Muhammad Faryad

Assistant Professor and Chair, Department of Physics, Lahore University of Management Sciences (LUMS), Lahore, Pakistan. Email: muhammad.faryad@lums.edu.pk **Date of Birth:** March 18, 1982

Academic Background

Degree (Major)	Institution	Years
Ph. D. (Engineering Science and Mechanics)	Pennsylvania State University, USA	2009-12
M. Phil. (Electronics)	Quaid-i-Azam University, Pakistan	2006-08
M. Sc. (Electronics)	Quaid-i-Azam University, Pakistan	2004-06
B. Sc. (Mathematics, Physics)	Punjab University, Pakistan	2000-02

Ph. D. Thesis: Propagation and excitation of multiple surface waves (Adviser: Prof. Akhlesh Lakhtakia)

M. Phil. Thesis: Applications of chiral media in cylindrical reflectors (Adviser: Prof. Qaisar A. Naqvi)

Honors, Scholarships, and Awards

1- ***Early Career Achievement Award by ESM department of Penn State, 2021***
Given by Department of Engineering Science and Mechanics at the Pennsylvania State University to recent alumni who have distinguished themselves in academia, workplace, and/or community

2- ***ICO-ICTP Gallieno Denardo Optics Award, 2019***
Given for significant contributions in optics and photonics to a young researcher working in a developing country by the International Commission for Optics (ICO) and the Abdus Salam International Center of Theoretical Physics (ICTP)

3- ***Senior Member, OSA, 2019***
Senior membership of the Optical Society of America recognizes contributions to the optics research and optical society

4- ***Senior Member, SPIE, 2018***
Senior membership of the International Society of Photo-optical Instrumentation Engineers (SPIE) recognizes contributions to the optics research and scientific community.

5- ***Alumni Association Dissertation Award, 2012***
The highest recognition awarded to a Ph. D. graduate in the Pennsylvania State University

6- ***SPIE scholarship in optics and photonics, 2011***
Awarded in recognition of the contributions to the field of optics and photonics

7- ***Sabih & Güler Hayek Graduate Scholarship, 2010***
Awarded in recognition of the scholarly achievements by the Department of Engineering Science and Mechanics

8- ***University Graduate Fellowship and College of Engineering Fellowship, 2009-2012***
The fellowships are granted to outstanding applicants to the graduate program of Pennsylvania State University

9- ***Certificate of Merit, 2008***
Awarded for the highest CGPA in M. Phil. in the Department of Electronics of Quaid-i-Azam University

10- ***Certificate of Merit, 2006***
Awarded for the highest CGPA in M. Sc. in all the departments of the Faculty of Natural Sciences of Quaid-i-Azam University

Employment Record

1- ***Department of Physics, Lahore University of Management Sciences, Lahore, Pakistan***

July 2018—Till present	Chairman of the Department
July 2014—Till present	Assistant Professor

2- ***Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, USA***

May 2012—June 2014	Postdoctoral Scholar
January 2012—May 2012	Research Assistant
August 2010—December 2011	Teaching Assistant
August 2009—May 2010	University Graduate Fellow

3- ***Department of Electronics, Quaid-i-Azam University, Pakistan***

August 2007—August 2009	Lecturer

4- ***Department of Electrical Engineering, National University of Sciences and Technology, Pakistan***

January 2006—August 2007	Laboratory Demonstrator

Teaching Experience

1- ***Department of Physics, Lahore University of Management Sciences, Lahore, Pakistan***

Fall 2014, Fall 2015	Electrodynamics-I
Spring 2015, Spring 2016	Electrodynamics-II
Spring 2015	Optics and Special Relativity
Fall 2015, Fall 2017	Introduction to Photonics
Spring 2016, Fall 2016	Experimental Physics Lab-I
Fall 2016	Electricity and Magnetism
Spring 2017, Spring 2019	Modern Physics and Thermodynamics
Fall 2017	Experimental Physics Lab-II
Fall 2017	Electrodynamics
Fall 2018	Classical Mechanics
Fall 2018	Relativistic Electrodynamics
Fall 2019	Atomic and Laser Physics
Spring 2020	Quantum Mechanics II
Spring 2020, Spring 2021	Computational Physics
Fall 2020	Statistical Mechanics
Spring 2021	Quantum Computation

2- ***Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, USA***

Fall 2010 (Teaching Assistant)	Engineering Statics and Mechanics
Spring 2011 (Teaching Assistant)	Mathematical Methods in Engineering-A
Fall 2011 (Teaching Assistant)	Mathematical Methods in Engineering-B

3- ***Department of Electronics, Quaid-i-Azam University (QAU), Pakistan***

Fall 2007, Fall 2008	Applied Mathematics-II
Fall 2007	Electronics Laboratory
Spring 2008, Spring 2009	Applied Mathematics-I
Spring 2008	Laser and Fiber Optics
Fall 2008	Control Systems
Spring 2009	Laser and Fiber Optics

4- ***Department of Electrical Engineering, National University of Sciences and Technology, Pakistan***

Spring 2006	Electromagnetics-I
Fall 2006	Electromagnetics-II
Spring 2007	Antenna Theory and Design

Research Supervision

1- Asif Zaman, Ph. D. (Physics, LUMS), in progress since 2020
2- Kiran Mujeeb, Ph. D. (Electronics, QAU) in progress since 2015
3- Maimoona Naheed, Ph. D. 2014-2021 (Electronics, QAU) Thesis Submitted for External Review
4- Aamir Hayat, Ph. D. (Physics, LUMS), 2015-2020, Thesis title: Radiations by finite-sized sources in uniaxial materials, **Placement:** Assistant Professor of Physics, University of Lahore (Sargodha Campus).
5- Muhammad Kamran, Ph. D. (EE, LUMS), 2015-2020, Thesis title: Applications of coupled-wave approach for 1D gratings illuminated from planar interface
6- Rija Adnan, M.S. 2020 (Physics, LUMS), in progress.
7- Najeha Rashid, M.S. 2019-2020 (Physics, LUMS), Thesis title: Band structure of one-dimensional dielectric-magnetic photonic crystals
8- Hafiz Adeel Ahmad Zaheer, M.S. 2018-19 (Chemistry, LUMS), Thesis title: Fabrication of zero-index metamaterials
9- Muhammad Umer Farooq, M.S. 2018-19 (Physics, LUMS), Thesis title: Zero-index metamaterials using 3D photonic crystals, **Placement:** Ph. D. (Physics) Texas Tech University, USA
10- Subhan Jamil, M. S. 2017-18 (Physics, LUMS), Thesis title: On the dispersion equation for electromagnetic plane wave propagation in uniaxial and biaxial metamaterials
11- Muhammad Noman Safdar, M. S. 2017-18 (Physics, LUMS), Thesis title: Bandgap computation of chiral sculptured thin films (CSTFs), **Placement:** School Teacher, Government School, Punjab, Pakistan
12- Hassan Ahmad Khan, M. S. 2017-18 (Physics, LUMS), Thesis title: Approximate bandgap computation using Fourier series for one-dimensional dielectric-magnetic photonic crystals
13- Mehran Rasheed, Research Associate 2017-18 (LUMS) Research Project: Surface waves guided by 1D photonic crystals,

Placement: Ph. D. (EE), The University of Central Florida, USA

14- Muhammad Waseem Ashraf, Research Associate 2016-17 (LUMS) Research Project: Design of 2D all-dielectric zero-index mediums based on photonic crystals, **Placement:** Ph. D. (Physics and Nanoscience) The Italian Institute of Technology and the University of Genoa, Italy
15- Iqra Nadeem, B. S. 2015-16 (Physics, LUMS), Senior Project: The use of surface plasmon resonance to investigate biological interactions, **Placement:** M. S. (Technology and Policy), MIT, USA
16- Yasir Iqbal, M. S. 2015-16 (Physics, LUMS), Thesis title: Electromagnetic modelling of one-dimensional magneto-dielectric photonic crystals, **Placement:** Ph. D. (Physics) Texas Tech University, USA.
17- Nosheen Younas, M. S. 2015-16 (Physics, LUMS), Thesis title: Optimization of graphene-based plasmonic sensor using genetic algorithm, **Placement:** Ph. D (Physical Chemistry) University of Houston, Texas, USA
18- Farhat Abbas, M. Phil. 2014-17 (Electronics, QAU), Thesis title: Optical sensing with multiple surface waves guided by interfaces with sculptured thin films, **Placement:** Ph. D. (EE) University of Texas at Dallas, USA
19- Zahir Muhammad, M. Phil. 2014-15 (Electronics, QAU), Thesis title: Optical filters for circularly polarized light using tilt-modulated scultptured thin films, **Placement:** Ph. D. (Nanoscience) University of Science and Technology, China

Selected Professional Services

1- Section Editor, International Journal of Light and Electron Optics (Optik), Elsevier, June 2016—Till Present
2- Guest editor of proceedings, Conferences on Nanophotonics and Micro/Nano Optics, 2016 (Paris), 2017 (Barcelona)
3- Technical committee member of conference, Interphotonics 2018, Antalya, Turkey, Oct. 8-12 (2018).
4- Technical Reviewer of Journals of IEEE, SPIE, OSA, AIP, IOP (UK), APS, Nature, and many others.
5- Faculty advisor, SPIE Student Chapter of LUMS, 2018—Till Present.
6- Chair, Departmental graduate program committee, 2015-2018
7- Member, School graduate program committee, 2015-2018
8- Chair, Departmental search committee, 2015-2017
9- Chair, School of Science Task Force on online education and research during COVID-19 (Fall 2020 & Spring 2021)
10- Chair, University Working Group on online education, research, and scheduling during COVID-19 (Fall 2020)

Presentations without Publications

1. M. Rasheed and M. Faryad, "On the propagation of surface plasmon-polariton waves along the direction of periodicity of one-dimensional photonic crystal," **SPP9 Conference**, Copenhagen, Denmark, May 26-31, 2019.
2. *M. Faryad, "Surface wave resonance and optical sensing," Gallieno Denardo Award Lecture, **Abus Salam International Center of Theoretical Physics (ICTP),** Trieste, Italy, 19th February (2019).
3. *M. Faryad, "Zero-index mediums using two-dimensional all-dielectric photonic crystals," **Interphotonics, Antalya**, Turkey, Oct. 8-12 (2018).
4. *M. Faryad, "The circular Bragg Phenomenon," Seminar at the **Punjab University**, Lahore, 27 September (2018).
5. *M. Faryad, "Uller—Zenneck surface waves," **TUD-CIIT international mini-school on quantum and ultra-fast optics: Theory and Experiment,** Islamabad, Pakistan, Oct. 4-6, 2017.
6. M. Faryad, "Differentiating surface waves and waveguide modes guided by interfaces with one-dimensional photonic crystal," poster presentation at **META17: 8th International conference on photonic crystals, plasmonics, and metamaterials**, Seoul, South Korea, 25-28 July, 2017.
7. M. Faryad, "Surface plasmon-polariton waves guided by interfaces with one-dimensional photonic crystal," **Spring school on optics**, LUMS university, Lahore, Pakistan, April 30-May 1, 2016.
8. *M. Faryad, "The circular Bragg phenomenon—A review," Seminar series of the **Department of Engineering Science and Mechanics of Pennsylvania State University**, USA, Sept. 18, 2013.
9. M. Faryad, "Enhanced absorption of light due multiple surface-plasmon-polariton waves," **ESM Today 2012**, University Park, USA, February 11, 2012.
10. M. Faryad, "Multiple surface-plasmon-polariton waves," Seminar series of the **Department of Engineering Science and Mechanics of Pennsylvania State University**, USA, October 19, 2011.
11. M. Faryad, "Direct proof of multiple trains of same-color surface plasmon-polariton waves guided by the planar interface of a metal and a sculptured nematic thin film," **ESM Today 2010**, University Park, USA, February 13, 2010.
12. M. Faryad, "Fractional curl operator," **Conference on Recent Advances in Mathematical Methods, Models and Applications**, LUMS, Lahore, Pakistan, April 28-29, 2007.
13. M. Faryad and Q. A. Naqvi, "Fractional curl operator and chiro-waveguides," **2nd All Pakistan Engineering Conference** (APEC 06), Topi, Pakistan, November 10-12, 2006.

*Invited talks

Lecture Series

1- Workshop on Anisotropic Metamaterials, **Quaid-i-Azam University**, Islamabad, Pakistan, Dec. 31, 2018-Jan. 3, 2019.
2- Delivered invited talks on (i) plasmonic optical sensing, (ii) plasmonic solar cells, and (iii) circular Bragg phenomenon, in **International Nathiagalli Summer College,** Islamabad, Pakistan, Aug. 10-15, 2015
3- Delivered invited talks on surface multiplasmonics in **International Nathiagalli Summer College,** Islamabad, Pakistan, Aug. 11-16, 2014
4- Conducted a 4-days long course on "Surface multiplasmonics: Fundamentals and applications," **Quaid-i-Azam University**, Islamabad, Pakistan**,** Jan. 27-30 (2014).

Workshops/Conferences Organized

1- "Molecular dynamics of soft matter and biological physics," **LUMS University**, Lahore, Pakistan, Feb. 13-14 (2020).
2- "Workshop for physics teachers on selected topics in mechanics," **LUMS University**, Lahore, Pakistan, Dec. 27 (2018).
3- "Workshop on Molecular Dynamics," **LUMS University**, Lahore, Pakistan, Dec. 8 (2017).
4- "Spring school on optics," **LUMS University**, Lahore, Pakistan, April 30-May 1 (2016).

Professional Trainings

1- "Training Workshop on Gender Sensitization and Harassment by Asian Development Bank", Lahore University of Management Sciences, Pakistan, Aug. 17-21 (2020).
2- "International Management Teachers Academy", CEEMAN, Bled, Slovenia, June 16-21 (2019).
3- "Faculty Workshop on Case-based Learning", Lahore University of Management Sciences, Pakistan, Jan. 14-18, (2019).
4- Workshop on "Scholarship of Teaching and Learning", Lahore University of Management Sciences (LUMS), Aug 25-Sept. 4 (2014).
5- "How to Engineer Engineering Education: Workshop on Active Teaching Methods", Bucknell University, USA, July 25-27 (2012).

Technical Trainings

1- Quantum Algorithms, Simons Institute for the Theory of Computing, UC Berkeley, USA, Feb. 25-28 (2020).
2- Summer School on Nano Optics and Plasmonics, University of Southern Denmark, Odense, Denmark, May 24-26 (2019).
3- European School on Metamaterials on "Nonreciprocal and Time-Modulated Metamaterials and Metasurfaces" Espoo, Finland, August 31-Sept. 1 (2018).
4- Hands-on research in complex systems school, ICTP, Trieste, Italy, July 18-29 (2016).
5- Workshop on COMSOL Multiphysics for electromagnetics, Carnegie Melon University, June 7 (2016).
6- Workshop on the graphical programming in the physics laboratory, LUMS April 22-23 (2016).
7- Winter College on Optics: Optical frequency combs, ICTP, Trieste, Italy, Feb. 14-26 (2016).
8- Nano Optics: Principles enabling basic research and applications, Erice, Sicily, Italy July 4-19 (2015).
9- International Nathiagalli Summer College, Plasmonics and Metamaterials, Islamabad, Pakistan, Aug. 10-15 (2015).
10- Winter College on Optics: Light, A bridge between earth and space, ICTP, Trieste Italy, Feb 8-20 (2015).
11- International Nathiagalli Summer College, Plasmonics and Metamaterials, Islamabad, Pakistan, Aug. 11-16 (2014).
12- University Days, Saint-Gobain Northborough Research and Development Center, Northborough, MA, USA, Nov. 5-6 (2012).

Research Funding Secured

1- PKR 7.9 million from Higher Education Commission (HEC), Pakistan, for project "Design and implementation of light-trapping coating for solar cells using effective zero-index photonic crystals," (2016).
2- PKR 1 million from Lahore University of Management Science under competitive faculty initiative fund (FIF), for "Specific absorption rates of human body parts illuminated by mobile-phone microwave radiation," (2019).

Research Visits

1- The Pennsylvania State University, Adjunct Research Assistant, Worked on a book on dyadic Green functions with Akhlesh Lakhtakia, May 15-July 10 (2016).
2- The University of Edinburgh, Visiting Researcher under PAK-UK Education Gateway, Initiated work on the use of machine learning for the homogenization of isotropic materials with Tom G. Mackay, Dec. 6-18 (2019).

Media Coverage

1- SPIE Press Release 2018: SPIE press release stated that Muhammad Faryad was the first Pakistani to receive senior membership of the society. https://spie.org/about-spie/press-room/press-release-archive/spie-welcomes-136-new-senior-members-for-2018
2- ICTP Press Release 2019: The citation for the Gallieno Denardo award by the Abdus Salam International Center of Theoretical Physics (ICTP). https://www.ictp.it/about-ictp/media-centre/news/2019/2/ico_ictp-prize.aspx
3- Interview on Mentoring 2020: Interview on career trajectory and importance of mentoring published in the premier Optics and Photonics magazine of the Optical Society of America. https://www.osa-opn.org/home/career/2020/january/muhammad_faryad_on_mentoring_with_impact/
4- Penn State Press Release 2020: Penn State College of Engineering press release naming Muhammad Faryad as the 2021 recipient of Early Career award from the department of Engineering Science and Mechanics. https://news.engr.psu.edu/2020/faryad-muhammad-early-career-award.aspx
5- LUMS Press Release 2020: LUMS press release on the news of Early Career Award from Penn State. https://lums.edu.pk/news/sbasse-faculty-receives-penn-state-college-engineering-2020-early-career-recognition-award

List of Publications

Book

1- M. Faryad and A. Lakhtakia, "Infinite-space dyadic Green functions in electromagnetism," Morgan & Claypool (**2018).**

Book Chapter

2- M. Faryad and A. Lakhtakia, "Surface multiplasmonics with periodically nonhomogeneous thin films," in **Optical Thin Films and Coatings,** Editors: F. Flory and A. Piegari, Woodhead Publishing Ltd., Cambridge, United Kingdom, **(2013). Revised version is available in the second edition of the book in 2018.**

Refereed Journal Publication

3- M. Naheed and M. Faryad, "Excitation of surface-plasmon-polariton waves at the interface of a metal and an isotropic chiral material in the prism-coupled configurations," **The European Physical Journal Plus**, 135, 1-15 (2020).
4- K. Mujeeb, M. Faryad, A. Lakhtakia, and J. V. Urbina, "Theory of grating-coupled excitation of Dyakonov surface waves," **Optical Engineering**, 59, 070503 (2020).
5- K. Mujeeb, M. Faryad, A. Lakhtakia, and J. V. Urbina, "Effect of orientation on excitation of surface-plasmon-polariton waves guided by a columnar thin film deposited on a metal grating," **Optical Engineering**, 59, 055103 (2020), Erratum: 59, 069801 (2020).
6- M. Naheed and M. Faryad, "Excitation of surface-plasmon-polariton waves in the prism-coupled configurations guided by reciprocal, uniaxially chiral, bianisotropic material," **Optics Communications**, 465, 125611 (2020), Erratum: 465, 126279, (2020).
7- M. Naheed and M. Faryad, "Surface plasmon-polariton waves guided by an interface of a metal and an obliquely mounted uniaxially chiral, bianisotropic material**," Journal of Electromagnetic Waves and Applications**, 34, 1756-1770 (2020).
8- U. B. Qasim, H. Imran, M. Kamran, M. Faryad, N. Z. Butt, "Computational study of stack/terminal topologies for perovskite based bifacial tandem solar cells," **Solar Energy**, 203, 1-9 (2020).
9- A. Hayat and M. Faryad, "Radiation by a finite-length electric dipole in the hyperbolic media," **Physical Review A**, 101, 013832 (2020).
10- M. Kamran and M. Faryad, "Anti-reflection coatings of zero-index metamaterial for solar cells," **AIP Advances**, 10, 025010 (2020).
11- M. Naheed and M. Faryad, "Excitation of surface-plasmon-polariton waves in the Turbadar—Otto configuration by an interface with the columnar thin film," **Journal of Nanophotonics**, 13, 036001 (2019).
12- A. Hayat and M. Faryad, "Closed-form expressions for electromagnetic waves generated by a current loop in a uniaxial dielectric medium in the far zone," **Journal of Optical Society of America B**, 36, F9-F17 (2019).
13- A. Hayat and M. Faryad, "On the radiation from a Hertzian dipole of a finite length in the uniaxial medium," **OSA Continuum**, 2, 1411-1429 (2019), Erratum: 2, 2855-2855 (2019).
14- M. Kamran and M. Faryad, "Plasmonic sensor using a combination of grating and prism couplings," **Plasmonics**, 14, 791-798 (2019).
15- M. Kamran and M. Faryad, "Excitation of surface plasmon-polariton waves along the direction of periodicity of a one-dimensional photonic crystal," **Physical Review A**, 99, 053811 (2019).

16- M. Naheed, M. Faryad, and T. G. Mackay, "Electromagnetic surface waves guided by the planar interface of isotropic chiral mediums," **Journal of Optical Society of America B**, 36, F1-F8 (2019).
17- H. A. Khan and M. Faryad, "Approximate photonic bandgaps of dielectric-magnetic one-dimensional photonic crystals," **Optik**, 180, 492-497 (2019).
18- T. Fatima, M. A. Fiaz, and M. Faryad, "On the planewave scattering from a circular cylinder with core or coating made of ENZ and DNZ mediums," **Journal of Physics Communications**, 2, 115025 (2018).
19- M. Rasheed and M. Faryad, "Rigorous formulation of surface plasmon-polariton-waves propagation along the direction of periodicity of one-dimensional photonic crystal," **Journal of Optical Society of America B**, 35, 2957-2962 (2018).
20- H. Imran, I. Durrani, M. Kamran, T. M. Abdolkader, M. Faryad, N. Z. Butt, "High-performance bifacial perovskite/silicon double-tandem solar cell," **IEEE Journal of Photovoltaics**, 8, 1222-1229 (2018).
21- M. Faryad, "Differentiating surface plasmon-polariton waves and waveguide modes guided by interfaces with one-dimensional photonic crystals," **Applied Physics A**, 124, 102-108 (2018).
22- F. Abbas and M. Faryad, "A highly sensitive multiplasmonic sensor using hyperbolic chiral sculptured thin films," **Journal of Applied Physics**, 122, 173104 (2017).
23- M. Rasheed and M. Faryad, "Excitation of the Uller—Zenneck surface electromagnetic waves in the prism-coupled configuration," **Physical Review A**, 96, 023810 (2017).
24- H. U. Manzoor, H. Maab, and M. Faryad, "Multiple surface electromagnetic waves guided by the planar interface a rugate filter and a hyperbolic columnar thin film," **Optik**, 143, 211-215 (2017).
25- Y. Iqbal and M. Faryad, "Photonic band structure of one-dimensional multilayered dielectric-magnetic photonic crystals," **Photonics and Nanostructures: Fundamentals and Applications**, 24, 63-68 (2017).
26- M. Faryad and A. Lakhtakia, "On the Huygens principle for bianisotropic mediums with symmetric permittivity and permeability," **Physics Letters A,** 381, 742-746 (2017).
27- S. Erten, M. Faryad, and A. Lakhtakia, "Multiple surface-plasmon-polariton waves guided by a chiral sculptured thin film grown on a metallic grating," **Journal of Optical Society of America B**, 34, 1937-1945 (2017).
28- M.W. Ashraf and M. Faryad, "On the mapping of Dirac-like cone dispersion in dielectric photonic crystals to an effective zero-index medium," **Journal of Optical Society of America B**, 33, 1008-1013 (2016).
29- T.H. Anderson, M. Faryad, T.G. Mackay, A. Lakhtakia, and R. Singh, "Combined optical-electrical finite-element simulations of thin-film solar cells with homogeneous and nonhomogeneous intrinsic layers," **Journal of Photonics for Energy,** 6(2), 025502 (2016).
30- F. Abbas, M. Faryad, S.E. Swiontek, and A. Lakhtakia "Enhancement of dynamic sensitivity of multiple surface-plasmonic-polaritonic sensor using silver nanoparticles," **Plasmonics,** 11, 987-994 (2016).
31- M.E. Solano, G.D. Barber, A. Lakhtakia, M. Faryad, P.B. Monk, and T.E. Mallouk, "Buffer layer between a planar optical concentrator and a solar cell," **AIP Advances**, 5, 097150 (2015).
32- M.W. Ashraf and M. Faryad, "Dirac-like cone dispersion in two-dimensional core-shell dielectric photonic crystals," **Journal of Nanophotonics**, 9, 093057 (2015).
33- H. Maab, H.U. Manzoor, and M. Faryad, "Dyakonov—Tamm waves guided by the planar interface of a rugate filter and a columnar thin film," **Journal of Electromagnetic Waves and Applications** 29, 2155-2162, (2015).
34- F. Abbas, Q.A. Naqvi, and M. Faryad, "Dyakonov—Tamm waves based optical sensing using sculptured nematic thin films," **Optical Engineering**, 54, 067109 (2015).
35- L. Fan, M. Faryad, G.D. Barbar, T.E. Mallouk, P.B. Monk, and A. Lakhtakia, "Optimization of a spectrum splitter using differential evolution algorithm for solar cell applications," **Journal of Photonics for Energy**, 5, 055099 (2015).
36- M.V. Shuba, M. Faryad, M.E. Solano, P.B. Monk, and A. Lakhtakia, "Adequacy of rigorous coupled-wave approach for thin-film silicon solar cells with periodically corrugated metallic back reflectors: spectral analysis," **Journal of Optical Society of America A**, 32, 1222-1230 (2015).
37- L. Liu, M. Faryad, A.S. Hall, G.D. Barbar, S.E. Erten, T.E. Mallouk, A. Lakhtakia, and T.S. Mayer, "Experimental excitation of multiple surface-plasmon-polariton waves and waveguide modes in a one-dimensional photonic crystal atop two-dimensional metal grating," **Journal of Nanophotonics**, 9, 093593 (2015).
38- Z. Muhammad, Q.A. Naqvi, and M. Faryad, "Spectral hole filters using tilt-modulated chiral sculptured thin films," **Optics Communications** 346, 178-182 (2015).
39- F. Abbas, Q.A. Naqvi, and M. Faryad, "Multiplasmonic optical sensor using sculptured nematic thin film," **Plasmonics,** 10, 1269-1273 (2015).
40- F. Abbas, A. Lakhtakia, Q.A. Naqvi, and M. Faryad, "An optical-sensing modality that exploits Dyakonov—Tamm waves," **Photonics Research 3,** 5-8, (2015).
41- A. Lakhtakia and M. Faryad, "Theory of optical sensing with Dyakonov—Tamm waves," **Journal of Nanophotonics**, 8, 083072 (2014).
42- Z. Muhammad, Q.A. Naqvi, and M. Faryad, "Suppression of circular Bragg phenomenon in tilt-modulated chiral sculptured thin films at oblique incidence," **Optical Engineering** 53, 117110 (2014).

43- M.E. Solano, M. Faryad, P.B. Monk, A. Lakhtakia, "Comparison of rigorous coupled-wave approach and finite element method for photovoltaic devices with periodically corrugated metallic backreflectors," **Journal of Optical Society of America A**, 31, 2275-2284 (2014).
44- M. Faryad and A. Lakhtakia, "Observation of the Uller—Zenneck surface waves," **Optics Letters**, 39, 5204-5207 (2014).
45- M. Faryad and A. Lakhtakia, "Grating-coupled excitation of the Uller—Zenneck surface wave in the optical regime," **Journal of Optical Society of America B**, 31, 1706-1711 (2014).
46- M. Faryad and A. Lakhtakia, "Evolution of surface plasmon-polariton and Dyakonov--Tamm waves with the ambichirality of a partnering dielectric material," **Journal of Nanophotonics**, 8, 083082 (2014).
47- F. Abbas, Q.A. Naqvi, and M. Faryad, "Multiple surface plasmon-polariton waves guided by the interface of a metal and periodically nonhomogeneous magnetic materials," **Optics Communications,** 332, 109-113 (2014).
48- S.E. Swiontek, M. Faryad, and A. Lakhtakia, "Surface plasmonic polaritonic sensor using a dielectric columnar thin film," **Journal of Nanophotonics,** 8, 083986 (2014).
49- M. Faryad and A. Lakhtakia, "The circular Bragg phenomenon," **Advances in Optics and Photonics,** 6, 225-292, (2014).
50- A. Lakhtakia and M. Faryad, "Dyakonov—Tamm waves guided jointly by an ordinary, isotropic, homogeneous, dielectric material and a hyperbolic, dielectric, structurally chiral material," **Journal of Modern Optics,** 61, 1115-1119 (2014).
51- H. Maab and M. Faryad, "Coupled Tamm waves guided by an isotropic and homogeneous dielectric layer in a rugate filter," **Journal of Modern Optics,** 61, 986-993 (2014).
52- A. Lakhtakia and M. Faryad, "Multiple surface-plasmon-polariton waves guided jointly by a metal and a hyperbolic, dielectric, structurally chiral material," **Proceedings of Romanian Academy A**, 15, 159-164 (2014).
53- D.P. Pulsifer, M. Faryad, A. Lakhtakia, A.S. Hall, and L. Liu, "Experimental excitation of the Dyakonov—Tamm waves in the grating-coupled configuration," **Optics Letters,** 39, 2125-2128 (2014).
54- D.P. Pulsifer, M. Faryad, and A. Lakhtakia, "Observation of the Dyakonov—Tamm waves," **Physical Review Letters,** 111, 243902 (2013).
55- M. Faryad, A. Lakhtakia, and D. P. Pulsifer, "Dyakonov—Tamm waves guided by the planar surface of a chiral sculptured thin film," **Journal of Optical Society of America B**, 30, 3035-3040 (2013).
56- M. Solano, M. Faryad, P. B. Monk, T. E. Mallouk, and A. Lakhtakia, "Periodically multilayered planar optical concentrator for photovoltaic solar cells," **Applied Physics Letters**, 103, 191115 (2013).
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