

Asst. Prof. HÜMEYRA ÇAĞLAYAN ÖZTÜRK

Personal Information

Email: humeyra.caglayan@agu.edu.tr

Web: <https://www.opticsoptimum.com>

Address: Abdullah Gul University Sumer Campus 38080, Kayseri, Turkey

Education Information

Post Doctorate, University of Pennsylvania, School Of Applied Science, Electrical And System Engineering, United States Of America 2010 - 2013

Doctorate, Ihsan Dogramaci Bilkent University, Institute Of Engineering And Natural Sciences, Fizik, Turkey 2005 - 2010

Postgraduate, Ihsan Dogramaci Bilkent University, Institute Of Engineering And Natural Sciences, Fizik, Turkey 2003 - 2005

Undergraduate, Ihsan Dogramaci Bilkent University, Faculty Of Science, Fizik, Turkey 1999 - 2003

Foreign Languages

English, C1 Advanced

Dissertations

Doctorate, BEAMING AND LOCALIZATION OF ELECTROMAGNETIC WAVES IN PERIODIC STRUCTURES, İhsan Doğramacı Bilkent Üniversitesi, Mühendislik Ve Doğa Fakültesi, Fizik, 2010

Postgraduate, ENHANCED CONFINED MICROWAVE TRANSMISSION BY SINGLE SUBWAVELENGTH APERTURES, İhsan Doğramacı Bilkent Üniversitesi, Mühendislik Ve Doğa Fakültesi, Fizik, 2005

Research Areas

Electrical and Electronics Engineering, Electromagnetic, Electromagnetic Waves, Antennas and Propagation, Physics, Intensive Article 2: Electronic Structure, Electric, Magnetic and Optical Properties, Optical Properties, Spectroscopy of Matter, Natural Sciences, Engineering and Technology

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Enhanced tunability of V-shaped plasmonic structures using ionic liquid gating and graphene**
Ozdemir O., Aygar A. M., Balci O., Kocabas C., Caglayan H., Ozbay E.
CARBON, vol.108, pp.515-520, 2016 (SCI-Expanded)
- II. **Enhanced transmission and beaming via a zero-index photonic crystal**
Hajian H., ÖZBAY E., Caglayan H.
APPLIED PHYSICS LETTERS, vol.109, no.3, 2016 (SCI-Expanded)
- III. **Guided Plasmon Modes of a Graphene-Coated Kerr Slab**
Hajian H., Rukhlenko I. D., Leung P. T., Caglayan H., ÖZBAY E.

PLASMONICS, vol.11, no.3, pp.735-741, 2016 (SCI-Expanded)

- IV. **Role of epsilon-near-zero substrates in the optical response of plasmonic antennas**
Kim J., Dutta A., Naik G. V., Giles A. J., Bezares F. J., Ellis C. T., Tischler J. G., Mahmoud A. M., ÇAĞLAYAN ÖZTÜRK H., Glembocki O. J., et al.
OPTICA, vol.3, no.3, pp.339-346, 2016 (SCI-Expanded)
- V. **Coupling enhancement of split ring resonators on graphene**
Cakmakyapan S., Caglayan H., Ozbay E.
CARBON, vol.80, pp.351-355, 2014 (SCI-Expanded)
- VI. **Multiple slow waves and relevant transverse transmission and confinement in chirped photonic crystals**
Serebryannikov A. E., Cakmak A. O., Colak E., Caglayan H., Kurt H., Ozbay E.
OPTICS EXPRESS, vol.22, no.18, pp.21806-21819, 2014 (SCI-Expanded)
- VII. **Air-Stable, Nanostructured Electronic and Plasmonic Materials from Solution-Processable, Silver Nanocrystal Building Blocks**
Fafarman A. T., Hong S., Oh S. J., Caglayan H., Ye X., Diroll B. T., Engheta N., Murray C. B., Kagan C. R.
ACS NANO, vol.8, no.3, pp.2746-2754, 2014 (SCI-Expanded)
- VIII. **Solution-Processed Phase-Change VO₂ Metamaterials from Colloidal Vanadium Oxide (VO_x) Nanocrystals**
Paik T., Hong S., Gauldin E. A., Caglayan H., Gordon T. R., Engheta N., Kagan C. R., Murray C. B.
ACS NANO, vol.8, no.1, pp.797-806, 2014 (SCI-Expanded)
- IX. **Near-Infrared Metatronic Nanocircuits by Design**
Caglayan H., Hong S., Edwards B., Kagan C. R., Engheta N.
PHYSICAL REVIEW LETTERS, vol.111, no.7, 2013 (SCI-Expanded)
- X. **Shape-Dependent Plasmonic Response and Directed Self-Assembly in a New Semiconductor Building Block, Indium-Doped Cadmium Oxide (ICO)**
Gordon T. R., Paik T., Klein D. R., Naik G. V., Caglayan H., Boltasseva A., Murray C. B.
NANO LETTERS, vol.13, no.6, pp.2857-2863, 2013 (SCI-Expanded)
- XI. **Chemically Tailored Dielectric-to-Metal Transition for the Design of Metamaterials from Nanoimprinted Colloidal Nanocrystals**
Fafarman A. T., Hong S., Caglayan H., Ye X., Diroll B. T., Paik T., Engheta N., Murray C. B., Kagan C. R.
NANO LETTERS, vol.13, no.2, pp.350-357, 2013 (SCI-Expanded)
- XII. **Experimental Verification of n=0 Structures for Visible Light**
Vesseur E. J. R., Coenen T., Caglayan H., Engheta N., Polman A.
PHYSICAL REVIEW LETTERS, vol.110, no.1, 2013 (SCI-Expanded)
- XIII. **Spoof-plasmon relevant one-way collimation and multiplexing at beaming from a slit in metallic grating**
Cakmakyapan S., Serebryannikov A. E., Caglayan H., Ozbay E.
OPTICS EXPRESS, vol.20, no.24, pp.26636-26648, 2012 (SCI-Expanded)
- XIV. **Composite chiral metamaterials with negative refractive index and high values of the figure of merit**
Li Z., Alici K. B., Caglayan H., Kafesaki M., Soukoulis C. M., Ozbay E.
OPTICS EXPRESS, vol.20, no.6, pp.6146-6156, 2012 (SCI-Expanded)
- XV. **Improved Size-Tunable Synthesis of Monodisperse Gold Nanorods through the Use of Aromatic Additives**
Ye X., Jin L., Caglayan H., Chen J., Xing G., Zheng C., Vicky Doan-Nguyen V. D., Kang Y., Engheta N., Kagan C. R., et al.
ACS NANO, vol.6, no.3, pp.2804-2817, 2012 (SCI-Expanded)
- XVI. **Experimental validation of strong directional selectivity in nonsymmetric metallic gratings with a subwavelength slit**
Cakmakyapan S., Caglayan H., Serebryannikov A. E., Ozbay E.
APPLIED PHYSICS LETTERS, vol.98, no.5, 2011 (SCI-Expanded)
- XVII. **Ultrafast and sensitive bioassay using split ring resonator structures and microwave heating**
Caglayan H., Cakmakyapan S., Addae S. A., Pinard M. A., Caliskan D., Aslan K., Ozbay E.

- APPLIED PHYSICS LETTERS, vol.97, no.9, 2010 (SCI-Expanded)
- XVIII. **Chiral metamaterials with negative refractive index based on four "U" split ring resonators**
Li Z., Zhao R., Koschny T., Kafesaki M., Alici K. B., Colak E., Caglayan H., Ozbay E., Soukoulis C. M.
APPLIED PHYSICS LETTERS, vol.97, no.8, 2010 (SCI-Expanded)
- XIX. **One-way transmission through the subwavelength slit in nonsymmetric metallic gratings**
Cakmakyapan S., Serebryannikov A. E., Caglayan H., Ozbay E.
OPTICS LETTERS, vol.35, no.15, pp.2597-2599, 2010 (SCI-Expanded)
- XX. **Observation of cavity structures in composite metamaterials**
Caglayan H., Ozbay E.
JOURNAL OF NANOPHOTONICS, vol.4, 2010 (SCI-Expanded)
- XXI. **Coupling effect between two adjacent chiral structure layers**
Li Z., Caglayan H., Colak E., Zhou J., Soukoulis C. M., Ozbay E.
OPTICS EXPRESS, vol.18, no.6, pp.5375-5383, 2010 (SCI-Expanded)
- XXII. **Frequency dependent steering with backward leaky waves via photonic crystal interface layer**
Colak E., Caglayan H., Cakmak A. O., Della Villa A., Capolino F., Ozbay E.
OPTICS EXPRESS, vol.17, no.12, pp.9879-9890, 2009 (SCI-Expanded)
- XXIII. **High efficiency of graded index photonic crystal as an input coupler**
Cakmak A. O., Colak E., Caglayan H., Kurt H., Ozbay E.
JOURNAL OF APPLIED PHYSICS, vol.105, no.10, 2009 (SCI-Expanded)
- XXIV. **Generation of an Axially Asymmetric Bessel-Like Beam from a Metallic Subwavelength Aperture**
Li Z., Alici K. B., Caglayan H., Ozbay E.
PHYSICAL REVIEW LETTERS, vol.102, no.14, 2009 (SCI-Expanded)
- XXV. **Observation of off-axis directional beaming via subwavelength asymmetric metallic gratings**
Caglayan H., Bulu I., Ozbay E.
JOURNAL OF PHYSICS D-APPLIED PHYSICS, vol.42, no.4, 2009 (SCI-Expanded)
- XXVI. **Experimental observation of subwavelength localization using metamaterial-based cavities**
Caglayan H., Bulu I., Loncar M., Ozbay E.
OPTICS LETTERS, vol.34, no.1, pp.88-90, 2009 (SCI-Expanded)
- XXVII. **Cavity formation in split ring resonators**
Caglayan H., Bulu I., Loncar M., Ozbay E.
PHOTONICS AND NANOSTRUCTURES-FUNDAMENTALS AND APPLICATIONS, vol.6, pp.200-204, 2008 (SCI-Expanded)
- XXVIII. **Surface wave splitter based on metallic gratings with sub-wavelength aperture**
Caglayan H., Ozbay E.
OPTICS EXPRESS, vol.16, no.23, pp.19091-19096, 2008 (SCI-Expanded)
- XXIX. **The focusing effect of graded index photonic crystals**
Kurt H., Colak E., Cakmak O., Caglayan H., Ozbay E.
APPLIED PHYSICS LETTERS, vol.93, no.17, 2008 (SCI-Expanded)
- XXX. **Off-axis beaming from subwavelength apertures**
Caglayan H., Bulu I., Ozbay E.
JOURNAL OF APPLIED PHYSICS, vol.104, no.7, 2008 (SCI-Expanded)
- XXXI. **Observation of coupled-cavity structures in metamaterials**
Caglayan H., Bulu I., Loncar M., Ozbay E.
APPLIED PHYSICS LETTERS, vol.93, no.12, 2008 (SCI-Expanded)
- XXXII. **Experimental observation of cavity formation in composite metamaterials**
Caglayan H., Bulu I., Loncar M., Ozbay E.
OPTICS EXPRESS, vol.16, no.15, pp.11132-11140, 2008 (SCI-Expanded)
- XXXIII. **Off-axis directional beaming via photonic crystal surface modes**
Caglayan H., Bulu I., Ozbay E.
APPLIED PHYSICS LETTERS, vol.92, no.9, 2008 (SCI-Expanded)
- XXXIV. **Focusing surface plasmons via changing the incident angle**

- Caglayan H., Bulu I., Ozbay E.
JOURNAL OF APPLIED PHYSICS, vol.103, no.5, 2008 (SCI-Expanded)
- XXXV. **Enhanced transmission and directivity from metallic subwavelength apertures with nonuniform and nonperiodic grooves**
Li Z., Caglayan H., Colak E., Ozbay E.
APPLIED PHYSICS LETTERS, vol.92, no.1, 2008 (SCI-Expanded)
- XXXVI. **Transmission, refraction, and focusing properties of labyrinth based left-handed metamaterials**
Ozbay E., Bulu I., Caglayan H.
PHYSICA STATUS SOLIDI B-BASIC SOLID STATE PHYSICS, vol.244, no.4, pp.1202-1210, 2007 (SCI-Expanded)
- XXXVII. **Study of the field emitted by a source placed inside a two-dimensional left-handed metamaterial**
Bulu I., Caglayan H., Aydin K., Ozbay E.
OPTICS LETTERS, vol.32, no.7, pp.850-852, 2007 (SCI-Expanded)
- XXXVIII. **Plasmonic structures with extraordinary transmission and highly directional beaming properties**
Caglayan H., Bulu I., Ozbay E.
MICROWAVE AND OPTICAL TECHNOLOGY LETTERS, vol.48, no.12, pp.2491-2496, 2006 (SCI-Expanded)
- XXXIX. **Designing materials with desired electromagnetic properties**
Bulu I., Caglayan H., Ozbay E.
MICROWAVE AND OPTICAL TECHNOLOGY LETTERS, vol.48, no.12, pp.2611-2615, 2006 (SCI-Expanded)
- XL. **Observation of negative refraction and focusing in two-dimensional photonic crystals**
Ozbay E., Bulu I., Guven K., Caglayan H., Aydin K.
JAPANESE JOURNAL OF APPLIED PHYSICS PART 1-REGULAR PAPERS BRIEF COMMUNICATIONS & REVIEW PAPERS, vol.45, pp.6064-6070, 2006 (SCI-Expanded)
- XLI. **Experimental demonstration of subwavelength focusing of electromagnetic waves by labyrinth-based two-dimensional metamaterials**
Bulu I., Caglayan H., Ozbay E.
OPTICS LETTERS, vol.31, no.6, pp.814-816, 2006 (SCI-Expanded)
- XLII. **Beaming of electromagnetic waves emitted through a subwavelength annular aperture**
Caglayan H., Bulu I., Ozbay E.
JOURNAL OF THE OPTICAL SOCIETY OF AMERICA B-OPTICAL PHYSICS, vol.23, no.3, pp.419-422, 2006 (SCI-Expanded)
- XLIII. **Experimental demonstration of labyrinth-based left-handed metamaterials**
Bulu I., Caglayan H., Ozbay E.
OPTICS EXPRESS, vol.13, no.25, pp.10238-10247, 2005 (SCI-Expanded)
- XLIV. **Beaming of light and enhanced transmission via surface modes of photonic crystals**
Bulu I., Caglayan H., Ozbay E.
OPTICS LETTERS, vol.30, no.22, pp.3078-3080, 2005 (SCI-Expanded)
- XLV. **Compact size highly directive antennas based on the SRR metamaterial medium**
Bulu I., Caglayan H., Aydin K., Ozbay E.
NEW JOURNAL OF PHYSICS, vol.7, 2005 (SCI-Expanded)
- XLVI. **Highly directional enhanced radiation from sources embedded inside three-dimensional photonic crystals**
Caglayan H., Bulu I., Ozbay E.
OPTICS EXPRESS, vol.13, no.19, pp.7645-7652, 2005 (SCI-Expanded)
- XLVII. **Negative refraction and focusing of electromagnetic waves by metallodielectric photonic crystals**
Bulu I., Caglayan H., Ozbay E.
PHYSICAL REVIEW B, vol.72, no.4, 2005 (SCI-Expanded)
- XLVIII. **Extraordinary grating-coupled microwave transmission through a subwavelength annular aperture**
Caglayan H., Bulu I., Ozbay E.
OPTICS EXPRESS, vol.13, no.5, pp.1666-1671, 2005 (SCI-Expanded)
- XLIX. **Highly directive radiation and negative refraction using photonic crystals**
Ozbay E., Bulu I., Aydin K., Caglayan H., Alici K. B., Guven K.

LASER PHYSICS, vol.15, no.2, pp.217-224, 2005 (SCI-Expanded)

L. Highly directive radiation from sources embedded inside photonic crystals

Bulu I., Caglayan H., Ozbay E.

APPLIED PHYSICS LETTERS, vol.83, no.16, pp.3263-3265, 2003 (SCI-Expanded)

LI. Radiation properties of sources inside photonic crystals

Bulu I., Caglayan H., Ozbay E.

PHYSICAL REVIEW B, vol.67, no.20, 2003 (SCI-Expanded)

Refereed Congress / Symposium Publications in Proceedings

I. Coupling enhancement of metamaterial structures on graphene

ÇAĞLAYAN H.

META 15 The 6th International Conference on Metamaterials, Photonic Crystals and Plasmonics, New York, United States Of America, 4 - 07 August 2015, pp.1515

II. Metamalzeme Temelli Optik Nanodevreler

Caglayan H.

Fotonik 2014, Kocaeli, Turkey, 05 September 2014

III. Controlling Coherence in Epsilon-Near-Zero Metamaterials

Caglayan H.

SPIE Photonics Europe 2014, Brüksel, Belgium, 14 - 17 April 2014

IV. ENZ Metastructures and Wave Coherence

Caglayan H., Chettiar U., Edwards B., Engheta N.

2013 MRS Spring Meeting, San Francisco, United States Of America, 1 - 05 April 2013

V. Multiple Sources and Scatterers in Epsilon-Near-Zero (ENZ) Structures

Caglayan H., Chettiar U., Edwards B., Engheta N.

The 2012 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting, Chicago, United States Of America, 8 - 14 July 2012

VI. Controlling Coherence in ENZ Metamaterials

Caglayan H., Chettiar U., Edwards B., Engheta N.

The Plasmonics Gordon Research Conference, Waterville, United States Of America, 10 - 15 June 2012

VII. Near-Infra-Red (NIR) Metatronic Filter Elements as Building Blocks for the NIR Filter Metamaterials

Caglayan H., Hong S. H., Kagan C., Engheta N.

2012 MRS Spring Meeting, San Francisco, United States Of America, 9 - 13 April 2012

VIII. Theory of Near-IR Metatronic Nanocircuits Using Transparent Conducting Oxides (TCO)

Caglayan H., Engheta N.

OSA Frontiers in Optics (FiO), San Jose, United States Of America, 16 - 20 October 2011

IX. Magical world of metamaterials

Caglayan H., Ozbay E.

2009 MRS Spring Meeting, San Francisco, San Francisco, United States Of America, 13 - 17 April 2009

X. Observation of defect formation in metamaterials

Caglayan H., Bulu I., Loncar M., Ozbay E.

Plasmonics and Metamaterials (META), Rochester, United States Of America, 21 - 24 October 2008

XI. Focusing surface waves via changing the incident angle

Caglayan H., Bulu I., Ozbay E.

The 1st European Topical Meeting on Nanophotonics and Metamaterials, Seefeld, Austria, 8 - 11 January 2007

XII. Enhanced Confined Light Transmission by Single Subwavelength Apertures

Caglayan H., Bulu I., Ozbay E.

International Workshop on Nanophotonics and Nanobiotechnology, İstanbul, Turkey, 28 June - 08 July 2005

XIII. Negative refraction and focusing of electromagnetic waves by photonic crystals

Bulu I., Caglayan H., Ozbay E.

12th Central European Workshop on Quantum Optics, Ankara, Turkey, 6 - 09 June 2005, vol.36, pp.33-34

XIV. \ Plasmonic structures with highly directional beaming properties

Çağlayan H., Bulu I., Ozbay E.

12th Central European Workshop on Quantum Optics, Ankara, Turkey, 6 - 09 June 2005, vol.36, pp.41-42

Supported Projects

ÇAĞLAYAN ÖZTÜRK H., TUBITAK Project, Düşük- indisli Metamalzeme ile Dalgaboyu- altı Açıklıktan Yükseltilmiş ve Yönlendirilmiş Işık, 2015 - Continues

ÇAĞLAYAN ÖZTÜRK H., TUBITAK Project, Dalga-boyu altı yapıların metamalzeme ile kaplanması, 2013 - Continues

ÇAĞLAYAN ÖZTÜRK H., Çakmakçı S., Project Supported by Higher Education Institutions, Grafen tabanlı aygıtlar için nanoyapılarla emilim artırımı, 2015 - 2016

Memberships / Tasks in Scientific Organizations

SPIE, Member, 2014 - Continues

MRS, Member, 2010 - Continues

OSA, Member, 2010 - Continues

Scientific Refereeing

Physical Review B, SCI Journal, May 2015

April 2015

Physical Review Letters, SCI Journal, February 2015

Optics Letters, SCI Journal, September 2014

TUBITAK Project, September 2014

Optics Express, SCI Journal, August 2014

IEEE Transactions on Antennas & Propagation, SCI Journal, July 2014

PNFA, SCI Journal, June 2014

Scientific Reports, SCI Journal, May 2014

AIP Advances, SCI Journal, March 2014

Optics Express, SCI Journal, March 2014

Applied Physics Letters, SCI Journal, March 2014

Journal of Quantum Electronics, SCI Journal, March 2014

Nature Comm., SCI Journal, March 2014

Nanoscience and Nanotechnology Letters, SCI Journal, February 2014

Metrics

Publication: 65

Citation (WoS): 2161

Citation (Scopus): 2015

H-Index (WoS): 25

H-Index (Scopus): 24

Congress and Symposium Activities

Fotonik 2014, Invited Speaker, Kocaeli, Turkey, 2014
FOTONİK 2014, Attendee, Turkey, 2014
NANOTR, Attendee, İstanbul, Turkey, 2014
SPIE Photonics, Attendee, Belgium, 2014
SPIE Photonics Europe, Invited Speaker, Belgium, 2014
Optical Nanospectroscopy I, Attendee, Germany, 2014
FOTONİK 2013, Attendee, Turkey, 2013
2013 MRS Spring Meeting, Attendee, United States Of America, 2013
2012 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting, Attendee, United States Of America, 2012
The Plasmonics Gordon Research Conference, Attendee, United States Of America, 2012
2012 MRS Spring Meeting, Attendee, United States Of America, 2012
APS March Meeting, Attendee, United States Of America, 2012
OSA Frontiers in Optics (FiO), Attendee, United States Of America, 2011
SPIE Europe Microtechnologies for the New Millennium, Attendee, Germany, 2009
2009 MRS Spring Meeting, Attendee, United States Of America, 2009
Plasmonics and Metamaterials (META), Attendee, United States Of America, 2008
1st Mediterranean Conference on Nano-Photonics MediNano-1, Attendee, Turkey, 2008
Women in Photonics (WiP) School on Photonic Metamaterial, Attendee, France, 2008
The 2nd European Topical Meeting on Nanophotonics and Metamaterials, Attendee, Austria, 2008
The 1st European Topical Meeting on Nanophotonics and Metamaterials, Attendee, Austria, 2007
2006 MRS Fall Meeting, Attendee, United States Of America, 2006
Third Workshop on Metamaterials and Special Materials for Electromagnetic Applications and TLC, Attendee, Italy, 2006
Central European Workshop on Quantum Optics, Attendee, Turkey, 2005
International Workshop on Nanophotonics and Nanobiotechnology, Attendee, Turkey, 2005
SPIE Photonics West, Attendee, United States Of America, 2005

Awards

ÇAĞLAYAN ÖZTÜRK H., L'ORÉAL TÜRKİYE & UNESCO TÜRKİYE MİLLÎ KOMİSYONU "GENÇ BİLİM KADINLARINA DESTEK BURSLARI", Loreal-UNESCO Türkiye Milli Komisyonu, April 2015
ÇAĞLAYAN ÖZTÜRK H., GEBİP, TÜBA, June 2014