity repeated at terahertz rates**
Yuce E., CTİSTİS G., CLAUDON J., Dupuy E., Buijs R. D., de Ronde B., Mosk A. P., GÉRARD J., Vos W. L.
OPTICS LETTERS, vol.38, no.3, pp.374-376, 2013 (SCI-Expanded)
- XXIV. **Competition between electronic Kerr and free-carrier effects in an ultimate-fast optically switched semiconductor microcavity**
Yuce E., CTİSTİS G., CLAUDON J., DUPUY E., Boller K. J., GÉRARD J., Vos W. L.
JOURNAL OF THE OPTICAL SOCIETY OF AMERICA B-OPTICAL PHYSICS, vol.29, no.9, pp.2630-2642, 2012 (SCI-Expanded)
- XXV. **On the pathway of photoexcited electrons: probing photon-to-electron and photon-to-phonon conversions in silicon by ATR-IR**
KARABUDAK E., Yuce E., SCHLAUTMANN S., Hansen O., Mul G., Gardeniers H. (G. E.
PHYSICAL CHEMISTRY CHEMICAL PHYSICS, vol.14, no.31, pp.10882-10885, 2012 (SCI-Expanded)
- XXVI. **Geometrically enhanced morphology-dependent resonances of a dielectric sphere**
Demir A., Yuce E., Serpenguzel A., Lock J. A.
APPLIED OPTICS, vol.50, no.36, pp.6652-6656, 2011 (SCI-Expanded)
- XXVII. **Addendum Ultimate fast optical switching of a planar microcavity in the telecom wavelength range**
Appl Phys Lett 98 161114 2011
CTİSTİS G., YÜCE E., HARTSUİKER A., CLAUDON J., MAELA B., GÉRARD J., WİLLEM L V.
Applied Physics Letters, vol.99, pp.199901, 2011 (SCI-Expanded)
- XXVIII. **Ultimate fast optical switching of a planar microcavity in the telecom wavelength range**
Ctistis G., Yuce E., HARTSUİKER A., Claudon J., Bazin M., Gerard J., Vos W. L.
APPLIED PHYSICS LETTERS, vol.98, no.16, 2011 (SCI-Expanded)
- XXIX. **Optical Modulation With Silicon Microspheres**
Yuce E., Gurlu O., Serpenguzel A.
IEEE PHOTONICS TECHNOLOGY LETTERS, vol.21, no.20, pp.1481-1483, 2009 (SCI-Expanded)

Articles Published in Other Journals

- I. **Nonlinear frequency conversion of light inside a microcavity**
YÜCE E.
TURKISH JOURNAL OF PHYSICS, vol.43, no.2, pp.221-227, 2019 (ESCI)
- II. **Broadband spectral splitting of white light via 2D diffractive optical elements**
Başay Y., Yüce E.
Turkish Journal of Physics, vol.42, pp.501-508, 2018 (Scopus)

Refereed Congress / Symposium Publications in Proceedings

- I. **Fabrication of SERS Substrates via Laser Induced Surface Nanostructuring of Silicon**
Akbiyık A., Avishan N., YÜCE E., BEK A.
11th International Conference on Metamaterials, Photonic Crystals and Plasmonics, META 2021, Warszawa, Poland, 20 - 23 July 2021, pp.879-883
- II. **Deep learning-based spectral splitting and concentration of broadband light for solar cells applications**
Yolalmaz A., Yüce E.
PVCON2020, Ankara, Turkey, 1 - 03 July 2020, pp.39
- III. **Control of spatial phase empowering spectral splitting and concentration of solar spectrum**
Gün B. N., Yüce E.
PVCON 2020, Ankara, Turkey, 30 November - 02 December 2020, pp.39
- IV. **Single-Step Periodic Photoelectrochemical Texturing of Silicon for Photovoltaics**

Avishan N., Akbıyık A., YÜCE E., BEK A.

37th European Photovoltaic Solar Energy Conference and Exhibition, 7 - 11 September 2020, pp.549-553

- V. **Deep learning-based image transmission through a multi-mode fiber**
Kürekcı Ş., Odabaş E., Temur T., Afshari G., YÜCE E.
SPIE Photonics Europe, 2020, 6 - 10 April 2020, vol.1135126
- VI. **Angle-independent diffractive optical elements for efficient solar energy conversion**
Yolalmaz A., Yüce E.
Photonics for Solar Energy Systems VIII 2020, None, France, 6 - 10 April 2020, vol.11366
- VII. **Deep learning-based image transmission through a multi-mode fiber**
Kürekcı Ş., Temur A. T., Odabas M. E., Afshari G., Yüce E.
Unconventional Optical Imaging II 2020, Virtual, Online, France, 6 - 10 April 2020, vol.11351
- VIII. **Deep Learning Image Transmission Through a Multi-mode Fiber**
Kürekcı Ş., Temur A. T., Odabaş M. E., Yüce E.
21. Ulusal Optik, Elektro-Optik ve Fotonik Çalıştayı, İstanbul, Turkey, 06 September 2019
- IX. **Broadband Spectral Splitting of Light Using a Spatial Light Modulator**
Gün B. N., Yüce E.
21. Ulusal Optik, Elektro-Optik ve Fotonik Çalıştayı, İstanbul, Turkey, 06 September 2019, pp.85
- X. **Designs of diffractive optical elements for solar energy harvesting**
Yolalmaz A., Yüce E.
5th International Conference on Power Generation Systems and Renewable Energy Technologies, PGSRET 2019, İstanbul, Turkey, 26 - 27 August 2019
- XI. **Focusing Light Through Scattering Medium**
Kürekcı Ş., Yeşil C., Afshari G., Tabak M., Yüce E.
20. Ulusal Optik, Elektro-Optik ve Fotonik Çalıştayı, Ankara, Turkey, 14 August 2018
- XII. **Deep learning algorithm applied to daily solar irradiation estimations**
Akbaba E. C., Yüce E., Akinoglu B. G.
6th International Renewable and Sustainable Energy Conference, IRSEC 2018, Rabat, Morocco, 5 - 08 December 2018
- XIII. **Investigation of Spectral Splitting and Solar Concentration using Diffractive Optical Elements at Oblique Angles**
Yüce E., Başay Y., Gün B. N.
PVCON 2018, Ankara, Turkey, 4 - 06 June 2018
- XIV. **Tailoring Spontaneous Emission**
YÜCE E.
Türk Fizik Derneği 33. Uluslararası Fizik Kongresi, 6 - 10 September 2017
- XV. **Yarı İletken Yapıların ve Işığın Programlanması**
YÜCE E.
YMF22, Ankara, Turkey, 16 December 2016
- XVI. **Programmable Photonics**
YÜCE E.
Fotonik 2016, 18. Ulusal Optik, Elektro-Optik ve Fotonik Çalıştayı, Ankara, Turkey, 23 September 2016
- XVII. **Frequency dependent dynamics of semiconductor microcavities under ultrafast carrier switching**
Ctistis G., YÜCE E., Julien C., Allard P M., Gerard J., Vos W. L.
2013 Conference on Lasers Electro-Optics Europe International Quantum Electronics Conference CLEO EUROPE/IQEC, Munich, Germany, 12 - 16 May 2013
- XVIII. **All-optical Switching of a Microcavity Repeated at Terahertz Clock Rates**
YÜCE E., Ctistis G., Claudon J., Dupuy E., Buijs R. D., de Ronde B., Mosk A. P., Gerard J., Vos W. L.
Conference on Lasers and Electro-Optics Europe & International Quantum Electronics Conference (CLEO/Europe-IQEC), Munich, Germany, 12 - 16 May 2013
- XIX. **Competition between electronic Kerr and free carrier effects in an ultimate fast switched semiconductor microcavity**

YÜCE E., Ctistis G., Claudon J., Bazin M., Jean-Michel G., Vos W. L.

2011 Conference on Lasers and Electro-Optics Europe and 12th European Quantum Electronics Conference (CLEO EUROPE/EQEC), Munich, Germany, 22 - 26 May 2011

XX. Q-factor dependent Kerr switching of semiconductor microcavities

YÜCE E., Georgios C., Julien C., Maela B., Jean-Michel G., Willem L V.

2011 Conference on Lasers and Electro-Optics Europe and 12th European Quantum Electronics Conference (CLEO EUROPE/EQEC), Munich, Germany, 22 - 26 May 2011

XXI. Ultimate fast optical switching of a semiconductor photonic microcavity

Ctistis G., YÜCE E., Alex H., Maela B., Julien C., Jean-Michel G., Willem L V.

2011 Conference on Lasers and Electro-Optics Europe and 12th European Quantum Electronics Conference (CLEO EUROPE/EQEC), Munich, Germany, 22 - 26 May 2011

XXII. Near-Infrared Resonant Cavity Enhanced Silicon Microsphere Photodetector

Murib M. S., Yuce E., GÜRLÜ O., SERPENGÜZEL A.

Conference on Photonic Materials, Devices and Applications III, Dresden, Germany, 4 - 06 May 2009, vol.7366

XXIII. Silicon microspheres for optical modulation applications

Yuce E., Murib M. S., GÜRLÜ O., SERPENGÜZEL A.

Conference on Photonic Materials, Devices and Applications III, Dresden, Germany, 4 - 06 May 2009, vol.7366

Supported Projects

YÜCE E., TUBITAK Project, Dalga önu şekillendirmesi ile ışığın çok modlu sistem sonrası kontrolü, 2016 - 2018

Patent

Yüce E., DİJİTAL MİKROAYNA CİHAZI İLE HIZLI FAZ MODÜLASYONU, Patent, CHAPTER G Physics, The Invention Registration Number: 2021 022240 , Standard Registration, 2023

Yüce E., ÇOK EKSENLİ VE ÇOK YÜZEYLİ POLİGON TARAYICI İLE HIZLI VE YÜKSEK ÇÖZÜNÜRLÜKLÜ LIDAR, Patent, CHAPTER F Mechanical engineering; Lighting; Heating; Weaponry; Destroyed Materials, The Invention Registration Number: 2021 020308 , Standard Registration, 2023

Yüce E., Kürekcı Ş., KOMPAKT HOLOGRAFİK SLM SPEKTROMETRE, Patent, CHAPTER G Physics, The Invention Registration Number: 2020 22701 , Standard Registration, 2023

Yüce E., YÜKSEK ÇÖZÜNÜRLÜKLÜ LİDAR GÖRÜNTÜLEME SİSTEMİ, Patent, CHAPTER F Mechanical engineering; Lighting; Heating; Weaponry; Destroyed Materials, The Invention Registration Number: 2021 015058 , Standard Registration, 2022

Yüce E., HIZLI LIDAR VE KONUM TESPİT UYGULAMALARI İÇİN ADAPTİF YÖNTEM VE MEKANİZMALAR, Patent, CHAPTER G Physics, The Invention Registration Number: 2018 19800 , Standard Registration, 2021

Yüce E., Kürekcı Ş., ÇOK MODLU ORTAM İLE GİRİŞİM TEMELLİ SLM SPEKTROMETRE, Patent, CHAPTER G Physics, The Invention Recourse Number: 2020/16850 , Standard Registration, 2020

Yüce E., DEĞİŞKEN KİRİNİM OPTİK ELEMANLI OPTİK SPEKTROMETRE, Patent, CHAPTER G Physics, The Invention Recourse Number: 2020/10646 , Standard Registration, 2020

Metrics

Publication: 62

Citation (WoS): 252

Citation (Scopus): 292

H-Index (WoS): 10

H-Index (Scopus): 10

Congress and Symposium Activities

NanoTr, Attendee, Ankara, Turkey, 2022

Awards

Yüce E., Üstün başarılı genç bilim insanı ödülü, Türkiye Bilimler Akademisi (Tüba), December 2021

Non Academic Experience

Nanomanyetik

USSAK Teknoloji Elk. Elkt. Ürn. İmlt. San. Tic. Ltd. Şti.