CURRICULUM VITAE

Name	AKHLESH LAKHTAKIA
Date & Place of Birth	July 1, 1957; Lucknow, India
Citizenship	USA (since May 19, 1995), India (1957–1995)
Present Rank	Evan Pugh University Professor *and* Charles Godfrey Binder Professor in Engineering Science and Mechanics
Present Address	Department of Engineering Science and Mechanics 212 EES Building Pennsylvania State University University Park, PA 16802, USA
E-mail	akhlesh@psu.edu
Web	http://www.esm.psu.edu/~axl4/

ACADEMIC BACKGROUND

DEGREE	INSTITUTION	YEAR	DIVISION/GPA
BTech (Electronics Engg.)	Banaras Hindu University Varanasi, India	1979	First Class First (with Honors)
MS (Electrical Engg.)	University of Utah Salt Lake City, USA	1981	3.89/4.00
PhD (Electrical Engg.)	University of Utah Salt Lake City, USA	1983	3.92/4.00
DSc (Electronics Engg.)	Banaras Hindu University Varanasi, India	2006	

MS Thesis: Radio–frequency absorption of near–field energy by prolate spheroidal models of humans and animals.

PhD Thesis: Near–field scattering and absorption by lossy dielectrics at resonance frequencies.

DSc Thesis: Electromagnetic fields in complex mediums.

Further Academic Studies

Diploma in Children's Literature, Institute of Children's Literature (Connecticutt), January 1990.

SCHOLARSHIPS

1. National Science Talent Search Award, India, 1974
2. National Merit Scholarship, India, 1975
3. University Grants Commission/ Undergraduate Scholarship, India, 1974–79
4. University of Utah Graduate Research Fellowship, USA, 1982–83

AWARDS AND HONORS

1. BHU Gold Medal (1979)
2. Fellow, Optical Society of America (1992–)
3. Certificate of Appreciation, IEEE Electromagnetics Compatibility Society (1994)
4. Scottish Amicable Lectureship, University of Glasgow (1995)
5. Keynote Speaker, First LAAS Symposium on Computer Simulation, Beirut, Lebanon (1995)[a]
6. PSES Outstanding Research Award, Pennsylvania State University (1996)
7. Fellow, SPIE–The International Society for Optical Engineering (1996–)
8. Fellow, Institute of Physics (UK) (1996–)
9. Distinguished Professorship, Pennsylvania State University (2003–2005)
10. PSES Outstanding Advising Award, Pennsylvania State University (2005)
11. Faculty Scholar Medal in Engineering, Pennsylvania State University (2005)
12. Nano 50 (Technology) Award, Nanotech Briefs (2005)
13. Endowed Professorship, Pennsylvania State University (2005–)
14. Nano 50 (Innovator) Award, Nanotech Briefs (2006)
15. University Distinguished Alumnus Award, University of Utah (2007)
16. Plenary Speaker (Nano), SPIE Optics & Photonics (2007)
17. Distinguished Lecturer, Department of Electrical Engineering, University of Texas at Dallas (2008)
18. Plenary Speaker, 7th Iberian Vacuum Meeting (2008)
19. PSES Premier Research Award, Pennsylvania State University (2008)
20. Inaugural Speaker, Spanish URSI Meeting (2009)
21. Fellow, American Association for the Advancement of Science (2009–)
22. Presidential Research Visitor, Ben Gurion University of the Negev (2010)
23. SPIE[b] Technical Achievement Award (2010)
24. OSA Outstanding Reviewer Award (Inaugural Class) (2012)
25. Fellow, American Physical Society (2012–)
26. Honorary International Chair Professor, National Taipei University of Technology (2012–13)
27. Distinguished Alumnus Award, Indian Institute of Technology BHU (2014)
28. Fellow, Institute of Electrical and Electronics Engineers (2016–)
29. PSEAS Outstanding Teaching Award, Pennsylvania State University (2016)

[a]Delivered via videotape
[b]Formerly: SPIE–International Society for Optical Engineering

30. Walston Chubb Award for Innovation, Sigma Xi, The Scientific Research Society (2016)
31. Fellow, Royal Society of Chemistry (2016–)
32. Plenary Speaker, 40th Conference, Optical Society of India (2016)[c]
33. Fellow, Royal Society of Arts (2017–)
34. Visiting Advanced Joint Research (VAJRA) Professor, Government of India (2018-2020)
34. Evan Pugh University Professorship, Pennsylvania State University (2018–)[d]
35. OSA Outstanding Reviewer Recognition (2018)
36. SPIE Certificate of Appreciation (2018)
37. "Alumnus of the Century in Making" Award, Indian Institute of Technology (BHU) Varanasi (2019)
38. Otto Mønsted Guest Professor, Technical University of Denmark (2019)
39. Honorary International Chair Professor, National Taipei University of Technology (2020–23)
40. SPIE Smart Structures and Materials Lifetime Achievement Award (2022)
41. IEEE Antennas and Propagation Society Distinguished Achievement Award (2022)
42. Radio Club of America Lifetime Achievement Award (2022)
43. Sigma Xi Distinguished Lecturer (2022–24)
44. Jefferson Science Fellow, US State Department (2022–23)

CURRENT PROFESSIONAL AFFILIATIONS

1. Optical Society of America, Member (1988–92), *Fellow* (elected1992)
2. SPIE, Member (1994–1996), *Fellow* (elected 1996), *Life Fellow* (2011–)
3. Institute of Physics (UK), *Fellow* (elected 1996)
4. American Association for the Advancement of Science, Member (2009–), *Fellow* (elected 2009)
5. American Physical Society, Member (2010–2011), *Fellow* (elected 2012)
6. Institute of Electrical and Electronics Engineers, Student Member (1980–1983), Member (1983–1986, 1992–1999), Senior Member (1999–2001, 2011–2015), *Fellow* (elected 2016)
7. Sigma Xi–The Scientific Research Society, Member (1986–1993, 2016–2021), Life Member (2022–)
8. Royal Society of Arts (UK), *Fellow* (elected 2017)
9. Union Radio Scientifique International, *Senior Member* (elected 2020)

FORMER PROFESSIONAL AFFILIATIONS

1. Acoustical Society of America, *Member* (1994–2001)
2. Asosacion Argentino para la Promocion de la Ciencias, *Member* (1994–2002)
3. Electromagnetics Society (now defunct), *Member* (1982–1986)
4. European Mechanics Society, *Member* (1996–1997)
5. Institute of Nanotechnology, *Professional Fellow* (2006–2009)

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[c]Delivered via Skype

[d]Highest professorial rank at Penn State

6. Royal Society of Chemistry (UK), *Fellow* (elected 2016)

EMPLOYMENT RECORD

1. *Department of Electrical Engineering, University of Utah*
   Salt Lake City, UT 84112, USA

Sept 1979–March 1983	Graduate Research Assistant
Apr 1983–June 1983	Post–Doctoral Research Associate

2. *Department of Engineering Science and Mechanics, Pennsylvania State University,*
   University Park, PA 16802, USA

July 1983–June 1984	Post–Doctoral Scholar
July 1984–Aug 1984	Research Assistant
Aug 1984–June 1988	Assistant Professor (Fixed Term)
July 1988–June 1991	Assistant Professor
July 1991–June 1997	Associate Professor
1994	Granted tenure
July 1997–	Professor
Dec 2003–Oct 2005	Distinguished Professor of Engineering Science and Mechanics
Nov 2005–	Charles Godfrey Binder (Endowed) Professor in Engineering Science and Mechanics
July 2018–	Evan Pugh University Professor

OTHER APPOINTMENTS

1. *Departamento de Física, Facultad de Exactas y Naturales,*
   Universidad de Buenos Aires, Buenos Aires, Argentina

May 1990	Visitante Profesor Titular (con máxima antiguedad)
May 1992–June 1992	Visitante Profesor Titular (con máxima antiguedad)

2. *Department of Mathematics, University of Glasgow, Glasgow, Scotland, United Kingdom*

Mar 1995	Scottish Amicable Visiting Lecturer
Sept 1995–Dec 1995	Visiting Scholar in Mathematics

3. *Department of Physics, University of Otago, Dunedin, New Zealand*

Mar 2004	Visiting Professor

4. *Department of Physics, Imperial College London, London, England, United Kingdom*

May 2004–Sept 2007	Visiting (Adjunct) Professor

5. *Department of Management Communications, University of Waikato*
   Hamilton, New Zealand

May 2005	Visiting Scholar

6. *Department of Physics, Indian Institute of Technology Kanpur, Kanpur, India*

July 2008	Visiting Professor

Dec 2009–Jan 2010	Visiting Professor
June 2011	Visiting Researcher

7. *Department of Electrical Engineering, Indian Institute of Technology Kanpur, Kanpur, India*

Aug 2017–July 2020	Adjunct Professor

8. *Department of Electronics Engineering, Indian Institute of Technology (BHU), Varanasi, India*

June 2018–May 2020	Adjunct Faculty

9. *School of Materials Science and Technology, Indian Institute of Technology (BHU), Varanasi, India*

July 2021–June 2023	Adjunct Faculty

10. *Faculty of Engineering, Multimedia University, Cyberjaya, Selangor, Malaysia*

Apr 2007–Mar 2010	External Examiner (M.Sc. Photonics)

11. *Board of External Doctoral Examiners and Supervisors, Islamabad, Pakistan*

Jan 2007–	External Doctoral Examiner

12. *Instituto Nicolás Cabrera, Universidad Autonóma de Madrid*

Oct 2021–	Member, Comité de Asesoramiento Científico
Nov 2021	Evaluator, Chema Gómez-Rodríguez Young Research Award

13. *Pakistan Academy of Sciences*

2016	Evaluator, Abdus Salam Prize in Basic Sciences (2016) for Scientists under 40 in Mathematics

14. *Disha Institute of Management and Technology, Raipur, India*

Jan 2008–Jan 2011	Member, Board of Advisors

15. *International Commission for Optics*

May 1992	Traveling Lecturer (Argentina)

16. *Optical Society of America*

Dec 1993	International Lecturer (India)
May 2003	International Council's Traveling Fellow (Krygyzstan)
Aug 2012	International Council's Traveling Fellow (Mongolia)
Nov 2012	International Council's Traveling Fellow (India)
Dec 2014	International Council's Traveling Fellow (India)
Oct 2016	Traveling Lecturer (Florida Tech, USA)
Mar 2018	Traveling Lecturer (India)
July 2019	Traveling Lecturer (Brazil)
Mar 2020	Traveling Lecturer (Argentina)

17. SPIE
Feb 2012 Traveling Lecturer (Mexico)

18. Organization of Islamic Cooperation–Ministerial Select Committee on Science and Technology Cooperation
2020 Selector, Best Research Paper in Mathematics 2019
2021 Selector, Best Research Paper in Mathematics 2021

TEACHING EXPERIENCE

1. *Department of Electrical Engineering, University of Utah, Salt Lake City, UT, USA*
1983 Teaching Assistant Undergraduate Course:
Lasers (EE530)

2. *Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA, USA*
1984– Instructor Undergraduate Courses:
Statics
Dynamics
Strength of Materials
Statics & Strength of Materials
Active Circuits
Computer Methods dor Engineering Science
Computer Methods dor Engineering Mechanics
Waster Reduction Seminar
Electromagnetics

Senior/Graduate Courses:
Computational Techniques for Engineering BVPs
Analysis for Engineering Science
Materials for Waste Reduction
Materials in Design for Green Engineering
Fundamentals of Science and Technology for Engineering Education
Biologically Inspired Design

Graduate Courses:
Electromagnetic Fields in Material Continua
Laser Optics Fundamentals
Wave Propagation and Scattering
Mathematical Methods in Engineering

Graduate Seminars
Multidisciplinary Informal Engineering Education
Graduate Seminar for Engineering Science
Graduate Seminar for Engineering Mechanics

3. *Departamento de Física, Facultad de Exactas y Naturales,*

Universidad de Buenos Aires, Buenos Aires, Argentina
1990 Instructor Special Course: Optics of Biot's Solutions
1992 Instructor Special Course: Topics in Optics and Electromagnetic Scattering

4. *Department of Applied Physics, Institute of Technology, Banaras Hindu University, Varanasi, India*
   1993 Instructor Special Course: Beltrami Fields

5. *SPIE, 49th Annual Meeting, Denver, CO, USA*
   2004 Instructor Short Course: SC664: Thin Films with Nanoengineered Morphology (August 6)

6. *SPIE, Optics+Photonics 2014 Meeting, San Diego, CA, USA*
   2014 Instructor Short Course: SC1140: Surface Multiplasmonics (August 21)

7. *Global Initiative of Academic Networks, Indian Institute of Technology (BHU), Varanasi, India*
   2016 Instructor Short Course: Electromagnetic Surface Waves (Dec 19-27)

New Courses Developed at Pennsylvania State University

1.	E SC 497A	Spring 1990	Computational Techniques of Engineering Boundary Value Problems
2.	E SC 597A	Spring 1993	Electromagnetics of Material Continua
3.	E SC 297B	Fall 1993	Waste Reduction Seminar (with C.E. Bakis)
4.	E SC 497B	Fall 1993	Materials for Waste Reduction (with C.E. Bakis)
5.	E SC 497A	Fall 1994	Materials in Design for Green Engineering (with C.E. Bakis) (Fall 1994, Fall 1996, and Spring 1998)
6.	E SC 124A	Spring 2001	Freshman Seminar on Green Engineering (with C.E. Bakis) (Spring 2001 and Spring 2002)
7.	E SC 598G	Fall 2004	Laser Optics Fundamentals
8.	E SC 597C	Fall 2003	Multidisciplinary Informal Engineering Education Seminar (Fall 2003, Fall 2004, Fall 2005, Fall 2006, and Fall 2007)
9.	E SC 497-002	Fall 2020	Biologically Inspired Design

EDITORIAL WORK FOR JOURNALS

1. *Speculations in Science and Technology*
   American Editor (1991–1992)
   Editor–in–Chief (1993–1996)
2. *IEEE Transactions on Microwave Theory and Techniques*
   Editorial Board Member (March 1994–December 2000)
3. *Microwave and Optical Technology Letters*
   Editorial Board Member (April 1997–March 2019)
4. *Optik International Journal of Light and Electron Optics*

Editorial Board Member (March 1998–)

5. *AEÜ International Journal of Electronics & Communications*
   Editorial Board Member (February 2003–July 2006)
6. *Electromagnetics*
   Editorial Board Member (April 2003–)
7. *SPIE Nanotechnology E-Bulletin*
   Editorial Board Member (January 2004–December 2005)
8. *Optics Communications*
   Advisory Board Member (April 2006–)
9. *Journal of Nanophotonics (SPIE)*
   Editor–in–Chief (Aug 2006–December 2013)
10. *Journal of Optics (India)*
    Editorial Board Member (November 2011–)
11. *SPIE Reviews*
    Editorial Board Member (2012–2013)
12. *Proceedings of Pakistan Academy of Sciences A. Physical and Computational Sciences*
    Editorial Board Member (May 2021–)

TECHNICAL REVIEWER FOR JOURNALS

1. IEEE Transactions on Antennas and Propagation
2. IEEE Antennas and Wireless Propagation Letters
3. IEEE Transactions on Electromagnetic Compatibility
4. IEEE Transactions on Microwave Theory and Techniques
5. IEEE Microwave and Guided Wave Letters
6. IEEE Transactions on Geoscience and Remote Sensing
7. IEEE Geoscience and Remote Sensing Letters
8. IEEE Transactions on Nanotechnology
9. IET Nanobiotechnology
10. IET Radar, Sonar & Navigation
11. Proceedings of the Institution of Electrical Engineers
    —Microwaves, Antennas & Propagation
12. International Journal of Applied Electromagnetism and Materials (IoS Press)
13. International Journal of Microwave and Wireless Technologies (CUP)
14. Journal of Quantitative Spectroscopy and Radiative Transfer
15. Electromagnetics (Taylor & Francis)
16. Waves in Random Media (Waves in Random & Complex Media)
17. Journal of Electromagnetic Waves and Applications
18. International Journal of Electronics (Taylor & Francis)
19. Journal of Quantum Electronics (IEEE)
20. Electronics Letters (IET)
21. Electronics and Telecommunications Research Institute Journal (South Korea)
22. Archiv für Elektronik und Übertragungstechnik (Elsevier)
23. International Journal of Numerical Modelling:
    Electronic Networks, Devices & Fields
24. International Journal of Infrared and Millimeter Waves (Springer)
25. Journal of Electrostatics
26. Radio Science (URSI)

27. The Radioscientist Bulletin (URSI)
28. Applied Optics (Optical Society of America)
29. Optics Letters (Optical Society of America)
30. Optics Express (Optical Society of America)
31. Journal of Modern Optics (Taylor and Francis)
32. Journal of the Optical Society of America A
33. Journal of the Optical Society of America B
34. Advances in Optics and Photonics (Optical Society of America)
35. Journal of Nanophotonics (SPIE)
36. Optical Engineering (SPIE)
37. Optics Communications (Elsevier)
38. Optik (Elsevier)
39. Journal of Lightwave Technology (OSA+IEEE)
40. Journal of Optics (India)
41. Journal of Optics A: Pure and Applied Optics (IoP), *later renamed* Journal of Optics (United Kingdom)
42. Microwave and Optical Technology Letters (Wiley)
43. Optics and Laser Technology (Elsevier)
44. Optical Materials (Elsevier)
45. Optical Materials Express (Optical Society of America)
46. Journal of Biomedical Optics (SPIE)
47. Biomedical Optics Express (Optical Society of America)
48. Advances in Optical Technologies (Hindawi)
49. Advanced Photonics (Wiley)
50. Chinese Optics Letters
51. Journal of Mathematical Physics (AIP)
52. Journal of Applied Physics (AIP)
53. Applied Physics Letters (AIP)
54. Applied Physics Reviews (AIP)
55. Applied Physics B: Lasers and Optics
56. Chemical Physics Letters (Elsevier)
57. Current Applied Physics (Elsevier)
58. Europhysics Letters (IoP)
59. New Journal of Physics (IoP)
60. Journal of Physics A: Mathematical & General (IoP)
61. Journal of Physics D: Applied Physics (IoP)
62. Journal of Physics: Condensed Matter (IoP)
63. Physical Review A (APS)
64. Physical Review B (APS)
65. Physical Review E (APS)
66. Physical Review Letters (APS)
67. Physics of Plasmas (AIP)
68. AIP Advances
69. Physics Letters A (Elsevier)
70. Modern Physics Letters B (World Scientific)
71. Physics Essays
72. Physica B (Elsevier)
73. physica status solidi (a) (Wiley VCH)

74. physica status solidi (b) (Wiley VCH)
75. Physica Scripta (IoP)
76. Annals of Physics
77. Foundations of Physics
78. Foundations of Physics Letters
79. Pramana–Journal of Physics
80. Indian Journal of Pure and Applied Physics
81. Indian Journal of Physics
82. Journal of International Academy of Physical Sciences
83. Journal de Physique III France
84. American Journal of Physics
85. Australian Journal of Physics
86. Canadian Journal of Physics
87. Central European Journal of Physics
88. Chinese Physics Letters
89. European Physical Journal Applied Physics
90. European Physical Journal D
91. European Physical Journal E Soft Matter
92. Acta Physica Polonica A
93. Sensors and Actuators B
94. Biosensors and Bioelectronics
95. IEEE Sensors Journal
96. Journal of Computational & Theoretical Nanoscience
97. Crystal Growth and Design (ACS)
98. Vacuum
99. Journal of Vacuum Science and Technology B
100. Journal of Applied Crystallography (IUCr)
101. Journal of Alloys and Compounds (Elsevier)
102. Journal of the American Ceramic Society
103. Molecular Crystals and Liquid Crystals
104. Solar Energy Materials and Solar Cells
105. Bioinspiration and Biomimetics
106. Journal of Bionic Engineering
107. Bioinspired, Biomimetic and Nanobiomaterials
108. The Astrophysical Journal
109. Nuclear Instruments and Methods B
110. IMA Journal of Applied Mathematics
111. Journal of Engineering Mathematics
112. Journal of Mathematical Analysis and Applications
113. Acta Mathematica Scientia
114. Applied Mathematics Letters
115. Applied Mathematical Modelling
116. ZAMP–Zeitschrift für Angewandte Mathematik und Physik
117. Mathematical Problems in Engineering (Hindawi)
118. ASME Journal of Heat Transfer
119. ASME Journal of Vibrations, Acoustics, Stress, and Reliability in Design
120. Applied Acoustics
121. Journal of the Acoustical Society of America

122. Journal of Sound and Vibration
123. Journal of Vibration and Control
124. Bulletin of the Seismological Society of America
125. Studia Geophysica et Geodaetica
126. Mathematical Geology
127. International Journal of Engineering Science
128. International Journal of Solids and Structures
129. Journal of Intelligent Material Systems and Structures
130. Modelling and Simulation in Materials Science and Engineering (IoP)
131. European Journal of Mechanics A/Solids (Elsevier)
132. Philosophical Magazine Letters (Taylor & Francis)
133. Beilstein Journal of Nanotechnology
134. Applied Nanoscience (Springer Nature)
135. Nano Letters (American Chemical Society)
136. ACS Nano
137. ACS Applied Nano Materials
138. Langmuir (American Chemical Society)
139. Journal of Physical Chemistry
140. Materials Letters (Elsevier)
141. Advanced Materials (Wiley)
142. Advanced Optical Materials (Wiley)
143. Advanced Functional Materials (Wiley)
144. Applied Materials Today
145. Materials Research Innovations (Sage)
146. Materials Chemistry and Physics (Elsevier)
147. Mechanics of Materials
148. Journal of Mechanics and Physics of Solids
149. Journal of Composite Materials
150. Journal of Composites Technology and Research
151. Cement and Concrete Research
152. Journal of Porous Materials
153. Applied Surface Science (Elsevier)
154. Thin Solid Films (Elsevier)
155. Coloration Technology (Elsevier)
156. Soft Matter
157. Materials Science and Engineering C (Elsevier)
158. Nanomedicine: Nanotechnology, Biology, and Medicine
159. Measurement
160. Journal of Laboratory Automation
161. Computers and Graphics (Pergamon)
162. Leonardo (International Society for the Arts, Sciences and Technology)
163. IEEE Computer Graphics and Applications
164. Computers in Physics (American Institute of Physics)
165. Symmetry (VCH, New York)
166. Speculations in Science and Technology
167. Proceedings of the Indian National Science Academy A
168. Proceedings of the Royal Society, London, Series A
169. Arabian Journal for Science and Engineering

170. Turkish Journal of Electrical Engineering and Computer Sciences
171. Pakistan Journal of Scientific and Industrial Research
172. Science in China F
173. Journal of Wave–Material Interaction (Penn State, CEEAM)
174. International Journal of Engineering Education
175. Nature
176. Nature Physics
177. Nature Photonics
178. Nature Reviews Physics
179. Scientific Reports
180. PLoS One
181. Journal of Forensic Sciences (AAFS)
182. Forensic Chemistry
183. Journal of Water, Sanitation and Hygiene for Development
184. Computer Applications in Engineering Education

REVIEWER OF RESEARCH PROPOSALS

1. US National Science Foundation
2. US Army Corps of Engineers, Engineering Research & Development Center
3. US Department of Energy, Basic Energy Sciences
4. US Civilian Research and Development Foundation
5. Center for International Security Affairs, Los Alamos National Laboratory
6. American Chemical Society Petroleum Research Fund
7. Medical Research Council of Canada
8. National Sciences & Engineering Research Council of Canada
9. Israel Science Foundation
10. German–Israel Foundation for Scientific Research & Development
11. Czech Research Foundation
12. Netherlands Organization for Scientific Research
13. Academia Europae
14. Science and Technology Center of Ukraine
15. Research Grants Council of Hong Kong

REVIEWER OF BOOKS and BOOK PROPOSALS

1. Cambridge University Press, American Branch
2. Richard D. Irwin, Inc., Stewartsville, NJ
3. World Scientific Publishing Company, Singapore
4. SPIE–International Society for Optical Engineering
5. Institute of Physics (IoP)
6. John Wiley and Sons
7. Oxford University Press, United Kingdom
8. CRC Press, Boca Raton, FL
9. ASME Press
10. Springer, New York, NY

REVIEWER OF BOOKS

1. Optics & Photonics News (Optical Society of America)
2. Speculations in Science and Technology
3. Materials Research Bulletin
4. IEEE Antennas and Propagation Magazine
5. Archiv für Elektronik und Übertragungstechnik
6. Optik
7. Journal of Nanophotonics

EXTERNAL EXAMINER OF THESES AND DISSERTATIONS

1. *University of Adelaide, Adelaide, Australia*

   Faculty of Mathematics and Computer Sciences
   1994 DSc Christopher Roy Illert

2. *University of Technology, Sydney, Australia*

   Department of Applied Physics
   2005 PhD Stefan Schelm

3. *Quaid-i-Azam University, Islamabad, Pakistan*

   Department of Mathematics
   1994 PhD Akhtar Hussain
   1999 PhD Tasawar Hayat
   2007 PhD Muhammad Mudassar Gulzar
   2009 PhD Muhammad Ramzan
   2010 PhD Amer Bilal Mann

   Department of Electronics
   2009 PhD Abdul Ghaffar
   2009 PhD Shakeel Ahmed
   2021 PhD Maimoona Naheed

4. *University of Engineering and Technology, Lahore, Pakistan*

   Department of Electrical Engineering
   2008 PhD Syed Ali Mohsin

5. *Banaras Hindu University, Varanasi, India*

   Department of Applied Physics
   1994 PhD Ajai Kumar Singh
   1998 PhD Umesh Kumar Singh

Department of Electronics Engineering
2010 PhD Reddi Ranga Rao
2011 PhD S. Umamaheswara Reddy

6. *University of Pune, Pune, India*

Department of Chemistry
2011 PhD Neha Tiwari

7. *National Institute of Technology, Tiruchirappalli, India*

Department of Electronics and Communication Engineering
2015 PhD S. Anand

8. *Université Montpellier II, Montpellier, France*

Department of Physics
2007 PhD Alexandru Cabuz

9. *Bulgarian Academy of Sciences, Sofia, Bulgaria*

Institute of Solid State Physics
1998 PhD Elena Georgieva

10. *Multimedia University, Cyberjaya, Selangor, Malaysia*

Faculty of Engineering
2010 PhD Md. Mijanur Rahman
2010 MEngSc Yong Yean Sheng

11. *Ben-Gurion University of the Negev, Beer Sheva, Israel*

Faculty of Engineering Science
2013 PhD Tatiana Danov

EXTERNAL EXAMINER OF PROMOTION & TENURE DOSSIERS

1. *Georgia State University, Atlanta, GA, USA*

Department of Mathematics and Computer Sciences
1991 Valerie Ann Miller

2. *University of Glasgow, Glasgow, Scotland, United Kingdom*

Department of Mathematics
1996 Werner Siegfried Weiglhofer
1999 Werner Siegfried Weiglhofer

2002 Werner Siegfried Weiglhofer

3. *University of Edinburgh, Edinburgh, Scotland, United Kingdom*

Department of Mathematics
2007 Tom Gunn Mackay

4. *Imperial College London, London, England, United Kingdom*

Department of Physics
1999 Martin William McCall
2002 Martin William McCall

5. *University of Athens, Athens, Greece*

Department of Mathematics
1997 Christodoulos Athanasiadis
1998 Ioannis G. Stratis

6. *Quaid-i-Azam University, Islamabad, Pakistan*

Department of Electronics
2007 Aqeel Ahmed Syed
2007 Qaisar Abbas Naqvi
2007 Farhan Saif
2011 Qaisar Abbas Naqvi

Department of Mathematics
2011 Tasawar Hayat
2011 Sohail Nadeem
2011 Masood Khan (1)
2011 Masood Khan (2)

7. *University of Agriculture, Faisalabad, Pakistan*

Department of Physics
2016 Abdul Ghaffar

8. *Ghulam Ishaq Khan Institute of Engineering Science and Technology, Topi, Pakistan*

Faculty of Electronic Engineering
2017 Husnul Maab

9. *Lahore University of Management Sciences, Lahore, Pakistan*

Department of Physics
2020 M. Sabieh Anwar
2021 Muhammad Faryad

10. Information Technology University, Lahore, Pakistan

Faculty of Engineering
2020 Muhammad Zubair
2020 Muhammad Qasim Mehmood
2020 Muhammad Amin
2020 Sajid Ahmed

11. Technion–Israel Institute of Technology, Haifa, Israel

Department of Electrical Engineering
2004 Haim Cory

12. University of Jordan, Amman, Jordan

Department of Electrical and Computer Engineering
2015 Loay D. Khalaf
2015 Jamal S. Rahhal

13. National University of Singapore, Singapore

Department of Mechanical Engineering
2005 Quan Chenggen

14. Nanyang Technical University, Singapore

School of Physical and Mathematical Sciences
2021 Zhang Baile

15. University of Kentucky, Lexington, KY, USA

Department of Electrical Engineering
1998 Craig A. Grimes

16. University of Texas at Dallas, Richardson, TX, USA

Department of Electrical Engineering
1999 Lakshman Solaimalai Tamil

17. University of Southern California, Los Angeles, CA, USA

Department of Industrial and Systems Engineering
2002 Satish Bukkapatnam

18. Pennsylvania State University, Hershey, PA, USA

Department of Orthopedics

2009 Timothy M. Ritty

19. *University of Minnesota, Minneapolis, MN, USA*

Department of Mechanical Engineering
2010 Traian Dumitrica

20. *University of North Carolina, Charlotte, NC, USA*

Department of Physics and Optical Science
2013 Thomas J. Suleski

EXTERNAL EXAMINER OF SABBATICAL LEAVE PROPOSALS

1. *King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia*

Department of Mathematical Sciences
1996 Mohammed Aslam Chaudhry

Department of Electrical Engineering
2010 Mohammad AbdulAziz Alsunaidi

PROFESSIONAL PANELS, ETC.

1. *National Research Council, Washington, DC*
1989–1990 Member Research Evaluation Panel

2. *IEEE Electromagnetic Compatibility Society*
1992–1994 Chair Technical Committee 7: Nonsinusoidal Waves

3. *SPIE*
2002–2004 Member Publications Committee
2005 Member New Nanotechnology E-Journal Proposal Committee
2006–2010 Member Publications Committee
2006 Member Nanotechnology E-Journal Editor Search Committee
2008 Member Publications Subcommittee on Ethics
2008–2010 Chair Publications Subcommittee on Ethics
2009– Member Chandra S. Vikram Award Committee
2011–2013 Member Publications Subcommittee on Ethics
2011–2013 Member Board of Editors
2012–2013 Member Publications Committee
(with special charge of reporting for the Board of Editors)
2021– Member Technology Achievement Award Committee

4. *American Society of Mechanical Engineers*
2004–2008 Member ASME Press Advisory and Oversight Committee

5. *American Society of Engineering Education*

2005	Member	ASEE Panel for Graduate Fellowships

6. *Institute of Physics (United Kingdom)*

2015–2020	Series Editor	IoP Concise Books on Electromagnetics and Metamaterials

7. *Elsevier*

2018–	Series Editor	Elsevier Series on Nanophotonics

8. *Morgan & Claypool*

2020–	Series Editor	Synthesis Lectures on Electromagnetics

CONFERENCE ORGANIZATION, ETC.

1. *MICRO–79*, Convener (Publication and Publicity), Jan 15–17, 1979, Banaras Hindu University, Varanasi 221005, India

2. *International Conference for Coatings and Sensors for Acoustic and Electromagnetic/ Optical Applications*, Program Committee Member, May 9–11, 1989, Pennsylvania State University, University Park, PA 16802, USA.

3. *SPIE Conference 1489: Structures Sensing and Control*, Session Chair, April 2–3, 1991, Orlando, Florida, USA.

4. *IEEE–APS International Symposium / URSI Radio Science Metting / Nuclear EMP Meeting*, Session FA10 Co–Chair, July 18–25, 1992, Chicago, Illinois, USA.

5. *IEEE International Symposium on Electromagnetic Compatibility*, Session 5D Organizer and Chair, August 18–20, 1992, Anaheim, California, USA.

6. *IEEE International Symposium on Electromagnetic Compatibility*, Session Organizer, August 11–13, 1993, Dallas, Texas, USA.

7. *The First Penn State Green Design Conference*, Co–Chair, April 9, 1994, Pennsylvania State University, University Park, PA 16802, USA.

8. *Chiral '94: 3rd International Workshop on Chiral*, *Bi–isotropic and Bi–anisotropic Media*, Session A1 Co–Chair and Member of Scientific Committee, May 18–20, 1994, Périgueux, France.

9. *Bianisotropics '97: International Conference and Workshop on Electromagnetics of Complex Media*, Session X Chair, Invited Lecturer, and Member of Scientific Advisory Committee, June 5–7, 1997, Glasgow, UK.

10. *Bianisotropics '98: 7th International Conference on Electromagnetics of Complex Media*, Session VIII Chair, Invited Lecturer, and Member of Scientific Advisory Committee, June 3–6, 1998, Braunschweig, Germany.

11. *44th Annual Meeting of SPIE*, Program Chair (*Smart & Nanoscale Materials and Devices Group* of conferences); Conference Chair (*Engineered Nanostructural Films and Materials*), July 18–23, 1999, Denver, Colorado, USA.

12. *45th Annual Meeting of SPIE*, Program Chair (*Nanostructural Materials and Nanotechnologies Group* of conferences); Conference Chair (*Complex Mediums*), July 30–August 04, 2000, San Diego, California, USA.

13. *Bianisotropics 2000: 8th International Conference on Electromagnetics of Complex Media*, Session XI Chair, Invited Lecturer, and Member of Scientific Advisory Committee, September 27–29, 2000, Lisbon, Portugal.

14. *46th Annual Meeting of SPIE*, Program Chair (*Nanostructural Materials and Molecular Manufacturing Group* of conferences); Conference Chair (*Complex Mediums II*), July 29–August 03, 2001, San Diego, California, USA.

15. *47th Annual Meeting of SPIE*, Conference Chair (*Complex Mediums III*), July 7–11, 2002, Seattle, Washington, USA.

16. *39th Annual Technical Meeting of the Society of Engineering Science*, Organizer and Session Chair (*Nanoscale Science and Technology*), October 13–16, 2002, State College, Pennsylvania, USA.

17. *Bianisotropics 2002: 9th International Conference on Electromagnetics of Complex Media*, Member of Scientific Advisory Committee, May 08–11, 2002, Marrakesh, Morocco.

18. *48th Annual Meeting of SPIE*, Conference Chair (*Nanotubes & Nanowires*) Program Committee Member, Session Chair (*Complex Mediums IV*), August 3–8, 2003, San Diego, California, USA.

19. *49th Annual Meeting of SPIE*, Conference Chair (*Nanomodeling*), Program Committee Member, Session Chair (*Complex Mediums V*), August 2–6, 2004, Denver, Colorado, USA.

20. *50th Annual Meeting of SPIE*, Program Committee Member, Session Chair (*Complex Mediums VI*), August 1–5, 2005, San Diego, California, USA.

19. *SPIE Optics & Photonics 2006*, Conference Chair (*Nanomodeling II*), Program Committee Member (*Complex Photonic Media*), August 13–17, 2006, San Diego, California, USA.

20. *Nanomec 06: Materials Science and Materials Mechanics at the Nanoscale*, Organizing Committee Member, November 19–23, 2006, Bari, Italy.

21. *SPIE Optics & Photonics 2007*, Program Committee Member (*What is a Photon?–II*), Program Committee Member, Session Chair (*Photonic Metamaterials*), August 26–30, 2007, San Diego, California, USA.

22. *SPIE Photonics West 2008*, Program Committee Member (*Advanced Fabrication Technologies for Micro/Nano-Optics & Photonics*), January 20–24, 2008, San Jose, California, USA.

23. *SPIE Optics & Photonics 2008*, Conference Chair (*Nanostructured Thin Films*), Program Committee Member (*Metamaterials*), August 10–14, 2008, San Diego, California, USA.

24. *Photonics 2008: International Conference on Fiber Optics & Photonics*, Member of International Advisory Committee, December 14–17, 2008, New Delhi, India.

25. *SPIE Photonics West* 2009, Program Committee Member (*Advanced Fabrication Technologies for Micro/Nano-Optics & Photonics II*), January 25–29, 2009, San Jose, California, USA.

26. *SPIE Optics & Photonics 2009*, Conference Chair (*Nanostructured Thin Films II*), Conference Chair (*Biomimetics and Bioinspiration*), Program Committee Member (*Metamaterials: Fundamentals and Applications II*), Program Committee Member (*What is a Photon?–III*), August 2–6, 2009, San Diego, California, USA.

27. *SPIE Photonics West 2010*, Program Committee Member (*Advanced Fabrication Technologies for Micro/Nano-Optics & Photonics III*), January 23–27, 2010, San Francisco, California, USA.

28. *SPIE Optics & Photonics 2010*, Conference Chair (*Nanostructured Thin Films III*), Program Committee Member (*Metamaterials: Fundamentals and Applications III*), August 1–5, 2010, San Diego, California, USA.

29. *SPIE Photonics West 2011*, Program Committee Member (*Advanced Fabrication Technologies for Micro/Nano-Optics & Photonics IV*), January 22–27, 2011, San Francisco, California, USA.

30. *SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring 2011*, Conference Co-Chair (*Bioinspiration, Biomimetics, and Bioreplication*), March 6–10, 2011, San Diego, California, USA.

31. *SPIE Optics & Photonics 2011*, Program Committee Member (*Nanostructured Thin Films IV*), Program Committee Member (*Metamaterials: Fundamentals and Applications IV*), August 21–25, 2011, San Diego, California, USA.

32. *SPIE Photonics West 2012*, Program Committee Member (*Advanced Fabrication Technologies for Micro/Nano-Optics & Photonics V*), January 21–26, 2012, San Francisco, California, USA.

33. *SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring 2012*, Conference Co-Chair (*Bioinspiration, Biomimetics, and Bioreplication II*), March 11–15, 2012, San Diego, California, USA.

34. *SPIE Optics & Photonics 2012*, Conference Co-Chair (*Photonics Innovations and Solutions for Complex Environments and Systems*), Program Committee Member (*Nanostructured Thin Films V*), Program Committee Member (*Metamaterials: Fundamentals and Applications V*), August 12–16, 2012, San Diego, California, USA.

35. *SPIE Photonics West 2013*, Program Committee Member (*Advanced Fabrication Technologies for Micro/Nano-Optics & Photonics VI*), February 2–7, 2013, San Francisco, California, USA.

36. *SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring 2013*, Conference Co-Chair (*Bioinspiration, Biomimetics, and Bioreplication III*), March 10–14, 2013, San Diego, California, USA.

37. *SPIE Optics & Photonics 2013*, Conference Co-Chair (*Nanostructured Thin Films VI*), Program Committee Member (*What is a Photon?-IV*), August 25–29, 2013, San Diego, California, USA.

38. *SPIE Photonics West 2014*, Program Committee Member (*Advanced Fabrication Technologies for Micro/Nano-Optics & Photonics VII*), February 1–6, 2014, San Francisco, California, USA.

39. *SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring 2014*, Conference Co-Chair (*Bioinspiration, Biomimetics, and Bioreplication IV*), March 9–13, 2014, San Diego, California, USA.

40. *SPIE Optics & Photonics 2014*, Conference Co-Chair (*Photonics Innovations and Solutions for Complex Environments and Systems*), Conference Co-Chair (*Nanostructured Thin Films VII*), August 17–21, 2014, San Diego, California, USA.

41. *SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring 2015*, Conference Co-Chair (*Bioinspiration, Biomimetics, and Bioreplication V*), March 8–12, 2015, San Diego, California, USA.

42. *SPIE Optics & Photonics 2015*, Conference Co-Chair (*Nanostructured Thin Films VIII*), Program Committee Member (*What is a Photon?-V*), August 9–13, 2015, San Diego, California, USA.

43. *SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring 2016*, Conference Co-Chair (*Bioinspiration, Biomimetics, and Bioreplication VI*), March 20–24, 2016, Las Vegas, Nevada, USA.

44. *SPIE Optics & Photonics 2016*, Conference Co-Chair (*Nanostructured Thin Films IX*), August 28–September 1, 2016, San Diego, California, USA.

45. *SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring 2017*, Conference Co-Chair (*Bioinspiration, Biomimetics, and Bioreplication VII*), March 25–29, 2017, Portland, Oregon, USA.

46. *IEEE International Microwave Symposium 2017*, Session Co-Organizer (*Future Prospects for Medical Devices, Metmaterials, and Communication Systems*), June 4–9, 2017, Honolulu, Hawaii, USA.

47. *SPIE Optics & Photonics 2017*, Conference Co-Chair (*Nanostructured Thin Films X*), August 6–10, 2017, San Diego, California, USA.

48. *SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring 2018*, Conference Chair (*Bioinspiration, Biomimetics, and Bioreplication VIII*), March 4–8, 2018, Denver, Colorado, USA.

49. *SPIE Optics & Photonics 2018*, Conference Co-Chair (*Nanostructured Thin Films XI*), August 19–23, 2018, San Diego, California, USA.

50. *SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring 2019*, Conference Co-Chair (*Bioinspiration, Biomimetics, and Bioreplication IX*), March 3–7, 2019, Denver, Colorado, USA.

51. *International Workshop on Thin Films for Electronics, Electro-Optics, Energy and Sensors (TFE3S)*, Co-Chair, June 24–26, 2019, Reykjavik, Iceland.

52. *SPIE Optics & Photonics 2019*, Program Committee Member (*Light in Nature VII*), August 11–15, 2019, San Diego, California, USA.

53. *SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring 2020 (Digital Forum)*, Conference Co-Chair (*Bioinspiration, Biomimetics, and Bioreplication X*), April 27–May 1, 2020, Online Only.

54. *SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring 2021 (Digital Forum)*, Conference Chair (*Bioinspiration, Biomimetics, and Bioreplication XI*), March 22–26, 2021, Online Only.

MEETINGS / WORKSHOPS ATTENDED (without presentations)

1. *Light and Color in the Atmosphere*, Optical Society of America, July 1990, Washington, DC, USA.

2. *Total Quality Workshop for COE Faculty*, Pennsylvania State University, May 12, 1992, University Park, PA, USA.

3. *1992 IEEE International Symposium on Electromagnetic Compatibility*, August 17–21, 1992, Anaheim, CA, USA.

4. *Technological Literacy Conference and Eighth Annual Meeting*, National Association for Science, Technology and Society, January 15–17, 1993, Arlington, VA, USA.

5. *Thermoplastic Waste Reduction*, Clemson University Office of Professional Development, February 9–10, 1993, Charlotte, NC, USA.

6. *From Nanoparticles to Nanocomposites: Processing, Performance and Toxicity*, University of Massachusetts at Lowell, June 15–18, 2009, Lowell, MA, USA.

7. *Techniques in Molecular Biology*, Pennsylvania State University, June 1–12, 2015, University Park, PA, USA.

8. *Climate Conversations*, Alan Alda Center for Communicating Science, Stony Brook University, November 15, 2021, online.

Principal Research Contributions

- **Frequency-Domain Scattering**: Investigated scattering of acoustic, electromagnetic, and elastodynamic waves by single objects, half spaces, slabs, and surface gratings. Devised the Iterative Extended Boundary Condition Method (IEBCM) for scattering by long slender objects, and devised a semi-analytic technique to overcome the Rayleigh hypothesis for scattering by surface gratings.
- **Time-Domain Scattering**: Discovered temporal evolution of the anatomy of the circular Bragg phenomenon. Formulated and investigated pulse scattering by relativistically moving targets.
- **Electrostatics**: Formulated Ewald–Oseen extinction theorem and T-matrix method for anisotropic objects
- **Surface-Wave Propagation**: Extended the concept of Dyakonov waves. Predicted and experimentally discovered Dyakonov-Tamm waves. First unambiguous observation of Uller-Zenneck waves (111 years after prediction). Initiated the concept of exceptional surface waves. Co-authored a recent book. Created the concepts of exceptional surface and composite waves.
- **Surface Multiplasmonics**: Initiated and established the principles for propagating multiple surface plasmon-polariton waves along just one metal/dielectric surface. Initiated and is developing applications for rapid multi-analyte biosensing.
- **Bianisotropic Materials**: Obtained analytic expressions for (i) electromagnetic Green functions for many types of bianisotropic materials, and (ii) singularities of the dyadic Green function of any bianisotropic material. Examined wave propagation in many types of bianisotropic materials. Co-authored one of only two books on the topic.
- **Isotropic Chiral Materials**: Developed the principles of frequency-domain electromagnetics in isotropic chiral materials: 2D and 1D dyadic Green functions, Huygens principle, Ewald-Oseen extinction theorem, surface equivalence principles, image principle, Bruggeman homogenization formalism, strong property fluctuation theory, T-matrix method, method of moments, coupled dipole method, etc. Wrote two fundamental books and compiled a published anthology of milestone papers. Extended the concept to acoustic chiral (hemitropic micropolar) solids.

- **Sculptured Thin Films**: Enunciated the concept of STFs. Initiated and established the principles of optics in chiral STFs: analytic solutions for wave propagation, matrix Green functions, canonical sources of radiation, nanoscopic-to-macroscopic structure-properties model, surface-wave propagation, and pulse shaping in the time domain. Initiated and is developing optical applications: polarization filters, other filters and integrated optical devices, optical biosensors, LEDs and lasers. Initiated and is developing biomedical applications: tissue culture substrates, free-standing films for conformal coatings for prostheses and for in-vivo tissue transplants, gradient panels for protein-binding assays, and coatings for bones. Co-authored the only book on STFs. Extended the concept of structural chirality to elastostatics, elastodynamics, and piezoelectric materials.
- **Composite Materials**: Theoretically extended homogenization theories to account for inclusion size, inclusion shape, and material complexity (isotropic chirality, linear bianisotropy, nonlinear bianisotropy). Determined analytical expressions for polarizability dyadics. Compiled a published anthology of milestone papers (1996) and co-authored a monograph in 2015.
- **Negative Refraction**: Created several key concepts: (i) nihility; (ii) simple equations to predict negative-phase-velocity propagation is isotropic dielectric-magnetic materials; (iii) counterposition; (iv) distinction between negative refraction, negative phase velocity, and counterposition; (v) negative reflection; (vi) negative phase velocity in relativistic scenarios, and (vii) particulate metamaterials to simulate gravitational metrics.
- **Solar Cells**: Applied surface multiplasmonics and biotexturing theory to solar cells. Devised a comprehensive optoelectronic model that predicts a 25% –50% increase in the efficiency of thin-film solar cells. Invented a single-junction, two-terminal, double-absorber thin-film solar with 34% efficiency predicted.
- **Machine Control**: Initiated the use of Mandelbrot sets to control machining processes, especially turning, which has been widely adopted by the industrial-engineering community. Co-authored perhaps the first eight papers in this area.
- **Bioreplication**: Enunciated the concept of bioreplication. Initiated and developed an industrially scalable technique for replication of biological surfaces, such as compound eyes of insects for solar-cell surfaces. Initiated and is optimizing a technique for rapid visualization of fingerprints and other impression evidence of forensic significance. Co-edited a recent book on engineered biomimicry.
- **Mimumes and Multicontrollable Materials**: Developing the bioinspired concepts of (i) microfibrous multifunctional metamaterials (mimumes) using Parylene C and (ii) multicontrollable structures using terahertz metasurfaces.
- **Forensic Science**: Devised and is developing columnar-thin-film assisted visualization of latent fingerprints on forensically relevant nonporous substrates. Combination with DNA analysis of CTF-entombed cells for doubly secure identification. Combined columnar-thin-film assisted visualization with two-color holography for 3D electronic storage.
- **Bone Nanoresurfacing**: Devised a technique for osteogenic nanoresurfacing of bones, with eventual use in transplants. US patent filed with co-inventor from Penn State Hershey.

Recent Media Coverage

Research Topic	*Media Coverage*
Solar Cells (2017-2021)	Big Ten News Network (2017); articles in several blogs in PhysOrg, PV-Magazine, SciTech Daily, Science Daily, Solar Daily, and Eureka Alert.
Bioreplication (2008–2016)	CNN TV Interview (2010); BBC Global Service Radio interview (2014); articles in several magazines including Laser Focus World (2008), MRS Bulletin (2008), Materials Today (2008), and Electronics For You (2011); articles in many blogs including Discovery News, MaterialsToday.com, Nanowerk Spotlight, Nanotechweb.org, Optics.org, Photonics.com, Physics World, Physorg.com, Smart Planet, and Wired Science.
Bioreplicated Decoys (2013–2015)	BBC Global Service Radio interview (2014); articles in many blogs and magazines including About, Bio-Medicine, Futurity, Nanowerk, Irrigation & Green Industry, and Plantwise.
Surface Multiplasmonics (2009)	Articles in many blogs including Nanotechnology Now, Nanowerk Spotlight, Sensors Insights, and Voice of Progress.
Surface Multiplasmonic Sensors (2013)	Articles in many blogs including Science Daily, Science News Online, Biospace, Physorg, and Nanowerk.
Negative Refractive Index (2009)	Articles in many blogs including Physics World, Optics.org, Optical Futures, Technology Review (MIT), and Voice of Progress.
Fingerprint Development (2010–2014)	Coverage in NOVA movie *Forensics on Trial* (Oct 17, 2012); WJAC TV newsitem (May 2010); Cover Illustration in Journal of Vacuum Science and Technology B (March/April 2014); articles in several blogs including Forensic Magazine, Police Professional, Medical News Today, Slideshare, and Nanowerk.
Bioinspired Waveplates (2011)	Articles in many blogs including Asian Scientist, Eureka Alert, MaterialsToday.com, MSNBC.com, Nanowerk, OSA Optics and Photonics News, and US News & World Report.
Bone Nanoresurfacing (2012)	Articles in many blogs including Eureka Alert, Futurity, Health Canal, Medical News Today, Medical Xpress, Nanowerk, and Science Daily.

Data on Publications and Presentations

No. of sole-authored books	1	No. of co-authored books	12
No. of sole-edited research books	5	No. of co-edited research books	9
No. of sole-edited special issues of journals	3	No. of co-edited special issues of journals	7
No. of sole-edited conference proceedings	1	No. of co-edited conference proceedings	31
No. of forewords and introductions to books	2	No. of journal editorials	20
No. of book reviews	27		

No. of sole-authored book chapters	9	No. of co-authored book chapters	25
No. of sole-authored journal publications (including regular papers, review papers, short papers, letters, and comments)	152	No. of co-authored journal publications (including regular papers, review papers, short papers, letters, and comments)	826
No. of citations (Web of Science; August 31, 2022)	18574	Hirsch index (Web of Science; August 31, 2022)	55
No. of citations (Google Scholar; August 31, 2022)	30704	Hirsch index (Google Scholar; August 31, 2022)	75

No. of sole-authored conference papers (Abstracts and Summaries)	53	No. of co-authored conference papers (Abstracts and Summaries)	154
No. of sole-authored conference papers (Full papers)	18	No. of co-authored conference papers (Full papers)	201
No. of seminars and presentations (ex Penn State)	126	No. of seminars and presentations (Penn State)	85

Classification of Research Areas (Journal Papers #1–#930)

Problem Class			**Journal Article No.**
Scattering by a Single Bound Object	Two-Dimensional Problems	Acoustic Scattering	73
		Electro-magnetic Scattering	73,117,139,140,153,169,181,184,333,568, 746,870
		Elastodynamic Scattering	73
	Three-Dimensional Problems	Acoustic Scattering	12,73,180,792
		Electro-magnetic Scattering	1-9,11-14,22,44,73,80,89,108,110,118, 124,134,147,150,154,166-168,171,172, 175,184,194,195,210,254,553,777,793, 827,883,893,908
		Elastodynamic Scattering	23,73,157,180
	Relativistic Scattering		847,862,867,869,887
Scattering by Multiple Bound Objects	Acoustic Scattering		73
	Electromagnetic Scattering		27,49,60,73
	Elastodynamic Scattering		25,30,41,65,73
Scattering by Surfaces and Slabs	Planar Geometry	Acoustic Scattering	229
		Electro-magnetic Scattering	28,70,76,78,87,104,106,113,122,131,136, 141,155,158,160, 162,174,189,197,227, 336,435,437,440,453,455,458,477,488, 489,500,501,508,537,618,628,688,710, 717,720,721,726,736,755,803,807,837, 890,891
		Elastodynamic Scattering	103,144,192,217,229,352
	Surface Gratings	Acoustic Scattering	16,18,20,21,39,73
		Electro-magnetic Scattering	19,31,35,38,47,73,91,123,165,191,304, 451,457,484,492,507,513,519,522,539, 546,607,718,734,743,747,758,791,811, 827,832,845,854,872,874,909,913,917,930
		Elastodynamic Scattering	15,16,40,42,56,57,73

		Atomic Scattering	24,73
	Photonic Crystals		692,731,754,767,841
		Structural Color	845,851
Wave Propagation	Acoustic Waves		183
	Electro-magnetic Waves		17,48,61,62,116,137,138,142,202,203, 205,213,225,232,233, 236,241,244,249, 267,273,277,291,296,316,338,345,354, 371,380,393,420,428,448,455,463,473, 475,481,483,486,487,523,538,548,569, 634,653,663,672,688,722,725,729,819, 821,829,841,866,899
	Elastodynamic Waves		183,216,239,249,264,288,307,372,405
Fluid Mechanics	Stokesian Flow		257,269,290
	Micropolar Fluids		636,659,774
Green Functions	Acoustic		79
	Electromagnetic		62,67,74,81,92,105,136,143,158,160,186, 243,262,292,550
	Elastodynamic		298
Fields in Materials	Dielectric Materials	Isotropic Materials	1-9,123,177,181,196,212,214, 220,249, 254,279,303,334,374, 608,628,634, 718,720,748
		Anisotropic Materials	67,71,74,80,90,92,95,142,148,165,188, 194,210,227,243,293, 303,323,333,402, 420,463,475,532,538,561,567,569,570, 577,597,608,622,626,629,630,717,721, 724,726,736,819,837,866
	Dielectric-Magnetic Materials	Isotropic Materials	14,70,113,173,189,226,432,528,534,539, 549,555,569,579,623
		Anisotropic Materials	81,94,122,135,149,167,191,205,266,281, 289,302,548,569, 620,637,737,777
	Isotropic Chiral Materials		17,22,28,30,43,44,49,50,54,55,59,61,62, 64,76-78,82,88,89, 91,100,102,105-107, 110,114-116,118,121,124-126,130,131, 133,134,136,139-143,146,148,153,155, 159,160,174,175,179,186,187,189,190, 193, 206,211,215,242,246,252, 265,268, 275,296,336,347,349,371,401,431,452, 467,510,570, 596,632,648,672,679,722, 829
	Nonlinear Isotropic Chiral		247,256,278,282,470,722

	Materials		
	Bi-isotropic Materials		145,150,162,163,169,171,178, 182,195, 230,234,237,248,261, 294,295,315,326
	Bianisotropic Materials		48,108,112,117,119,134,150,154,167, 168,170,172,184,195,199,200,218,221, 224,228,231,235,238,250,251,253,269, 271, 272,280,284,285,297,300,301,318, 319,321,324,329,332,335,354,387,389, 391,393,395,409,411,428,430,476,496, 515,523, 535,541,569,577,606,653,660, 672,688,746,793,848,883,887,890,893, 908
		Magneto-photonic Crystals	502,503,605,647
	Structurally Chiral Materials	Linear Electromagnetic Phenomenons	71,148,203,205,213,225,232,233,236, 241,262,273,276,277, 286,291,292,310, 314,316,317,320,322,338,343,345,351, 356,357,361-363,367,371,373,377,380, 382,384,386,388,391,394,396-399,403, 404,406,408,410,413,421,423,425,427, 429,433,435,439-442,445,447,448,450, 451,454,457,459-462,466,467,471,477, 481,488,489,497,500,501,508,517,519, 521,525,526,527,530,543, 561,562,565, 566,569, 572,573,580,583,587,589,592, 593,595,600,602,610,615-617,621,626, 633,647,655,656,664,668,671,672,676, 684,688,701,703-705,769,780,782,784, 785,795,807,822,823,826,843,852,892, 904
		Nonlinear Electromagnetic Phenomenons	283,330,685
		Electro-Optic Control	543,551,552,556,561,562,565,573,603, 615-617,626,705,850
		Time Domain	384,391,394,396,399,408,426,439,468, 521,566,580
		Elastodynamic Phenomenons	144,216,239,381,385,438
		Piezoelectric Phenomenons	249,264,288,298,307,352,372,390,405, 464,542
	Negative Phase Velocity, Etc.	Isotropic Achiral	422,432,436,437,443,444,449,458,469, 484,486,487,491,492, 495,507,513,534, 537,549,553,560,563,569,571,581,598, 601,607,623,634,639,661,667,689,712, 725
		Isotropic Chiral	28,431,596

		(Bi)Anisotropic	429,455,466,473,476,483,522, 523,538, 546,569,619,620,643,653,663,672,897
		Relativistic Issues	491,494,498,511,512,514,516,524,531, 547,571,579,581,588,596,604,634,661, 666,675
	Electro-Optic Materials		543,551,552,556,561,562,565,573,576, 586,603,608,615-617,622,626,803,850
	Topological Insulators		824,835,837,843,854,891,915
	Piezoelectric Materials		25,459
	Hemitropic Micropolar Solids		37,103,157,180,217,229
Sculptured Thin Films			274,312,313,348,369,415,416,424,479, 480,499,504,569,590,603,677,758, 864
	Columnar Thin Films		227,337,346,358,386,482,490,564,570, 614,629,635,638,652,669,673,683,717, 797,799,800,801,802,804,816,818,841, 864,866,913,915,917
	Sculptured Nematic Thin Films		267,305,306,311,331,518,630,649,650, 662,674,687,691,698,700,726,753,770, 875
	Chiral Thin Films	Frequency Domain	262,286,310,314,316,317,320,322, 338-340,343,351,353,356-358,360,362, 363,367,368,370,371,373,376,377,380, 382,383,386,388,397,398,400,403,404, 406,410,419,423,425,427,433,435, 439-442,445, 447,450-452,454,457, 459-462,467,471,472,477,488,489,493, 497,500,501,508,517,519, 521,526,527, 530,544,558,559,566,572,573,580,583, 585,587, 589,591-593,595,600,602,603, 610,611,615,621,633,655,656,664,668, 671,676,684,701,716,721,724,733,751, 752,760,765,780,785,795,807,822,823, 826,838,839,852,863,877,881,904
		Time Domain	394,396,408,426,439,468,521,566,580, 785
	Devices		317,328,331,340,344,353,355,357,358, 360,366,373,376,377, 383,386,388,403, 410,419,445,450,471,482,493,500,517, 518,530,544,551,556,557,559,564,573, 583,591,592,603,610,611,615,676,685, 716,732,733,751,785,795,800,826,838, 839
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97. J. Xu, F. Zhang, **A. Lakhtakia** & S. M. Pursel, 'Circularly polarized emission from colloidal nanocrystal quantum dots confined in sculptured thin film based microcavities,' *OSA Topical Conference on Nanophotonics*, Hangzhou, People's Republic of China, June 18–21, 2007.

98.* **A. Lakhtakia**, 'Surface-plasmon wave at the planar interface of a metal film and a chiral sculptured thin film,' *5th Symposium on Photonics, Networks and Computing*, Salt Lake City, UT, USA, July 18–20, 2007.

99.*** **A. Lakhtakia**, 'Brave new nanoworld, without apologies to Aldous Huxley,' *Plenary on NanoScience and Engineering, Optics and Photonics 2007 (SPIE),* San Diego, CA, USA, August 26–30, 2007.

100. J.B. Geddes III, T.G. Mackay & **A. Lakhtakia**, 'Determination of sign of refractive index of active media via time–domain calculation,' *Frontiers in Optics 2007 (OSA)*, San Diego, CA, USA, September 16–20, 2007.

101. D. Farber, M.T. Pietrucha & **A. Lakhtakia**, 'Systems and scenarios for a philosophy of engineering,' *WPE–2007 Workshop on Philosophy and Engineering*, Delft University of Technology, Delft, The Netherlands, October 29–31, 2007.

102.* **A. Lakhtakia**, 'Sculptured thin films exemplify nanostructured metamaterials,' *Chandra S. Vikram Memorial Lectures*, Huntsville Electro-Optics Society, Huntsville, AL, USA, February 28, 2008.

103. *** **A. Lakhtakia**, 'Elastodynamics of inorganic and polymeric sculptured thin films,' *7th Iberian Vacuum Meeting* and *5th European Topical Conference on Hard Coatings*,

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* Invited
* Invited
* Invited
*** Plenary Address
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*** Plenary Address

Universidade Nova de Lisboa, Caparica, Portugal, June 23–25, 2008.

104. T.G. Mackay & **A. Lakhtakia**, 'Electro-optic particulate composite materials,' *Photon 08*, Heriot-Watt University, Edinburgh, UK, August 26–29, 2008.

105. A.J. Duncan, T.G. Mackay & **A. Lakhtakia**, 'On conventional approaches to homogenization applied to unconventional composite materials,' *Photon 08*, Heriot-Watt University, Edinburgh, UK, August 26–29, 2008.

106.[*] I. Abdulhalim, A. Karabchevky, J. Xu, C. Patzig, F. Zhang, A. Lahav, **A. Lakhtakia** & B. Rauschenbach, 'Towards the biosensing applications of metallic sculptured thin films,' *1st Mediterranean Conference on Nano-Photonics: MediNano-1*, Istanbul, Turkey, October 6–7, 2008.

107.[*] **A. Lakhtakia**, 'Sculptured thin films: Something old, something new, something borrowed, something blue,' *55th International Symposium and Exhibition, American Vacuum Society*, Boston, MA, USA, October 19–24, 2008.

108. A. Sharma, C.E. Bakis, **A. Lakhtakia** & K.-w. Wang, 'Electric field distribution to effectively align carbon nanofibers in epoxy composites,' *International Mechanical Engineering Congress and Exposition, American Society of Mechanical Engineers*, Boston, MA, USA, October 31–November 6, 2008.

109.[****] **A. Lakhtakia**, 'Sculptured thin films as nanoengineered metamaterials,' *Photonics 2008: International Conference on Fiber Optics and Photonics*, New Delhi, India, December 14–17, 2008.

110. J. Mease, T. Gilani & **A. Lakhtakia**, 'Spectral calculations for columnar thin films deposited on periodically decorated substrates,' *2009 March Meeting of the American Physical Society*, Pittsburgh, PA, USA, March 16–20, 2009.

111. F. Zhang, C. Zhang, J. Xu & **A. Lakhtakia**, 'Stable circularly-polarized emission from vertical-cavity surface-emitting lasers,' *CLEO 09: Conference on Lasers and Electro-Optics*, Baltimore, MD, USA, May 31–June 5, 2009.

112. Y.J. Jen, **A. Lakhtakia** & C.W. Yu, 'A glancing angle deposited metamaterial thin film,' *Nanophotonics and Meta-Materials 2009*, Department of Physics, National Taiwan University, Taipei, Taiwan, April 29–May 1, 2009.

113.[*] **A. Lakhtakia**, 'Sculptured thin films: Nanoengineered metamaterials,' *2009 Symposium on Nano-sculptured Optical Thin Films*, Department of Electro-optical Engineering, National Taipei University of Technology, Taipei, Taiwan, May 13, 2009.

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[*] Invited
[*] Invited
[****] Invited Tutorial Lecture
[*] Invited

114. [*]**A. Lakhtakia**, 'Replication of bugs' eyes and wings, etc.,' *2009 Symposium on Nano-sculptured Optical Thin Films*, Department of Electro-optical Engineering, National Taipei University of Technology, Taipei, Taiwan, May 13, 2009.

115. J. Han, **A. Lakhtakia**, Z. Tian, J. Gu, X. Lu & W. Zhang, 'Terahertz semiconductor metamaterials for magnetostatic and thermal tunability,' *CLEO 09: Conference on Lasers and Electro-Optics*, Baltimore, MD, USA, May 31–June 5, 2009.

116. [*] **A. Lakhtakia**, 'Nanoengineering, metamaterials, and sculptured thin films,' *Annual Conference of Society for Experimental Mechanics*, Albuquerque, NM, USA, June 1–4, 2009.

117. [*] **A. Lakhtakia**, 'Thin-film metamaterials called sculptured thin films,' *Joint IFIN-HH/ICTP/IAEA Workshop on Trends in Nanoscience: Theory, Experiment, Technology*, Sibiu, Romania, August 23–30, 2009.

118. [x] **A. Lakhtakia**, 'Nanotechnology and metamaterials: A marriage made in heaven,' *XXIV URSI Spanish National Symposium*, Santander, Spain, September 16–18, 2009.

119. D.P. Pulsifer, **A. Lakhtakia** & R.J. Martín-Palma, 'Towards the development of optical biomimetic devices,' *NanoSpain2010*, Malaga, Spain, March 23–26, 2010.

120. [**]**A. Lakhtakia**, 'What is needed to excite multiple surface plasmon polariton waves at a given frequency,' *Annual Conference of Society for Experimental Mechanics*, Indianapolis, IN, USA, June 7–10, 2010.

121. [*] G.Ya. Slepyan, M.V. Shuba, S.A. Maksimenko, C. Thomsen & **A. Lakhtakia**, 'Electromagnetic properties of composite materials containing carbon nanotubes,' *URSI 20th Triennial International Symposium on Electromagnetic Theory*, Berlin, Germany, August 16–19, 2010.

122. [*] T.G. Mackay & **A. Lakhtakia**, 'A plethora of negative-refraction phenomenons in relativistic and non-relativistic scenarios,' *URSI 20th Triennial International Symposium on Electromagnetic Theory*, Berlin, Germany, August 16–19, 2010 [corrected version: arxiv:1008.4282v1].

123. A.M. Nemilentsau, G.Ya. Slepyan, S.A. Maksimenko, **A. Lakhtakia** & S.V. Rotkin, 'Influence of a finite-length metallic carbon nanotube on the spontaneous decay of an emitter's excited state,' *3rd International Workshop on Theoretical and Computational Nano-Photonics*, Physikzentrum, Bad Honnef, Germany, November 3–5, 2010 [doi:10.1063/1.3506135].

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[*] Invited
[*] Invited
[*] Invited
[x] Inaugural Lecture
[**] Keynote Lecture
[*] Invited
[*] Invited

124. S.V. Rotkin, A.M. Nemilentsau, G.Ya. Slepyan, S.A. Maksimenko & **A. Lakhtakia**, 'Near-field 1D probes with single-wall nanotube antennas,' *219th Meeting of the Electrochemical Society*, Montreal, Canada, May 1–6, 2011.

125.[*] S.A. Muhlberger, D.P. Pulsifer, **A. Lakhtakia** & R.C. Shaler, 'Optimized deposition of columnar thin films for visualization of latent fingerprints,' *Nanoelectronic Devices for Defense & Security Conference*, Polytechnic Institute of New York University, Brooklyn, NY, USA, August 29–September 1, 2011.

126. S.A. Muhlberger, D.P. Pulsifer, R.J. Martín-Palma, R.C. Shaler & **A. Lakhtakia**, 'Optimized deposition of columnar thin films for visualization of latent fingerprints,' *39th Annual Symposium of American Society of Crime Laboratory Directors*, Denver, CO, USA, September 18–22, 2011 (Poster).

127. D.P. Pulsifer, S.A. Muhlberger, R.J. Martín-Palma, R.C. Shaler & **A. Lakhtakia**, 'Optimal conditions for visualization of fingerprints with the conformal-evaporated-film-by-rotation technique,' *58th Annual International Symposium of American Vacuum Society*, Nashville, TN, USA, October 30–November 4, 2011.

128. A.E. Loiselle, L. Wei, G. Lewis, E.M. Paul, **A. Lakhtakia** & H.J. Donahue, 'Resurfacing bone with a specific-scale hydroxyapatite nanotopographic coating enhances cortical bone graft healing,' *TERMIS North America 2011 Annual Conference and Exposition*, Houston, TX, USA, December 11–14, 2011 (Poster).

129. S. Muhlberger, R. Shaler, **A. Lakhtakia**, D. Pulsifer & R. Martín-Palma, 'Visualization of latent fingerprints using columnar thin films,' *64th Annual Scientific Meeting of American Academy of Forensic Sciences*, Atlanta, GA, USA, February 20–25, 2012.

130.[*] **A. Lakhtakia**, 'Sculptured thin films as nanoengineered metamaterials,' *XIV Simposio Internacional de Física: Física del Mañana*, Instituto Tecnológico y de Estudios Superiores de Monterrey, Monterrey, Nuevo León, Mexico, February 23–25, 2012.

131.[y] **A. Lakhtakia**, 'Surface multiplasmonics,' *FANEM' 12: Fundamental and Applied NanoElectroMagnetics,* Belarusian State University, Minsk, Belarus, May 22–25, 2012.

132. M. Shuba, A. Paddubskaya, A. Plushch, P. Kuzhir, G. Slepyan, S. Maksimenko, V. Ksenevich, P. Buka, D. Seliuta, J. Macutkevic, G. Valusis & **A. Lakhtakia**, 'Localized plasmon resonance in composite materials containing single-wall carbon nanotubes: theory and experiments,' *FANEM' 12: Fundamental and Applied NanoElectroMagnetics,* Belarusian State University, Minsk, Belarus, May 22–25, 2012.

133. M.V. Shuba, A.G. Paddubskaya, P.P. Kuzhir, S.A. Maksimenko, G.Y. Slepyan, V.K. Ksenevich, P. Buka, D. Seliuta, I. Kasalynas, J. Macutkevic, G. Valusis, C. Thomsen & **A. Lakhtakia**, 'Carbon nanotube antenna: Theory and experimental detection in thin

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[*] Invited
[*] Invited
[y] Key Lecture

composite films,' *3rd International Workshop on Nanocarbon Photonics and Optoelectronics,* University of Eastern Finland, Joensuu, Finland, July 29–August 4, 2012.

134. H. Reisman, D.P. Pulsifer, V. Torres-Costa, R.J. Martín-Palma, **A. Lakhtakia** & I. Abdulhalim, 'Alignment of liquid crystals in nanoporous photonic crystals,' *24th International Liquid Crystal Conference,* Mainz, Germany, August 19–24, 2012.

135.[z] **A. Lakhtakia**, 'Nanotechnology and metamaterials: Conceptualization and intersection for new opportunities,' *10th IEEE International Conference on Semiconductor Electronics,* Kuala Lumpur, Malaysia, September 19–21, 2012.

136.[***]**A. Lakhtakia**, 'Sculptured thin films: Nanoengineered metamaterials,' *Nanosciences Symposium, 2012 Nebraska Research & Innovation Conference*, University of Nebraska at Lincoln, Lincoln, NE, USA, October 9, 2012.

137.[*] **A. Lakhtakia** & R.J. Martín-Palma, 'Bioinspiration, biomimetics, and bioreplication for harvesting solar energy,' *OSA Frontiers in Optics Conference*, Rochester, NY, USA, October 14–18, 2012.

138. S.F. Williams, R.C. Shaler, D.P. Pulsifer & **A. Lakhtakia**, 'Visualizing latent fingerprints using columnar thin films,' *2012 Annual Meeting of North East Association of Forensic Scientists*, Saratoga Springs, NY, USA, October 12–17, 2012.

139.[aa] **A. Lakhtakia**, 'Sculptured thin films as nanoengineered metamaterials,' *1st IITG OSA Chapter Workshop on Optics*, Indian Institute of Technology Guwahati, Guwahati, India, November 15–17, 2012.

140.[bb]**A. Lakhtakia**, 'Engineered biomimicry for optics,' *1st IITG OSA Chapter Workshop on Optics*, Indian Institute of Technology Guwahati, Guwahati, India, November 15–17, 2012.

141.[*] I. Abdulhalim**,** H. Reisman, D.P. Pulsifer, V. Torres-Costa, R.J. Martín-Palma & **A. Lakhtakia**, 'Liquid crystals alignment in nanoporous photonic crystals,*' COINAPO (Composites Materials of Inorganic Nanotubes and Polymers) 2012 Meeting: Nanocomposites of Inorganic Fullerenes/Nanotubes, Their Characterization, Properties & Testing,* Weizmann Institute of Science, Tel Aviv, Israel, November 19–21, 2012.

142. M.J. Domingue, D.P. Pulsifer, Z. Imrei, G. Csóka, **A. Lakhtakia**, V.C. Mastro & T.C. Baker, 'Field trapping of European oak *Agrilus* species using nanofabricated beetle

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[z] Keynote Lecture
[***] Plenary Address
[*] Invited
[aa] Key Lecture
[bb] Key Lecture
[*] Invited

decoys,' *24th USDA Interagency Research Forum on Invasive Species*, Lower Annapolis, MD, USA, January 8–11, 2013.

143. S.F. Williams, R. Shaler, D. Pulsifer & **A. Lakhtakia**, 'Visualization of depleted latent fingerprints using columnar thin films,' *65th Annual Scientific Meeting of American Academy of Forensic Sciences*, Washington, DC, USA, February 18–23, 2013.

144. A.S. Hall, M. Faryad, G.D. Barber, L. Liu, M. Solano, T.S. Mayer, **A. Lakhtakia**, P. Monk & T.E. Mallouk, 'Nanostructures for improving the spectral response of photovoltaic cells,' *CleanTech Conference and Showcase 2013*, Washington, DC, USA, May12–16, 2013.

145.* **A. Lakhtakia**, 'Bountiful surface waves with sculptured thin films,' *OSA Optical Interference Coatings 2013*, Whistler, BC, Canada, June 16–21, 2013.

146. D. Lee, **A. Lakhtakia**, G. Strout & S. Russell, 'Preferential circularly polarized reflection by adaxial epidermal walls of iridescent plants,' *BSA Botany 2013*, New Orleans, LA, USA, July 27–31, 2013.

147.* **A. Lakhtakia**, 'Surface multiplasmonics and Dyakonov-Tamm waves,' *Metamaterials and Photonic Nanostructures*, Indian Institute of Technology Kanpur, Kanpur, India, August 16–17, 2013.

148. M.J. Domingue, **A. Lakhtakia**, T.C. Baker & D. Pulsifer, 'A recharged effort at non-sticky alternatives for buprestid trapping,' *61st Annual Meeting of Entomological Society of America*, Austin, TX, USA, November 10–13, 2013.

149. M.J. Domingue, D.P. Pulsifer, **A. Lakhtakia**, V.C. Mastro & T.C. Baker, 'Nanofabricated decoys used in an electrocution for emerald ash borer and other *Agrilus* spp.,' *25th USDA Interagency Research Forum on Invasive Species*, Lower Annapolis, MD, USA, January 7–10, 2014.

150. N.L. Tsitsas, **A. Lakhtakia** & D.J. Frantzeskakis, 'Nonlinear waves in a homogenized two-phase particulate composite medium,' *SIAM Conference on Nonlinear Waves and Coherent Structures*, Churchill College, University of Cambridge, Cambridge, United Kingdom, August 11–14, 2014.

151. M. Solano, M. Faryad, **A. Lakhtakia** & P. Monk, 'Performance of RCWA and a FE method in simulations of photovoltaic devices,' *Latest Advances in Numerical Solutions with FEM. On the Occasion of Rodolfo Rodríguez's 60th Birthday*, Hotel Cumbres, Puerto Varas, Chile, September 3–5, 2014.

152. Z. Goecker, S. E. Swiontek, **A. Lakhtakia** & R. Roy, 'Columnar-thin-film assisted visualization of environmentally insulted fingerprints, and DNA degradation analysis,' *25th International Symposium on Human Identification*, Phoenix, AZ, USA, September 29–October 2, 2014 (Poster).

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153. S.L. Plazibat, S. E. Swiontek, **A. Lakhtakia** & R. Roy, 'DNA profiles from fingerprints wetted with body fluids and developed by the columnar thin film method,' *25th International Symposium on Human Identification*, Phoenix, AZ, USA, September 29–October 2, 2014 (Poster).

154. I.H. Khawaji, C. Chindam, W. Orfali, **A. Lakhtakia** & O.O. Awadelkarim, 'The effects of morphology on the dielectric and mechanical properties of Parylene-C microfibrous thin films,' *226th Meeting of the Electrochemical Society*, Cancun, Mexico, October 5–9, 2014.

155.[cc] **A. Lakhtakia**, 'Mimumes,' *Materials Science & Technology 2014*, Pittsburgh, PA, USA, October 12–16, 2014.

156. C. Chindam, N. Brown, O.O. Awadelkarim, W. Orfali & **A. Lakhtakia**, 'Mechanical properties of microfibrous films of Parylene C for acoustic applications,' *Materials Science & Technology 2014*, Pittsburgh, PA, USA, October 12–16, 2014.

157. Z.C. Goecker, S.E. Swiontek, **A. Lakhtakia** & R. Roy, 'Development and preservation of environmentally insulted fingerprints through the use of columnar thin films,' *124th Seminar of the California Association of Criminalists*, Rohnert Park, CA, USA, October 20–24, 2014.

158. S.L. Plazibat, S.E. Swiontek, **A. Lakhtakia** & R. Roy, 'Columnar-thin-film development technique allows for generation of DNA profiles from fingerprints,' *2014 Annual Meeting of North East Association of Forensic Scientists*, Hershey, PA, USA, November 3–6, 2014.

159.[*] **A. Lakhtakia**, 'Nanoengineered metamaterials,' *International OSA Network of Students (IONS) Asia 6 Conference*, Indian Institute of Technology Kharagpur, Kharagpur, India, December 10–12, 2014.

160.[***] **A. Lakhtakia**, 'An optical tale of seduction and worse,' *International OSA Network of Students (IONS) Asia 6 Conference*, Indian Institute of Technology Kharagpur, Kharagpur, India, December 10–12, 2014.

161. J. Dutta, S.A. Ramakrishna & **A. Lakhtakia**, 'Surface-plasmon-polariton dispersions from metallic columnar thin film deposited on 2D dielectric grating,' *Photonics 2014: 12th International Conference on Fiber Optics and Photonics*, Indian Institute of Technology Kharagpur, Kharagpur, India, December 13–16, 2014.

162. S.L. Plazibat, S.E. Swiontek, **A. Lakhtakia** & R. Roy, 'White-light vs. shortwave-ultraviolet illumination for visualizing fingerprints developed with columnar thin films of Alq_3,' *67th Annual Scientific Meeting of American Academy of Forensic Sciences*, Orlando, FL, USA, February 16–21, 2015 (Poster).

[cc] Keynote
[*] Invited
[***] Plenary Address

163. S.L. Plazibat, Z. Goecker, S.E. Swiontek, **A. Lakhtakia** & R. Roy, 'DNA profile from a fingerprint developed with a columnar thin film,' *67th Annual Scientific Meeting of American Academy of Forensic Sciences*, Orlando, FL, USA, February 16–21, 2015.

164.[*] **A. Lakhtakia**, 'Mimumes–Materials for the future,' *OMAINTEC 2015: 13th International Operations and Maintenance Conference*, Cairo, Egypt, November 17–19, 2015.

165. C. Chindam, N.M. Wonderling, **A. Lakhtakia**, O.O. Awadelkarim & W. Orfali, 'Columnar multifunctional microfibrous Parylene-C thin films: Microfiber inclination, crystallinity, and water wettability,' *2015 Fall Meeting of the Materials Research Society*, Boston, MA, USA, November 29–December 4, 2015.

166. **A. Lakhtakia**, P. Monk & M. Solano, 'Numerical simulations of photovoltaic solar cells,' *Mathematics of Finite Elements and Applications 2016*, Brunel University London, London, United Kingdom, June 14–17, 2016.

167. T. Garner, **A. Lakhtakia**, J. Breakall & C. Bohren, 'Time-domain electromagnetic scattering by uniformly moving spheres,' *2016 URSI/USNC National Radio Science Meeting*, Fajardo, Puerto Rico, USA, June 26–July 01, 2016.

168. A.E. Serebryannikov, **A. Lakhtakia** & E. Ozbay, 'Single and coupled metasurfaces for tunable polarization-sensitive terahertz filters,' *NUSOD 2016: 16th International Conference on Numerical Simulation of Optoelectronic Devices*, University of Sydney, Sydney, Australia, July 11–15, 2016.

169.[*] T.G. Mackay & **A. Lakhtakia**, 'Classical electromagnetic scattering response of topological insulators,' *META'16: 7th International Conference on Metamaterials, Photonic Crystals and Plasmonics*, Malaga, Spain, July 25–28, 2016.

170.[dd] **A. Lakhtakia**, 'Filamentary materials for optics, terahertz, acoustics, forensics, and biomimicry,' *Sigma Xi Annual Meeting and Student Research Conference*, Atlanta, GA, USA, November 10–13, 2016.

171.[ee] **A. Lakhtakia**, 'Nonplasmonic surface waves—Simple and compound,' *International Conference on Light and Light Based Technologies, XL Conference of the Optical Society of India*, Tezpur University, Assam, India, November 26–28, 2016.

172. T.H. Anderson, **A. Lakhtakia** & T.G. Mackay, 'Optoelectronic finite-element simulations of nonhomogeneous thin-film solar cells,' *Waves 2017: 13th International Conference on Mathematical and Numerical Aspects of Wave Propagation*, Minneapolis, MN, USA, May 15–19, 2017.

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[*] Invited
[*] Invited
[dd] Walston Chubb Keynote Lecture
[ee] Plenary Lecture, delivered via Skype

173. **A. Lakhtakia**, 'The extended boundary condition method for terahertz scattering by three-dimensional objects with topologically insulating surface states,' *IEEE International Microwave Symposium 2017*, Honolulu, Hawaii, USA, June 4–9, 2017.

174. [***]**A. Lakhtakia**, 'Mimumes: Material architecture for a sustainable world,' *2nd International Workshop on Thin Films for Electronics, Electrooptics, Energy and Sensors*, University of Dayton Research Institute, Dayton, Ohio, USA, June 25–27, 2017.

175. [*] **A. Lakhtakia**, 'Not all butterflies have colorful wings,' *SPIE Conference 10367: Light in Nature VI*, San Diego, CA, USA, August 7, 2017.

176. I.H. Khawaji, C. Chindam, O.O. Awadelkarim & **A. Lakhtakia**, 'Engineering the dielectric and mechanical properties of Parylene-C columnar microfibrous thin films by controlling the deposition angle,' *Materials Science & Technology 2017*, Pittsburgh, Pennsylvania, USA, September 8–12, 2017.

177. [ff]**A. Lakhtakia**, 'Multicontrollable metasurfaces,' *International Conference on Advanced Optics and Photonics, XLI Conference of the Optical Society of India*, Guru Jambeshwar University of Science and Technology, Hisar, Haryana, India, November 22–25, 2017.

178. [gg] **A. Lakhtakia**, 'Who stole from the cookie jar?,' *SPIE Conference 10593*: *Bioinspiration, Biomimetics, and Bioreplication 2018*, Denver, Colorado, USA, March 6, 2018.

179. **A. Lakhtakia**, 'Electromagnetic surface waves: Riding two horses while straddling a fence,' *Industrial Affiliates Symposium, CREOL–College of Optics and Photonics, University of Central Florida*, Orlando, Florida, USA, April 20, 2018.

180. F. Chiadini, V. Fiumara, **A. Lakhtakia**, T.G. Mackay & A. Scaglione, 'Thermal effects in Tamm-wave propagation,' *Fotonica 2018,* Lecce, Italy, May 23–25, 2018.

181. F. Chiadini, A. Diovisalvi, V. Fiumara & **A. Lakhtakia**, 'Bilaterally asymmetric reflection and transmission by a topological insulator atop a grating structure,' *Fotonica 2018,* Lecce, Italy, May 23–25, 2018.

182. R. Agrahari, **A. Lakhtakia** & P.K. Jain, 'Scattering of surface-plasmon-polariton wave by an abrupt discontinuity,' *2018 USNC-URSI Radio Science Meeting*, Boston, Massachussetts, USA, July 8–13, 2018.

183. T.M. Tiedge, N. Nagachar, **A. Lakhtakia** & R. Roy, 'Massively parallel sequencing and short tandem repeat analysis from DNA from partial bloody fingerprints developed

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[***] Plenary Lecture
[*] Invited
[ff] Plenary Lecture
[gg] Replacement Paper

with nanotechnology,' *29th International Symposium on Human Identification*, Phoenix, AZ, USA, September 29–27, 2018 (Poster).

184. T.M. Tiedge, N. Nagachar, **A. Lakhtakia** & R. Roy, 'Massively parallel sequencing (MPS) and short tandem repeat (STR) analysis of human DNA from partial bloody fingerprints enhanced with columnar thin films (CTF),' *71st Annual Scientific Meeting of American Academy of Forensic Sciences*, Baltimore, MD, USA, February 18–23, 2019.

185. Y.P. Li, X.Y. Li, M.K. Lei & **A. Lakhtakia**, 'Biomimetic nanostructures on various polymer surfaces by plasma nanotexturing,' *SPIE Conference 10965*: *Bioinspiration, Biomimetics, and Bioreplication IX*, Denver, Colorado, USA, March 3–7, 2019.

186. X.Y. Li, Y.P. Li, I. Muzammil, X. Liu, M.K. Lei & **A. Lakhtakia**, 'Repel high-speed waterdrops for polyethylene nanowire bundles by plasma nanotexturing,' *SPIE Conference 10965*: *Bioinspiration, Biomimetics, and Bioreplication IX*, Denver, Colorado, USA, March 3–7, 2019 (Poster).

187. S. Rai, S. Bhattacharyya & **A. Lakhtakia**, 'Pixelated metasurfaces for terahertz absorption and polarization conversion,' *URSI Asia-Pacific Radio Science Conference*, New Delhi, India, March 9–15, 2019. [doi: 10.23919/URSIAP-RASC.2019.8738754].

188. T.M. Tiedge, M. McCormick, P.D. McAtee, N. Nagachar, **A. Lakhtakia** & R. Roy, 'Massively parallel sequencing of DNA obtained from partial bloody fingerprints enhanced with CTF nanotechnology,' *11th ISABS Conference on Forensic and Anthropological Genetics*, Split, Croatia, June 17–22, 2019 (Poster).

189. T.M. Tiedge, M. McCormick, **A. Lakhtakia** & R. Roy, 'High-throughput DNA sequencing of cold-weather-insulted fingerprints after visualization with the nanoscale columnar-thin-film technique,' *11th ISABS Conference on Forensic and Anthropological Genetics*, Split, Croatia, June 17–22, 2019 (Poster and Short Presentation).

190. [***]**A. Lakhtakia**, 'Materials for multifunctionality and multicontrollability,' *International OSA Network of Students (IONS) Conference and Escuela Latinoamericana de Óptica*, Universidade Campinas, Campinas, Brazil, July 22–25, 2019.

191. [*] **A. Lakhtakia**, 'Electromagnetic surface waves I,' *International OSA Network of Students (IONS) Conference and Escuela Latinoamericana de Óptica*, Universidade Campinas, Campinas, Brazil, July 22–25, 2019.

192. [*] **A. Lakhtakia**, 'Electromagnetic surface waves II,' *International OSA Network of Students (IONS) Conference and Escuela Latinoamericana de Óptica*, Universidade Campinas, Campinas, Brazil, July 22–25, 2019.

[***] Plenary Lecture
[*] Invited
[*] Invited

193.* T.G. Mackay & **A. Lakhtakia**, 'Simultaneous amplification and attenuation of plane waves and surface waves possible using nanoengineered materials,' *META 2019: 10th International Conference on Metamaterials, Photonic Crystals and Plasmonics*, Institute Superior Técnico, Lisbon, Portugal, July 23–26, 2019.

194. A.E. Serebryannikov, **A. Lakhtakia** & G.A.E. Vandenbosch, 'Exploiting the vacuum state in materials with plasmonic-to-dielectric state transition in terahertz gratings and metasurfaces,' *META 2019: 10th International Conference on Metamaterials, Photonic Crystals and Plasmonics*, Institute Superior Técnico, Lisbon, Portugal, July 23–26, 2019.

195. F. Ahmad & **A. Lakhtakia**, 'Optoelectronically optimized nonhomogeneous thin-film solar cells,' *Research to Action: The Science of Drawdown*, Pennsylvania State University, State College, PA, USA, September 16–18, 2019.

196.* **A. Lakhtakia**, 'Optoelectronic modeling of thin-film solar cells,' *XIII Encuentro/Encontro Ibérico de Electromagnetismo Computacional*, Centro de Estudios Lebaniegos, Potes, Cantabria, Spain, October 15–18, 2019.

197. R. Agrahari, **A. Lakhtakia** & P.K. Jain, 'Information transfer by surface-plasmon-polariton wave propagating on silver/silicon interface,' *2020 URSI Regional Conference on Radio Science*, Indian Institute of Technology (BHU), Varanasi, India, February 12–14, 2020. [doi: 10.23919/URSIRCRS49211.2020.9113570]

198.* **A. Lakhtakia**, 'Multicontrollable metasurfaces,' *IEEE Research and Applications of Photonics in Defence 2020*, Virtual Conference, August 10–12, 2020.

199. **A. Lakhtakia**, 'Double-absorber thin-film solar cells exceeding 30% in efficiency,' *2021 Online Joint Symposium of The Pennsylvania State University and National Taipei University of Technology*, March 28–30 (USA), March 29–31 (Taiwan), 2021. https://www.youtube.com/watch?v=Tho-meh9EWc

200. P. Monk, B. Civiletti & **A. Lakhtakia**, 'Transformation optics and RCWA for photonics,' *International Conference on Spectral and High Order Methods (ICOSAHOM 2020)*, Vienna, Austria (Online), July 12–16, 2021.

201. B. Civiletti, P.B. Monk & **A. Lakhtakia**, 'A hybrid coordinate transform method for electromagnetic scattering by a grating,' *Annual Meeting of Society of Industrial and Applied Mathematics Methods (AN21)*, Spokane, WA, USA (Online), July 19–23, 2021.

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62. **A. Lakhtakia**, 'Negative-phase-velocity electromagnetic waves and gravitation,' Dipartimento di Ingegneria dell'Informazione ed Ingegneria Elettrica, Universitá degli Studi di Salerno, Fisciano (Italy), March 4, 2005.

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64. **A. Lakhtakia,** 'Negative phase velocity and relativity,' SPIE Student Chapter, Pennsylvania State University, University Park, PA (USA), April 19, 2005.

65. **A. Lakhtakia,** 'Negative refraction in outer space,' Department of Mathematical Sciences, University of Delaware, Newark, DE (USA), May 4, 2005.

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69. **A. Lakhtakia**, 'Metamaterials by homogenization,' Electromagnetics, Remote Sensing & Space Science Seminar Series, Department of Electrical Engineering, Pennsylvania State University, University Park, PA (USA), February 21, 2006.

70. **A. Lakhtakia**, 'Electromagnetic fields in complex mediums,' Department of Electronics Engineering, Banaras Hindu University, Varanasi (India), February 27, 2006.

71. **A. Lakhtakia**, 'Challenges and opportunities in nano technologies,' Department of Electronics Engineering, Banaras Hindu University, Varanasi (India), February 28, 2006.

72. **A. Lakhtakia,** 'Negative refraction in outer space,' Department of Physics, Indian Institute of Technology, Kanpur (India), March 3, 2006.

73. **A. Lakhtakia,** 'Challenges and opportunities in nanotechnology,' Horizon Lecture, Physics Society, Indian Institute of Technology, Kanpur (India), March 3, 2006.

74. **A. Lakhtakia,** 'Negative refraction: From materials to outer space,' School of Engineering and Applied Sciences, Rai University, New Delhi (India), March 10, 2006.

75. **A. Lakhtakia,** 'Negative refraction: From materials to outer space,' Department of Physics, Millersville University, Millersville, PA (USA), April 25, 2006.

76. **A. Lakhtakia,** 'Negative refraction,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), April 26, 2006.

77. **A. Lakhtakia,** 'Negative refraction,' Instituto de Física, Universidad Nacional Autónoma de México, Mexico City (Mexico), May 25, 2006.

78. **A. Lakhtakia,** 'Emerging trends in research on sculptured thin films,' Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, Mexico City (Mexico), May 26, 2006.

79. **A. Lakhtakia,** 'Metamaterials and chirality,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), February 7, 2007.

80. **A. Lakhtakia,** 'Metamaterials and chirality,' Condensed Matter Physics Seminar Series, Department of Physics, University of Pennsylvania, Philadelphia, PA (USA), February 28, 2007.

81. **A. Lakhtakia,** 'A forest of nanowires,' Department of Electrical Engineering, University of Utah, Salt Lake City, UT (USA), March 6, 2007.

82. **A. Lakhtakia**, 'Polarization engineering through nanoengineered morphology,' Electromagnetics, Remote Sensing & Space Science Seminar Series, Department of Electrical Engineering, Pennsylvania State University, University Park, PA (USA), March 27, 2007.

83. **A. Lakhtakia**, 'Evolution of metamaterials,' PSU 2007 Materials Day, Pennsylvania State University, University Park, PA (USA), April 11, 2007.

84. **A. Lakhtakia,** 'Metamaterials and chirality,' Department of Physics, Millersville University, Millersville, PA (USA), April 18, 2007.

85. **A. Lakhtakia**, 'Evolution of metamaterials,' College of Engineering, University of Utah, Salt Lake City, UT (USA), May 25, 2007.

86. **A. Lakhtakia**, 'Publishing a journal article,' SPIE Student Chapter Leadership Workshop, San Diego, CA (USA), August 26, 2007.

87. **A. Lakhtakia**, 'Evolution of metamaterials,' Department of Chemistry and Physics, Southeastern Louisiana University, Hammond, LA (USA), October 12, 2007.

88. **A. Lakhtakia,** 'Writing a scientific paper well,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), October 17, 2007.

89.[ii] **A. Lakhtakia**, 'Sculptured thin films exemplify nanoengineered metamaterials,' Department of Electrical Engineering, University of Texas at Dallas, Dallas, TX (USA), January 11, 2008.

[ii] Distinguished Lecture

90. **A. Lakhtakia**, 'Nanoengineered metamaterials,' Physics Colloquium, Department of Physics, Pennsylvania State University, University Park, PA (USA), January 31, 2008.

91. **A. Lakhtakia**, 'Nanoengineered metamaterials,' Faculty of Engineering, Multimedia University, Cyberjaya (Malaysia), March 11, 2008.

92. **A. Lakhtakia**, 'Polarization engineering through nanoengineered metamaterials,' Faculty of Engineering, Multimedia University, Cyberjaya (Malaysia), March 11, 2008.

93. **A. Lakhtakia**, 'From Maxwell to nanotechnology,' Maxwell Institute for Mathematical Sciences, University of Edinburgh and Heriot-Watt University, Edinburgh (UK), April 17, 2008.

94. **A. Lakhtakia**, 'Polarization engineering through nanoengineered morphology,' School of Mathematics, University of Edinburgh, Edinburgh (UK), April 18, 2008.

95. **A. Lakhtakia**, 'Nanoengineered metamaterials called sculptured thin films,' Physics Colloquium, Indian Institute of Technology, Kanpur (India), July 11, 2008.

96. **A. Lakhtakia**, 'Emerging directions in sculptured-thin-film research,' Department of Materials and Metallurgical Engineering, Indian Institute of Technology, Kanpur (India), July 16, 2008.

97. **A. Lakhtakia**, 'Introduction to bianisotropic materials,' Department of Physics, Indian Institute of Technology, Kanpur (India), July 11, 2008.

98. **A. Lakhtakia**, 'Publishing a journal article,' SPIE Student Chapter Leadership Workshop, San Diego, CA (USA), August 10, 2008.

99. **A. Lakhtakia,** 'Writing a scientific paper well,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), August 27, 2008.

100. **A. Lakhtakia**, 'Nanoengineered metamaterials,' Dipartimento di Ingegneria dell'Informazione ed Ingegneria Elettrica, Universitá degli Studi di Salerno, Fisciano (Italy), September 23, 2008.

101. **A. Lakhtakia**, 'Challenges and opportunities in nanotechnology,' Dipartimento di Ingegneria e Fisica dell'Ambiente, Universitá degli Studi della Basilicata, Potenza (Italy), September 24, 2008.

102. **A. Lakhtakia**, 'Polarization engineering,' Dipartimento di Ingegneria dell'Informazione ed Ingegneria Elettrica, Universitá degli Studi di Salerno, Fisciano (Italy), September 25, 2008.

103. **A. Lakhtakia**, 'Surface-plasmon-polariton waves, Dyakonov waves, and Dyakonov-Tamm waves,' Electromagnetics, Remote Sensing & Space Science Seminar Series and

Materials and Devices Area Seminar Series, Department of Electrical Engineering, Pennsylvania State University, University Park, PA (USA), October 7, 2008.

104. R.J. Martín-Palma, C.G. Pantano & **A. Lakhtakia** (Poster), 'Conformal-evaporated-film-by-rotation technique for hi-fi replicas of biotemplates for photonics,' 7th Annual Open House of Center for Optical Technologies, Lehigh University, Bethlehem, PA (USA), October 13–14, 2008.

105. F. Zhang, J. Xu & **A. Lakhtakia** (Poster), 'Towards circularly-polarized light emission from vertical-cavity surface-emitting lasers,*' 2008 NSF Nanoscale Science and Engineering Grantees Conference,* Arlington, VA (USA), December 3–5, 2008.

106. **A. Lakhtakia** (Panel Member), 'Remarks on informal science education,' *2008 NSF Nanoscale Science and Engineering Grantees Conference*, Arlington, VA (USA), December 3–5, 2008.

107. **A. Lakhtakia**, 'Nanoengineered metamaterials called sculptured thin films,' Department of Electronics Engineering, Banaras Hindu University, Varanasi (India), December 19, 2008.

108. **A. Lakhtakia**, 'Sculptured thin films: Nanoengineered morphology and emerging uses,' Materials Research Laboratory, SRI International, Menlo Park, AA (USA), January 27, 2009.

109. **A. Lakhtakia**, 'Nanoengineered metamaterials,' Department of Physics, Indiana University of Pennsylvania, Indiana, PA (USA), February 27, 2009.

110. **A. Lakhtakia**, 'Replication of bugs' eyes and butterfly wings,' Department of Physics, Millersville University, Millersville, PA (USA), March 23, 2009.

111. **A. Lakhtakia**, 'Nanotechnology and just-in-time education,' Iowa Wesleyan University, Mt. Pleasant, IA (USA), April 2, 2009.

112. **A. Lakhtakia**, 'Sculptured thin films as nanoengineered metamaterials,' Department of Electrical and Information Engineering, McMaster University, Hamilton, Ontario (Canada), April 14, 2009.

113. **A. Lakhtakia**, 'What can be done with sculptured thin films?,' Nelson W. Taylor Symposium, Department of Materials Science and Engineering, Pennsylvania State University, University Park, PA (USA), October 23, 2009.

114. **A. Lakhtakia,** 'Copycat science,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), December 9, 2009.

115. **A. Lakhtakia**, 'Ethical reporting in research papers,' Department of Materials and Metallurgical Engineering, Indian Institute of Technology, Kanpur (India), December 30, 2009.

116. **A. Lakhtakia**, 'Copycat science and technology,' Department of Physics, Indian Institute of Technology, Kanpur (India), January 4, 2010.

117. **A. Lakhtakia,** 'Bioreplication and the conformal–evaporated–film–by–rotation technique,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), January 20, 2010.

118. **A. Lakhtakia**, 'Copycat science and technology,' Ancient Biomaterials Institute, West Chester University, West Chester, PA (USA), February 18, 2010.

119. **A. Lakhtakia**, 'Sculptured thin films: Nanoengineered metamaterials,' ECE Distinguished Seminar, Department of Electrical and Computer Engineering, Michigan State University, East Lansing, MI (USA), April 16, 2010.

120. **A. Lakhtakia**, 'Multiplasmonics,' Department of Electro-Optical Engineering, Ben-Gurion University of the Negev, Beer Sheva (Israel), May 17, 2010.

121. **A. Lakhtakia**, 'Sculptured thin films: Nanoengineered metamaterials,' Ilse Katz Institute for Nanoscale Science and Technology, Ben-Gurion University of the Negev, Beer Sheva (Israel), May 20, 2010.

122. **A. Lakhtakia**, 'Coping with and celebrating nanotechnology,' Dean's Podium, College of Engineering, Ben-Gurion University of the Negev, Beer Sheva (Israel), May 25, 2010.

123. **A. Lakhtakia**, 'Negatively refracting chiral metamaterials,' Department of Electrical and Computer Engineering, Ben-Gurion University of the Negev, Beer Sheva (Israel), May 26, 2010.

124. **A. Lakhtakia**, 'Copycat technology,' Department of Bioengineering, Ben-Gurion University of the Negev, Beer Sheva (Israel), May 30, 2010.

125. **A. Lakhtakia**, 'Multiplasmonics,' Electromagnetics, Remote Sensing & Space Science Seminar Series, Department of Electrical Engineering, Pennsylvania State University, University Park, PA (USA), October 12, 2010.

126. **A. Lakhtakia**, 'Sculptured thin films,' Applied Physics Group, National Security Directorate, Pacific Northwest National Laboratory, Richland, WA (USA), January 5, 2011.

127. **A. Lakhtakia**, 'Multiplasmonics,' Liquid Crystal Institute, Kent State University, Kent, OH (USA), February 9, 2011.

128.[jj] **A. Lakhtakia**, 'Sculptured thin films,' Joint College Colloquium, College of Engineering and Information Technology & College of Science and Mathematics, University of Arkansas at Little Rock, Little Rock, AR (USA), February 25, 2011.

[jj] Distinguished Speaker

129. **A. Lakhtakia**, 'Surface multiplasmonics,' Department of Physics, Millersville University, Millersville, PA (USA), March 16, 2011.

130. **A. Lakhtakia,** 'Copycat science,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), March 23, 2011.

131. **A. Lakhtakia,** 'Ethical technoscientific communication,' Department of Materials Science and Engineering, Indian Institute of Technology, Kanpur (India), June 9, 2011.

132. **A. Lakhtakia,** 'Optical sensing with sculptured thin films,' Tata Institute of Fundamental Research, Mumbai (India), June 20, 2011.

133. **A. Lakhtakia**, 'Publishing a journal article,' SPIE Student Professional Skills Workshop, San Diego, CA (USA), August 21, 2011.

134. **A. Lakhtakia**, 'Sculptured thin films,' Institute of Microelectronics and Nanotechnology, Universiti Kebangsaan Malaysia, Bangi (Malaysia), January 4, 2012.

135. **A. Lakhtakia**, 'Surface multiplasmonics,' Institute of Microelectronics and Nanotechnology, Universiti Kebangsaan Malaysia, Bangi (Malaysia), January 5, 2012.

136. **A. Lakhtakia,** 'Writing an ethical paper,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), March 28, 2012.

137. **A. Lakhtakia,** 'Copycat technology,' X Club, Pennsylvania State University, University Park, PA (USA), April 9, 2012.

138. **A. Lakhtakia,** 'Sculptured thin films,' Instituto de Ciencia de Materiales de Madrid, Consejo Superior de Investigaciones Científicas, Cantoblanco, Madrid (Spain), May 9, 2012.

139. **A. Lakhtakia,** 'Sculptured thin films,' Institute of Physics, University of Belgrade, Belgrade (Serbia), May 16, 2012.

140. **A. Lakhtakia,** 'Nanotechnology: Opportunities and challenges,' National University of Mongolia, Ulan Baatar (Mongolia), August 23, 2012.

141. **A. Lakhtakia,** 'Optics of sculptured thin films,' National University of Mongolia, Ulan Baatar (Mongolia), August 24, 2012.

142. **A. Lakhtakia,** 'Surface multiplasmonics,' National University of Mongolia, Ulan Baatar (Mongolia), August 27, 2012.

143. **A. Lakhtakia,** 'Engineered biomimicry,' National University of Mongolia, Ulan Baatar (Mongolia), August 27, 2012.

144. **A. Lakhtakia**, 'Bioinspiration, biomimetic, and bioreplication for harvesting solar energy,' Department of Electrical Engineering, Pennsylvania State University, University Park, PA (USA), March 28, 2013.

145. **A. Lakhtakia**, 'The hair of Medusa, and other nanotales,' Hands-on Nanofabrication Workshop for Educators, Center for Nanotechnology Education and Utilization, Pennsylvania State University, University Park, PA (USA), May 09, 2013.

146. **A. Lakhtakia**, 'Sculptured thin films and other nanotales,' Department of Engineering and Center for Materials Research, Norfolk State University, Norfolk, VA (USA), July 19, 2013.

147. **A. Lakhtakia**, 'Sculptured thin films,' Microwave Theory & Techniques Student Branch, IEEE Uttar Pradesh Section, Indian Institute of Technology Kanpur, Kanpur, India, August 16, 2013.

148. **A. Lakhtakia**, 'Surface multiplasmonics and Dyakonov–Tamm waves,' Department of Physics, Millersville University, Millersville, PA (USA), October 23, 2013.

149. **A. Lakhtakia,** 'Nanoengineered metamaterials,' Department of Mechanical and Nuclear Engineering, Pennsylvania State University, University Park, PA (USA), November 5, 2013.

150. **A. Lakhtakia,** 'Academic bias and scientific reproducibility,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), November 6, 2013.

151. **A. Lakhtakia,** 'Surface multiplasmonics and Dyakonov–Tamm waves,' Department of Electro-Optical Engineering, National Taipei University of Technology, Taipei, Taiwan, November 26, 2013.

152. **A. Lakhtakia,** 'Sculptured thin films,' Research Center for Applied Sciences, Academia Sinica, Taipei, Taiwan, November 29, 2013.

153. **A. Lakhtakia,** 'Engineered biomimicry for harvesting solar energy,' Department of Optics and Photonics, National Central University, Chung-Li, Taiwan, November 29, 2013.

154. **A. Lakhtakia,** 'Who stole from the cookie jar?,' X Club, Pennsylvania State University, University Park, PA (USA), December 9, 2013.

155. **A. Lakhtakia,** 'Reasons for retractions,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), March 5, 2014.

156. **A. Lakhtakia,** 'A cornucopia of surface waves,' Department of Atmospheric Sciences, Texas A&M University, College Station, TX (USA), April 29, 2014.

157. **A. Lakhtakia,** 'Plagiarism of ideas, contents, and passages,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), November 5, 2014.

158. **A. Lakhtakia,** 'Seduction and murder: An optical tale,' Electro-optics Graduate Program and Department of Electrical & Computer Engineering, University of Dayton, Dayton, OH (USA), November 14, 2014.

159. **A. Lakhtakia,** 'Love, sex, and illegal aliens,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), January 21, 2015.

160. **A. Lakhtakia,** 'Rambling among retractions,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), February 11, 2015.

161. **A. Lakhtakia**, 'Mimumes,' Department of Electrical Engineering, Pennsylvania State University, University Park, PA (USA), February 12, 2015.

162. **A. Lakhtakia,** 'Plagiarism of ideas, contents, and passages,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), November 4, 2015.

163. **A. Lakhtakia,** 'Rambling among retractions,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), January 20, 2016.

164. **A. Lakhtakia,** 'Academic bias and scientific reproducibility,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), April 13, 2016.

165. **A. Lakhtakia,** 'About birds and bees,' 2016 Golden Decade Reunion, Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), June 3, 2016.

166.[kk] **A. Lakhtakia**, 'About birds and bees,' Department of Electrical and Computer Engineering, Florida Institute of Technology, Melbourne, FL (USA), October 28, 2016.

167. **A. Lakhtakia,** 'Writing an ethical paper,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), November 2, 2016.

168. **A. Lakhtakia,** 'About birds and bees,' X Club, Pennsylvania State University, University Park, PA (USA), November 14, 2016.

[kk] Frederick M. Ham ECE Distinguished Seminar

169. **A. Lakhtakia,** 'The nanoscale in science and nature,' Science and Engineering 100 Years Ago (March for Science event), Sigma Xi, US Navy Memorial, Washington, DC (USA), April 22, 2017.

170. **A. Lakhtakia,** 'The nanoscale in science and nature,' Center for Nanotechnology Education and Utilization, Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), July 14, 2017.

171. **A. Lakhtakia,** 'Biomimetic approaches to harvest solar energy,' Center for Nanotechnology Education and Utilization, Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), July 17, 2017.

172. **A. Lakhtakia,** 'About birds and bees,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), October 18, 2017.

173. **A. Lakhtakia,** 'Plagiarism of ideas, contents, and passages,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), January 10, 2018.

174. **A. Lakhtakia**, 'Materials for multifunctionality and multicontrollability,' Student Chapter of Optical Society of America, Indian Institute of Technology Delhi, New Delhi (India), March 26, 2018.

175. **A. Lakhtakia**, 'Materials for multifunctionality and multicontrollability,' Dipartimento di Ingegneria Industriale, Universitá degli Studi di Salerno, Fisciano (Italy), May 9, 2018.

176. **A. Lakhtakia**, 'Materials for multifunctionality and multicontrollability,' IEEE Student Branch Chapter, Universidad Nacional de Ingenieria, Lima (Peru), June 1, 2018.

177. **A. Lakhtakia**, 'Writing a research paper ethically,' IEEE Microwave Theory and Techniques Society Student Branch Chapter, Indian Institute of Technology (BHU), Varanasi (India), June 19, 2018.

178. **A. Lakhtakia**, 'Materials for multifunctionality and multicontrollability,' AICTE Sponsored Short Course on Recent Advances on Passive and Active Components at High Frequencies, Department of Electronics Engineering, Indian Institute of Technology (BHU), Varanasi (India), June 26, 2018.

179. **A. Lakhtakia**, 'Materials for multifunctionality and multicontrollability,' National Institute of Technology, Patna (India), July 3, 2018.

180. **A. Lakhtakia,** 'The nanoscale in science and nature,' Center for Nanotechnology Education and Utilization, Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), July 23, 2018.

181. **A. Lakhtakia,** 'Biomimetic approaches to harvest solar energy,' Center for Nanotechnology Education and Utilization, Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), July 23, 2018.

182. **A. Lakhtakia**, 'Unexpected gifts when your eyes are wide open,' IEEE Photonics Society Student Branch Chapter, Indian Institute of Technology (BHU), Varanasi (India), December 11, 2018.

183. **A. Lakhtakia**, 'Materials for multifunctionality and multicontrollability,' MHRD Sponsored Faculty Development Program on Metasurfaces: Theory, Design and Applications, National Institute of Technology, Patna (India), December 17, 2018.

184. **A. Lakhtakia**, 'Nanotechnology education and research in College of Engineering and College of Earth & Mineral Sciences,' IISc-PSU Joint Workshop in Physics, India Institute of Science, Bengaluru (India), January 7, 2019.

185. **A. Lakhtakia,** 'Rambling among retractions,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), January 23, 2019.

186. **A. Lakhtakia,** 'The nanoscale in science and nature,' Nanotechnology Professional Development Partnership, Center for Nanotechnology Education and Utilization, Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), February 22, 2019.

187. **A. Lakhtakia,** 'Drawdown: Uniting sane and scientifically spirited Americans in response to climate emergency,' Sektion for Konstruktion og Produktudvikling, Institut for Mekanisk Teknologi, Danmarks Tekniske Universitet, Kongens Lyngby, Denmark, October 4, 2019. <https://www.youtube.com/watch?v=dvJCzVoXNHg&t=114s>

188. **A. Lakhtakia,** 'Materials for multifunctionality and multicontrollability,' Departamento de Ingeniería de Communicaciones, Universidade de Cantabria, Santander, Spain, October 14, 2019.
< https://www.youtube.com/watch?v=X0zplJXwEbw>

189. **A. Lakhtakia,** 'Optoelectronic optimization of thin-film solar cells,' Donostia International Physics Center, Donostia–San Sebastian, Spain, December 9, 2019.

190. **A. Lakhtakia,** 'Integrated optoelectronic model of thin-film solar cells with graded-bandgap semiconductor layers,' DTU Fotonik, Danmarks Tekniske Universitet, Kongens Lyngby, Denmark, December 12, 2019.

191.[ll] **A. Lakhtakia,** 'Post-human or posthumous,' 17th ESM Today Symposium, Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), February 15, 2020.
<https://www.youtube.com/watch?v=7S8mlkB-0fU>

[ll] Keynote address

192. **A. Lakhtakia,** 'What engineering scientists can do in the face of climate emergency,' Department of Engineering Science and Mechanics, Pennsylvania State University, University Park, PA (USA), February 18, 2020.

193. **A. Lakhtakia**, 'Optoelectronic optimization of thin-film solar cells,' OSA Student Chapter, Facultad de Ingeniería, Universidad de Buenos Aires, Buenos Aires, Argentina, March 9, 2020.

194. **A. Lakhtakia**, 'Electromagnetic surface waves I,' OSA Student Chapter, Facultad de Ingeniería, Universidad de Buenos Aires, Buenos Aires, Argentina, March 10, 2020.

195. **A. Lakhtakia**, 'Electromagnetic surface waves II,' OSA Student Chapter, Facultad de Ingeniería, Universidad de Buenos Aires, Buenos Aires, Argentina, March 10, 2020.

196. **A. Lakhtakia**, 'Optoelectronic optimization of thin-film solar cells,' (Zoom Webinar), SPIE Student Chapter, Lahore University of Management Sciences, Lahore, Pakistan, May 20, 2020.

197. **A. Lakhtakia**, 'Photovoltaic thin-film solar cells with 30% efficiency,' (Zoom Webinar), SPIE Student Chapter, Central Scientific Instruments Organization, Chandigarh, India, July 21, 2020.

198. **A. Lakhtakia,** 'The artificial beetle,' Distinguished Honors Faculty Program, Schreyer Honors College, Pennsylvania State University, University Park, PA (USA), October 1, 2020.

199. **A. Lakhtakia,** 'Post-human or posthumous,' Distinguished Honors Faculty Program, Schreyer Honors College, Pennsylvania State University, University Park, PA (USA), October 20, 2020.

200. **A. Lakhtakia**, 'What can an engineer or scientist do against climate emergency?,' (Zoom Webinar), SPIE Student Chapter, Indian Institute of Science Education and Research, Kolkata, India, November 7, 2020.

201. **A. Lakhtakia**, 'Riding two horses while straddling a fence,' (Zoom Webinar), ROWS-2020, Raman Optronics Webinar Series, Department of Optoelectronics, University of Kerala, Trivandrum, India, November 16, 2020.
https://www.youtube.com/watch?v=6WgWsUDSgOs

202. **A. Lakhtakia,** 'Conversation at a crossroads,' (Zoom Webinar), X Club, Pennsylvania State University, University Park, PA (USA), December 14, 2020.

203. **A. Lakhtakia,** 'Design for environment,' Distinguished Honors Faculty Program, Schreyer Honors College, Pennsylvania State University, University Park, PA (USA), March 1, 2021.

204. **A. Lakhtakia,** 'Biologically inspired design,' Distinguished Honors Faculty Program, Schreyer Honors College, Pennsylvania State University, University Park, PA (USA), April 5, 2021.

205. **A. Lakhtakia,** 'Whither tomorrow?,' Distinguished Honors Faculty Program, Schreyer Honors College, Pennsylvania State University, University Park, PA (USA), September 13, 2021.

206. **A. Lakhtakia**, 'Biologically inspired design,' (Zoom Workshop), National Institute of Technology, Patna (India), March 14, 2022.

207. **A. Lakhtakia,** 'Bioinspired design,' Distinguished Honors Faculty Program, Schreyer Honors College, Pennsylvania State University, University Park, PA (USA), March 15, 2022.

208. **A. Lakhtakia,** 'Thin-film solar cells with graded-bandgap compound semiconductor layers,' (Zoom Webinar), Department of Electro-Optics and Photonics, University of Dayton, Dayton, OH (USA), March 18, 2022.

209. **A. Lakhtakia**, Interview by IEEE AP-S Young Professional Ambassadors, September 10, 2022. https://resourcecenter.ieeeaps.org/professional-development/interviews/APSPDINT0000.html and https://www.linkedin.com/posts/ieee-aps-yp_interview-with-2022-ieee-ap-s-distinguished-activity-6979571447773986816-rDQC

210. **A. Lakhtakia,** 'Whither tomorrow?,' Sigma Xi Distinguished Lecture, Department of Materials Science and Engineering, Arizona State University, Tempe, AZ (USA), September 23, 2022.

211. P.P. Banerjee & **A. Lakhtakia**, 'Digital holographic acquisition, storage, retrieval and analysis of three-dimensional fingermarks developed with the nanoscale columnar-thin-film technique,' *Annual Meeting of Criminal Investigations and Network Analysis (CINA) Center,* George Mason University, Fairfax, VA (USA), October 12, 2022.

PATENTS AWARDED

1. M.C. Demirel (50%) and **A. Lakhtakia** (50%), *Method and System for Forming and Using Nanoengineered Sculptured Thin Films*, US Patent 8,647,654 (awarded February 11, 2014).

2. J.L. Rose (50%) and **A. Lakhtakia** (50%), *Ultrasonic/Acoustic Control of Light Waves for Left-Right Optical Reflection Asymmetry*, US Patent 10,908,477B2 (awarded February 2, 2021).

US PATENT APPLICATIONS IN PROGRESS

1. H.J. Donahue (50%) and **A. Lakhtakia** (50%), *Biomimetic Surfaces for Enhancing Musculoskeletal Regeneration,* US Provisional Patent (January 2012), PCT Application PCT/US13/22999 (January 2013).

INVENTION DISCLOSURES AND PROVISIONAL PATENTS

1. M.C. Demirel (50%) and **A. Lakhtakia** (50%), *Method and System for Forming and Using Nanoengineered Sculptured Thin Films*, PCT Application PCT/US06/47890 (November 2007).

2. R.J. Martín-Palma, **A. Lakhtakia,** and C. G. Pantano (100/3% each), *Replication of Micro and Nanostructured Biological and Other Templates*, Penn State Invention Disclosure 2008 3420 (February 2008), US Provisional Patent (June 2008).

3. **A. Lakhtakia** (51%) and M. A. Motyka (49%), *Means to Excite Multiple Waves or Trains of Surface Plasmon Polaritons of the Same Frequency But Different Speeds on a Planar Bimaterial Interface*, Penn State Invention Disclosure 2008 3433 (April 2008), US Provisional Patent (June 2009).

4. R. C. Shaler (30%), **A. Lakhtakia** (30%), D. G. Sykes (25%), and R. Roy (15%), *Solid-State Acquisition of Latent Fingerprint Ridge Detail for Subsequent Identification and Physical and Chemical Constituents,* Penn State Invention Disclosure 2008 3513 (November 2008), US Provisional Patent (June 2009).

SERVICE TO PENNSYLVANIA STATE UNIVERSITY

COMMITTEES

The University

1990–1992	Minority Alumni Reunion Committee
1993–1994	Fulbright Scholars Selection Committee
1999–2000	Schreyer Scholars Selection Committee
2000–2001	Schreyer Scholars Selection Committee
2005–	University Fellowships Office's Advisory Council
2007	Faculty Scholar Medal (Engineering) Panel, Member
2008	Faculty Scholar Medal (Engineering) Panel, Chair
2009	Faculty Scholar Medal (Engineering) Panel, Member
2009	SE Asia GEN Task Force, Co-Chair
2010–	India Faculty Implementation Team, Member
2012–2013	Engineering Library Positions Committee, Member
2014	Grace Woodward Proposal Review Panel, Member
2016	Grace Woodward Proposal Review Panel, Member
2017	Grace Woodward Proposal Review Panel, Member

College of Engineering

1987	Ben Franklin Seed Grant Review Panel, Member
1988	Ben Franklin Seed Grant Review Panel, Member
1988–1991	Graduate Curriculum and Research Committee, Dean's Nominee
1989	Ben Franklin Seed Grant Review Panel, Member
1996–1997	PSES Outstanding Research Award Committee, Member
1998–2002	Weiss Graduate Fellowship Program, Faculty Coordinator
1999	English Presentational Proficiency Testing, Evaluator
2003–2005	Environmental Engineering Education Taskforce, Member
2007–2008	Strategic Plan (Graduate Education) Committee, Member
2009	PSES Premier Research Award Committee, Member
2010	PSES Outstanding Advising Award Committee, Member
2010–2012	College Promotion & Tenure Committee, Member
2013	PSEAS Premier Research Award Committee, Member
2015–2018	Engineering Energy & Environmental Institute, Steering Committee Member
2016–2017	Distinguished and Chair Professorships Evaluation Committee, Member
2017–2018	Distinguished and Chair Professorships Evaluation Committee, Chair

Department of Engineering Science and Mechanics

1988–1989	Admissions/Fellowships Committee Graduate Curriculum Committee Ad Hoc Committee to Re–examine Candidacy & Comprehensive Exams
1989–1990	Admissions/Fellowships Committee Graduate Curriculum Committee

1990–1991	Brochures and Guides Committee
1991–1992	Freshmen Mixer Committee
1992–1993	Graduate Admissions Committee Graduate English Competence Screening Committee
1993–1994	Graduate Admissions Committee Graduate English Competence Screening Committee Candidacy Examination Committee, Chair Tuition Surcharge Committee, Chair
1994–1995	Candidacy Mentoring Committee Graduate English Competence Screening Committee
1995–1996	Candidacy Mentoring Committee Graduation Brunch Committee
1996–1997	Graduation Brunch Committee, Chair Candidacy Mentoring Committee International Relations Committee Tuition Surcharge Committee
1997–1998	Graduation Brunch Committee, Chair Candidacy Mentoring Committee International Relations Committee Tuition Surcharge Committee Promotion & Tenure Committee
1998–1999	International Relations Committee, Chair Candidacy Mentoring Committee, Chair Promotion & Tenure Committee
1999–2000	Extensions/International Relations Committee, Chair Mixer Committee ESM IUG Committee
2000–2001	Extensions/International Relations Committee, Chair Mixer Committee ESM IUG Committee
2001–2002	Extensions/International Relations Committee, Chair Graduate Student Recruitment Committee Tuition Surcharge Committee Promotion & Tenure Committee
2002–2008	**Graduate Officer**

2002–2003	Graduate Student Recruitment Committee, Chair Graduate Student Admissions Committee, Chair Candidacy Examinations Committee, Chair Graduate Curriculum Committee Tuition Surcharge Committee
2003–2004	Graduate Student Recruitment Committee, Chair Graduate Student Admissions Committee, Chair Candidacy Examinations Committee, Chair Graduate Curriculum Committee Promotion & Tenure Committee
2004–2005	Graduate Student Recruitment Committee, Chair Graduate Student Admissions Committee, Chair Candidacy Examinations Committee, Chair Graduate Curriculum Committee Promotion & Tenure Committee Scholarships Committee
2005–2006	Graduate Student Recruitment Committee, Chair Graduate Student Admissions Committee, Chair Graduate Curriculum Committee, Chair Candidacy Examination Committee, Chair Promotion & Tenure Committee Scholarships Committee
2006–2007	Graduate Student Recruitment and Admissions Committee, Chair Candidacy Examination Board (Bionanotechnology), Chair Candidacy Examination Board (Electromagnetics) Promotion & Tenure Committee Scholarships Committee
2007–2008	Graduate Student Recruitment and Admissions Committee, Chair Graduate Curriculum Committee, Chair Candidacy Examination Board (Fundamentals) Promotion & Tenure Committee Scholarships Committee
2008–2009	Scholarships and Awards Committee
2009–2010	Scholarships and Awards Committee Candidacy Examination Board (Electromagnetics) Candidacy Examination Board (Bionano), Chair
2010–2011	Candidacy Examination Board (Electromagnetics) Student Chapter, Society of Engineering Science, Faculty Advisor
2011–2012	Candidacy Examination Board (Electromagnetics)

	Graduate Recruitment Committee Ad hoc Nano Professional Masters Committee
2012–2013	Candidacy Examination Board (Electromagnetics)
2013–2014	Coop Advisor Scholarships and Awards Committee, Chair Candidacy Examination Board (Electromagnetics)
2014–2015	Coop Advisor Scholarships and Awards Committee, Chair Undergraduate Curriculum Committee (Dynamics & Computation) Graduate Curriculum/Guide/Handbook Committee Candidacy Examination Board (Electromagnetics) Faculty Search Committee (Nano)
2015–2016	Coop Advisor Undergraduate Curriculum Committee (Dynamics & Computation) Graduate Curriculum/Guide/Handbook Committee Graduate Student Recruitment/Admissions Committee Candidacy Examination Board (Electromagnetics)
2016–2017	Coop Advisor Graduate Curriculum/Guide/Handbook Committee Graduate Student Recruitment/Admissions Committee Candidacy Examination Board (Electromagnetics) Faculty Search Committee
2017–2018	Coop Advisor Graduate Curriculum/Guide/Handbook Committee Graduate Student Recruitment/Admissions Committee Candidacy Examination Board (Electromagnetics) Promotion & Tenure Committee
2018–2019	Coop Advisor Undergraduate Curriculum Committee (Dynamics & Computation) Graduate Curriculum/Guide/Handbook Committee Graduate Student Recruitment/Admissions Committee Candidacy Examination Board (Electromagnetics) Scholarships and Awards Committee
2019–2020	Coop Advisor Undergraduate Curriculum Committee (Dynamics & Computation) Graduate Curriculum/Guide/Handbook Committee Graduate Student Recruitment/Admissions Committee Candidacy Examination Board (Electromagnetics) Scholarships and Awards Committee

2020–2021	Coop Advisor
	ESM Graduate Student Council, Faculty Advisor
	Graduate Student Admissions Committee
	Candidacy Examination Board (Electromagnetics)
	Undergraduate Thesis Committee
	Scholarships and Awards Committee

TEACHING RESPONSIBILITIES

Fall 1984	E MCH 12	Dynamics (2 sections)
Spring 1985	E MCH 12	Dynamics
Fall 1985	E MCH 12	Dynamics
Spring 1986	E MCH 12	Dynamics
	EE 340	Active Circuits
Fall 1986	E MCH 12	Dynamics
Spring 1987	E MCH 12	Dynamics
Fall 1987	E MCH 12	Dynamics (2 sections)
Spring 1988	E MCH 12	Dynamics
Fall 1988	E MCH 12	Dynamics (2 sections)
Spring 1989	E MCH 12	Dynamics
Fall 1989	E MCH 12	Dynamics
Spring 1990	E SC 497A	Computational Technique for Engineering BVPs
Fall 1990	E MCH 12	Dynamics
Spring 1991	E SC 497A	Computational Techniques for Engineering BVPs
	E MCH 407	Computer Methods for Engineering Mechanics
Fall 1991	E MCH 11	Statics
	E MCH 12	Dynamics (2 sections)
Spring 1992	E MCH 11	Statics
	E MCH 13	Strength of Materials
Fall 1992	E MCH 12	Dynamics (2 sections)
	E MCH 514	Graduate Seminar
Spring 1993	E MCH 12	Dynamics (2 sections)
	E SC 597A	Electromagnetic Fields in Material Continua
Fall 1993	E MCH 12	Dynamics (2 sections)
	E SC 297B	Waste Reduction Seminar
	E SC 497B	Materials for Waste Reduction
Spring 1994	E MCH 12	Dynamics
	E MCH 210	Statics and Strength of Materials
Fall 1994	E MCH 12	Dynamics (2 sections)
	E SC 497A	Materials in Design for Green Engineering
Spring 1995	E MCH 12	Dynamics
	E MCH 210	Statics and Strength of Materials
Spring 1996	E MCH 12	Dynamics
	E MCH 210	Statics and Strength of Materials
Fall 1996	E SC 407 H	Computer Methods for Engineering Science
	E SC 497A	Materials in Design for Green Engineering
Spring 1997	E MCH 407	Computer Methods for Engineering Mechanics
	E MCH 210	Statics and Strength of Materials

Fall 1997	E SC 407 H	Computer Methods for Engineering Science
	E MCH 210	Statics and Strength of Materials
Spring 1998	E SC 497A/597A	Materials in Design for Green Engineering
	E MCH 13	Strength of Materials
Fall 1998	ENGR 497F	Fund. Sci. Technol. Engineering Education
	E MCH 11	Statics
	E SC 407 H	Computer Methods for Engineering Science
Spring 1999	ENGR 497F	Fund. Sci. Technol. Engineering Education
	E MCH 407	Computer Methods for Engineering Mechanics
Fall 1999	ENGR 497F	Fund. Sci. Technol. Engineering Education
	E MCH 210	Statics and Strength of Materials
	E SC 407 H	Computer Methods for Engineering Science
Spring 2000	ENGR 497F	Fund. Sci. Technol. Engineering Education
	E MCH 210	Statics and Strength of Materials
Fall 2000	E MCH 210	Statics and Strength of Materials
	E SC 407 H	Computer Methods for Engineering Science
	ENGR 497F	Fund. Sci. Technol. Engineering Education
Spring 2001	E MCH 210	Statics and Strength of Materials
	ENGR 497F	Fund. Sci. Technol. Engineering Education
	E SC 497C	Materials in Design for Green Engineering
Fall 2001	E MCH 210	Statics and Strength of Materials
	E SC 407 H	Computer Methods for Science
Spring 2002	E MCH 210	Statics and Strength of Materials
	ENGR 124S	Green Engineering Freshmen Seminar
Fall 2002	E MCH 13	Strength of Materials
	E SC 407 H	Computer Methods for Engineering Science
Fall 2003	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
	E SC 597A	Multidisciplinary Informal Engineering Education Seminar
	E SC 407 H	Computer Methods for Engineering Science
Spring 2004	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
	E SC 261 M	Computational Methods in Engineering
Fall 2004	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
	E SC 597A	Multidisciplinary Informal Engineering Education Seminar
	E SC 598G	Laser Optics Fundamentals
Spring 2005	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
	E SC 261 M	Computational Methods in Engineering
Fall 2005	E SC 404H	Analysis for Engineering Science
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
	E SC 597A	Multidisciplinary Informal Engineering Education Seminar
	E SC 536	Wave Propagation & Scattering
Spring 2006	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Fall 2006	E SC 404H	Analysis for Engineering Science

	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
	E SC 597A	Multidisciplinary Informal Engineering Education Seminar
	E SC 536	Wave Propagation & Scattering
Fall 2007	E SC 404H	Analysis for Engineering Science
	E SC 597A	Multidisciplinary Informal Engineering Education Seminar
Spring 2008	E MCH 212	Engineering Dynamics
Spring 2009	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Fall 2009	E SC 407H	Computer Methods for Engineering Science
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
	E SC 536	Wave Propagation & Scattering
Spring 2010	E SC 400H	Electromagnetics
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Fall 2010	E SC 404H	Analysis for Engineering Science
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
	E SC 524A	Mathematical Methods in Engineering
Spring 2011	E SC 400H	Electromagnetics
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Fall 2011	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
	E SC 524A	Mathematical Methods in Engineering
Spring 2012	E SC 400H	Electromagnetics
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Spring 2013	E SC 400H	Electromagnetics
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Fall 2013	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
	E SC 524A	Mathematical Methods in Engineering
Spring 2014	E SC 400H	Electromagnetics
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
	E SC 524A	Mathematical Methods in Engineering
Summer 2014	E SC 524A	Mathematical Methods in Engineering
Fall 2014	E SC 404H	Analysis for Engineering Science
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
	E SC 524A	Mathematical Methods in Engineering
Spring 2015	E SC 400H	Electromagnetics
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Fall 2015	E SC 404H	Analysis for Engineering Science

	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
	E SC 524A	Mathematical Methods in Engineering
Spring 2016	E SC 400H	Electromagnetics
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Fall 2016	E SC 404H	Analysis for Engineering Science
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Spring 2017	E SC 400H	Electromagnetics
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Fall 2017	E SC 404H	Analysis for Engineering Science
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Spring 2018	E SC 400H	Electromagnetics
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Fall 2018	E SC 404H	Analysis for Engineering Science
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Spring 2019	E SC 400H	Electromagnetics
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Spring 2020	E SC 400H	Electromagnetics
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Fall 2020	E SC 497-002	Biologically Inspired Design
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Spring 2021	E SC 400H	Electromagnetics
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Fall 2021	E SC 497-001	Biologically Inspired Design
	E SC 404H	Analysis for Engineering Science
	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar
Spring 2022	E MCH 514	Graduate Seminar
	E SC 514	Graduate Seminar

UNDERGRADUATE RESEARCH ADVISEES AT PENN STATE

BS (Electrical Engineering)

Semester of Graduation	Name	Remarks
1987 Summer	David J. Raup	

BS (Engineering Science)

Semester of Graduation	Name	Awards
1987 Spring	Thomas A. Biedka	
1987 Fall	Neal Sven Holter	
1990 Spring	Richard S. Andrulis, Jr.	
1992 Spring	Jeffrey R. Diamond	
1992 Spring	Robert D. Kampia	
1993 Spring	Michael T. Prinkey	
1994 Spring	Steven Francis Nagle	Xerox Awardee, NSF Graduate Fellow
1996 Spring	Matthew Wyczalkowski	
1999 Spring	Elif Ertekin	Xerox Awardee, Fenlon Awardee, NSF Graduate Fellow
2000 Spring	Mark W. Meredith	
2001 Spring	Joseph B. Geddes III	SHC Dean's Research Awardee, NSF Graduate Fellow
2001 Spring	David Denkenberger	Goldwater Fellow, ESM Student Marshall, NSF Graduate Fellow
2002 Spring	Erik E. Steltz	NDSEG Graduate Fellow
2004 Spring	Matthew D. Pickett	SPIE Scholar
2005 Spring	Katherine E. Weaver	Goldwater Fellow, Fenlon Awardee, ESM Student Marshall, Joelle WEP Awardee, NSF Graduate Fellow
2006 Spring	Benjamin M. Ross	ESM Student Marshall, NSF Graduate Fellow
2007 Spring	Mukul Dixit	
2007 Fall	Wei Luo	
2012 Spring	Amy E. Miller	
2013 Spring	Xuerong Xiao	ESM Student Marshall, Tau Beta Pi Fellowship
2015 Spring	Veronica L. Sardo	ESM Breneman Portfolio Award
2015 Spring	Christian M. Graham	
2018 Spring	Vikas Vepachedu	SPIE Scholar, PPG Summer Fellow
2019 Fall	Ricardo Fiallo Rodriguez	
2020 Spring	Chenzhang Zhou	Evan Pugh Scholar
2021 Spring	Chenzhang Zhou	Fenlon Awardee, P.B. Breneman Best Portfolio Award (3rd Place)

GRADUATE ADVISEES AT PENN STATE

MS (Engineering Science)

Year	Name	Thesis Title	Last Known Position	Remarks
1990	Karthikeyan Chittayil	Scattering and resonance problems involving a chiral cylinder immersed in a chiral medium	Professor, Rajagiri School of Engineering & Technology (Mahatma Gandhi University), Kochi, India	PhD (1994) Industrial Engg, Penn State University
1991	Patrick Shawn Reese	Low-frequency electromagnetic wave propagation in periodically stratified media	Lieutenant Colonel, US Air Force (Commander, 30th MSS, 30th Medical Group), Vandenberg AFB, CA	
1993	Michael J. Elphinstone	Planewave responses of elastic chiral halfspaces and slabs	Manager (Information Technology), US Steel, Pittsburgh, PA	
1995	Steven Francis Nagle	Shear axial waves in a piezoelectric continuously twisted structurally chiral medium (PCTSCM)	Lecturer, Department of Biological Engineering, MIT	PhD (2001) Electrical Engg, MIT
1997	Vijayakumar Chivukula Venugopal	Second harmonic emission from an axially excited slab of a dielectric thin-film helicoidal bianisotropic medium	Senior Director, Applied Materials, Inc., Santa Clara, CA	PhD (2000) ESM, Penn State University
1999	Paul Dominic Sunal (co-advisor: Russell Messier)	Optical modeling and fabrication of thin-film helicoidal bianisotropic media	Research Engineer, CNRI/MEMS and Nanotechnology Exchange, Reston, VA	PhD (2005) ESM, Penn State University

2000	Elif Ertekin	Space-guides: efficient optical interconnects made from a thin-film helicoidal bianisotropic medium	Associate Professor, Department of Mechanical Science & Engineering, University of Illinois at Urbana-Champaign	MS (2003), PhD (2006) Materials Sci Engg, University of California, Berkeley
2001	Joseph Bernhard Geddes III	Traversal of optical pulses through dielectric thin-film helicoidal bianisotropic mediums	Research Engineer, Rolith, Inc., Pleasanton, CA	PhD (2006) ESM, Penn State University
2006	Katherine E. Weaver (m. Calabro)	Theoretical Study of a One-Dimensional Dual-Periodicity Superlattice as a Diffraction Grating	Research Engineer, Synopsys, Boston, MA	PhD (2012) Biomedical Engineering, Boston University
2006	Ryan Joseph Carey	Reflection and transmission of elastodynamic plane waves by a piezoelectric, continuously twisted, structurally chiral medium	Engineer, ???	
2007	Benjamin M. Ross	Light pressure and stress distribution from normal and oblique plane waves on a chiral sculptured thin film	Entrepreneur, Powr.io, Go Overseas!, Diassess, Inc., Sanf Francisco, CA	PhD (2011) Appl Sci Technol, University of California, Berkeley
2008	Mukul Dixit	Selection strategy for circular-polarization-sensitive rejection characteristics of electro-optic ambichiral Reusch piles	Lead Engineer, Harris Corp., Rochester, NY	ESM Early Career Recognition Award (2015)
2009	Michael A. Motyka	Multiple trains of same-color surface plasmon-polaritons guided by the planar interface of a metal film and a sculptured nematic thin film	Process Engineer, Honeywell Films, Scranton, PA	PhD (2012) ESM, Penn State University
2010	Wei Luo	Coatings to optimize optical force and optical angular momentum exterted on metallic spheres	Post-Doctoral Research Scholar, ESM, Penn State University	PhD (2014) ESM, Penn State University
2010	Drew Patrick	Engineered biomimicry: Polymeric	Research	PhD (2013)

	Pulsifer	replication of the surface of a compound eye of an insect	Engineer, Intel, Hillsboro, OR	ESM, Penn State University
2011	Sema Erten	Excitation of multiple surface plasmon polariton waves at metal/chiral sculptured thin film interfaces	Research Engineer, Harry's, Inc., New York, NY	PhD (2018) ESM, Penn State University
2012	Stephen E. Swiontek	Suppression of circular Bragg phenomenon in chiral sculptured thin films produced with simultaneous rocking and rotation of substrate during serial bideposition	Coating Engineering Manager, II-VI, Inc., CA	PhD (2016) ESM, Penn State University
2016	Patrick D. McAtee (co-advisor: Jian Xu)	Reflection and transmission of obliquely incident light by asymmetric serial-bideposited chiral sculptured thin films	PhD Candidate, ESM	

MS (Engineering at the Nano-scale)

Year	Name	Project Title	Last Known Position	Remarks
2019	Marcus A. Lee	Impact of cyclic mechanical stress on the electrical performance of Parylene-C μFTF MIM devices for flexible electronic applications	Process Engineer, Intel, Chandler, AZ	

MS (Engineering Science and Mechanics)

Year	Name	Project Title	Last Known Position	Remarks
2019	Chengzhi Li	Deposition of conformal columnar thin films on latent fingerprint samples on currency and leather subjected to two kinds of environmental insult	PhD Candidate, ESM	
2022	Brody McElwain (co-advisor: S. Mahadevan)	Exploring the utility of monocentric imagers for astronomy	PhD Candidate, University of Arizona	

MS (Industrial and Systems Engineering)

Year	Name	Thesis Title	Last Known Position	Remarks
1994	Satishmohan T.S. Bukkapatnam (co-advisor:	Theory-of-chaos-based machine tool monitoring and control	Rockwell International Professor of Industrial	PhD (1997) Industrial Engg, Penn State

	Soundar R.T. Kumara)		Engineering, Texas A&M University, College Station, TX	University

MPS (Forensic Science)

Year	Name	Project Title	Last Known Position
2010	Jessica W. Rogers (co-advisor: Robert C. Shaler)	Identification of fingerprint topology using dense columnar thin films	Independent Consultant, Mars, PA
2012	Sarah A. Muhlberger (co-advisor: Robert C. Shaler)	Organized development of latent fingerprints on nonporous forensically relevant substrates with conformal CTFs	Forensic Examiner, Dallas County Southwestern Institute of Forensic Sciences
2013	Stephanie F. Williams (co-advisor: Robert C. Shaler)	Progress in the visualization of latent fingerprints on nonporous substrates using columnar thin films	Forensic Examiner, Washington DC Crime Laboratory
2015	Stephanie L. Plazibat (co-advisor: Reena Roy)	Generation of DNA profiles from fingerprints developed with CTF technique	Forensic DNA Analyst, Bode Cellmark Forensics, Dallas, TX
2015	Zachary C. Goecker (co-advisor: Reena Roy)	A comparison of traditional and novel fingerprint enhancements, and subsequent DNA degradation	PhD (Toxicology) Candidate, University of California Davis
2019	Teresa M. Tiedge (co-advisor: Reena Roy)	Massively parallel sequencing and STR analysis from partial bloody fingerprints enhanced with columnar thin films	PhD (Forensic Chemistry) Candidate, North Carolina State University

PhD (Engineering Science and Mechanics)

Year	Name	Thesis Title	Last Known Position
1993	Balasubramaniam Shanker	Extended Maxwell Garnett formalism for homogenizing chiral-in-chiral composites	University Distinguished Professor, Department of Electrical and Computer Engineering, Michigan State University (and IEEE Fellow)
1995	Scott A. Wymer (co-advisor: Renata S. Engel)	Application of electromagnetic scattering methods to Stokesian flow around a stationary body	Vice President, Interfolio, Inc., Washington, DC
2000	Vijayakumar Chivukula Venugopal	Optical responses of dielectric thin-film helicoidal bianisotropic mediums	Senior Director, Advanced Materials, Inc., Santa Clara, CA

2003	Joseph A. Sherwin	Nominal model for the optical response of a chiral sculptured thin film infiltrated with an isotropic chiral fluid	Assistant Professor, Metropolitan Community College, Omaha, NE
2005	Fei Wang	Optics of chiral sculptured thin films	R&D Engineer, Mentor Graphics, Wilsonville, OR
2006	Joseph Bernhard Geddes III	Manipulation of optical pulses with chiral sculptured thin films	President, Photia, Inc., Berkeley, CA
2008	Fan Zhang (co-advisor: Jian Xu)	Circularly polarized light emission by microcavity light-emitting diodes and vertical-cavity surface-emitting lasers	Research Scientist, Cree Santa Barbara Technology Center, Santa Barbara, CA
2011	Lai Wei	Fibrous parylene-C thin-film substrates for implant integration and protein assays	Research Engineer, Lam Research Corp., Fremont, CA
2012	Muhammad Faryad	Propagation and excitation of multiple surface waves	Associate Professor, Lahore University of Management Science, Pakistan
2013	Drew Patrick Pulsifer	Thermally evaporated conformal thin films on non-traditional/non-planar substrates	Research Engineer, Intel, Hillsboro, OR
2016	Stephen E. Swiontek	Optical sensing of analytes in aqueous solutions through surface plasmonics and surface multiplasmonics	Coating Engineering Manager, II-VI, Inc., CA
2017	Chandraprakash Chindam (co-advisor: Osama A. Awadelkarim)	Multifunctional Parylene-C microfibrous thin films	Assistant Professor of Mechanical Engineering, Indian Institute of Technology Kanpur
2018	Sema Erten	Broadband optical responses of chiral sculptured thin films deposited on planar and non-planar substrates	Research Engineer, Harry's, Inc., New York, NY
2020	Faiz Ahmad	Optoelectronic modeling and optimization of graded-bandgap thin-film solar cells	Assistant Professor, COMSATS University, Islamabad, Pakistan
2021	Partick D. McAtee	Sculptured thin films as a platform for machinbe-learning-based optical sensing of analytes	
2022	Russell Vela		
2023	Chengzhi Li		
2024	Ricardo Fiallo Rodriguez		

PhD (Industrial and Systems Engineering)

Year	Name	Thesis Title	Present Position
1997	Satishmohan T.S. Bukkapatnam (co-advisor: S.R.T. Kumara)	Monitoring and control issues in chaotic processes: an application to turning process	Rockwell International Professor of Industrial Engineering, Texas A&M University, College Station, TX

PhD (Electrical Engineering)

Year	Name	Thesis Title	Last Known Position
2018	Timothy M. Garner (co-advisor: James K. Breakall)	Time-domain electromagnetic scattering by objects moving uniformly at relativistic speeds	Research Engineer, United States Army Communications-Electronics Research, Development and Engineering Center (CERDEC), Aberdeen Proving Ground, MD
2019	Ibrahim H. Khawaji (co-advisor: Osama O. Awadelkarim)	Engineered thin films of Parylene C as electrical insulators for flexible electronics	Assistant Professor, Taibeh University, Saudi Arabia
2019	Hamad Alkhoori (co-advisor: James K. Breakall)	Electromagnetic scattering by a three-dimensional object composed of an orthorhombic dielectric-magnetic medium endowed with magnetoelectric gyrotropy	Assistant Professor, United Arab Emirates University

PhD (Mechanical Engineering)

Year	Name	Thesis Title	Last Known Position
2000	Ravi Patankar (co-advisor: Asok Ray)	Modeling of fatigue crack growth for life-extending control	IoT Architect (Residential HVAC), Carrier HVAC, Novi, MI

GRADUATE ADVISEES AT OTHER INSTITUTIONS

PhD

Year	Name	Thesis Title	Institution	Last Known Position	Degree
2010	Jun Gao (co-advisor: Mingkai Lei)	Dyakonov-Tamm surface electromagnetic waves guided by the interface between chiral sculptured thin films (in Chinese)	Dalian University of Technology, China	Post-Doctoral Research Scholar, ESM, Penn State University	PhD (Materials Science and Engineering)

2012	Husnul Maab (co-advisor: Qaisar A. Naqvi)	Propagation of surface electromagnetic waves guided by periodic and aperiodic mediums	Quaid-i-Azam University, Pakistan	Associate Professor, GIK Institute of Technology, Pakistan	PhD (Electronics)
2014	Allah Ditta Ulfat Jafri (co-advisor: Qaisar A. Naqvi)	Scattering of electromagnetic waves by a PEC/impedance circular disk and orthorhombic dielectric-magnetic sphere	Quaid-i-Azam University, Pakistan	Principal Scientist, Government Informatics Complex, Pakistan	PhD (Electronics)
2016	Jhuma Dutta (co-advisors: S. Anantha Ramakrishna and H. Wanare)	Photonic and plasmonic properties of periodically patterned columnar thin films	Indian Institute of Technology Kanpur	Post-Doctoral Scholar, Indian Institute of Technology Mohali	PhD (Physics)
2020	Rajan Agrahari (co-advisor: Pradip K. Jain)	Information transmission via electromagnetic surface waves	Indian Institute of Technology (BHU), Varanasi	Assistant Professor, National Institute of Technology Patna	PhD (Electronics Engineering)
2021	Pankaj Kumar (co-advisor: Pradip K. Jain)	Multicontrollable metasurfaces with pixelated meta-atoms for controlling terahertz radiation	National Institute of Technology Patna	Assistant Professor, National Institute of Technology Patna	PhD (Electronics & Communication Engineering)
2022	Govindam Sharma (co-advisor: Pradip K. Jain)	Multicontrollable pixelated metasurfaces (in progress)	National Institute of Technology Patna		PhD (Electronics & Communication Engineering)

AWARDS WON BY STUDENTS AT PENN STATE

Undergraduate Students

Award	Year	Recipient
ESM Department Student Marshall	2002	David C. Denkenberger
	2005	Katherine E. Weaver
	2006	Benjamin M. Ross
	2013	Xuerong Xiao
ESM Frank Fenlon Award	2000	Elif Ertekin

(Best Thesis Presentation)		
	2005	Katherine E. Weaver
	2021	Chenzhang Zhou
ESM Breneman Portfolio Award	2015	Veronica L. Sardo
	2021	Chenzhang Zhou
PSU College of Engineering 40 Under 40 Award	2021	Benjamin M. Ross
	2021	John R. Waldeisen
PSU College of Engineering Joelle WEP Award	2005	Katherine E. Weaver
Xerox Research Award for Research by a BS Student	1994	Steven F. Nagle
	2000	Elif Ertekin
PPG Undergraduate Research Fellow ($7.5K)	2017	Vikas Vepachedu
Goldwater Fellowship	1999	David C. Denkenberger
	2003	Katherine E. Weaver
Schreyer Honors College Dean's Research Award	2001	Joseph B. Geddes III
National Science Foundation Graduate Fellowship	1994	Steven F. Nagle
	2000	Elif Ertekin
	2001	Joseph B. Geddes III
	2003	David C. Denkenberger
	2005	Katherine E. Weaver
	2006	Benjamin M. Ross
National Defense Science and Engineering Graduate Fellowship	2002	Erik E. Steltz
Tau Beta Pi Fellowship	2013	Xuerong Xiao
SPIE (International Society for Optical Engineering) Scholarship	2003	Matthew D. Pickett
	2017	Vikas Vepachedu

Graduate Students

Award	**Year**	**Recipient**
ESM Today Grand Prize	2010	Drew P. Pulsifer ($2K)
ESM Today First Prize	2017	Sema Erten
ESM Today Second Prize	2015	Stephen E. Swiontek
ESM Today Third Prize	2010	Lai Wei
ESM Today Third Prize	2012	Muhammad Faryad

ESM Today Third Prize	2014	Stephen E. Swiontek
ESM Today Third Prize	2017	Chandraprakash Chindam
ESM Early Career Recognition Award	2012	Fei Wang
	2014	Joseph B. Geddes III
	2015	Mukul Dixit
	2016	Benjamin M. Ross
	2020	Muhammad Faryad
ESM Sabih & Güler Hayek Graduate Scholarship	2010	Muhammad Faryad
ESM Robert A. Sebroski Graduate Fellowship	2017-2018	Faiz Ahmad
	2018-2019	Faiz Ahmad
ESM Longenecker & Associates Scholarship	2017-2018	Faiz Ahmad
	2018-2019	Faiz Ahmad
ESM Paul A. Lester Memorial Award in Microelectronics	2017	Chandraprakash Chindam
	2020	Faiz Ahmad
Fred C. and M. Joan Thompson Graduate Fellowship in Electrical Engineering	2017-2018	Timothy J. Garner
Anthony J. Ferraro Graduate Research Award	2018	Timothy J. Garner
Penn State Alumni Association Early Career Recognition Award	2019	Benjamin M. Ross
Weiss Graduate Fellowship	2001-2002	Fei Wang
	2003-2004	Fei Wang
MRI Graduate Fellowship	2008	Lai Wei
Xerox Research Award for Research by an MS Student	1997	Vijayakumar C. Venugopal
	2001	Joseph B. Geddes III
Xerox Research Award for Research by a PhD Student	2000	Vijayakumar C. Venugopal
PSU College of Engineering Distinguished Teaching Fellowship	2015-2016	Chandraprakash Chindam
University Graduate Research Fellowship	2009-2010	Muhammad Faryad
	2016-2017	Faiz Ahmad
Penn State Alumni Dissertation Award	2002	Joseph A. Sherwin ($5K)
	2004	Fei Wang ($5K)
	2012	Muhammad Faryad ($5K)

	2013	Drew P. Pulsifer ($5K)
Fred A. and Susan Breidenbach Graduate Fellowship in Engineering	2020	Faiz Ahmad ($4K)
Haythornthwaite Graduate Fellowship in Innovation	2011	Drew P. Pulsifer ($10K)
SPIE (International Society for Optical Engineering) Scholarship	2002	Fei Wang ($2K)
	2004	Joseph B. Geddes III ($3K)
	2009	Michael A. Motyka ($2K)
	2015	Stephen E. Swiontek ($3K)
SPIE (International Society for Optical Engineering) Research Excellence Award	2011	Muhammad Faryad ($3K)
	2011	Drew P. Pulsifer ($2K)
SPIE (International Society for Optical Engineering) Travel Grant	1999	Vijayakumar C. Venugopal
	2000	Vijayakumar C. Venugopal
	2003	Joseph B. Geddes III
	2010	Drew P. Pulsifer
	2010	Drew P. Pulsifer
	2011	Stephen E. Swiontek
	2013	Stephen E. Swiontek
Union Radio Science Internationale (URSI) Young Scientist Award	1998	Vijayakumar C. Venugopal
Northeast Association of Forensic Scientists (NEAFS) Dr. Peter R. DeForest Collegiate Project Competition for Best Graduate Student Presentation	2012	Stephanie F. Williams

VISITING SCHOLARS (LONG-TERM)

1. Tom G. Mackay (Scotland) 1999, 2003, 2005, 2007
2. Werner S. Weiglhofer (Scotland) 2001
3. Álvaro Gomez (Spain) 2002-2003
4. Francisco Chiadini (Italy) 2003-2004
5. Juan-Adrian Reyes Cervantes (Mexico) 2005
6. Vincenzo Fiumara (Italy) 2005
7. John A. Polo Jr. (USA) 2007
8. Abuzar A. Siddiqui (Pakistan) 2008
9. Alexis A. Ortiz (Mexico) 2008

10. Jun Gao (P.R. China) 2008-2010
11. Leticia Jiminez Ortega (Italy) 2010
12. Husnul Maab (Pakistan) 2010-2011
13. Raúl J. Martín-Palma (Spain) 2011
14. Allah Ditta Ulfat Jafri (Pakistan) 2012-2013
15. Thomas H. Anderson (Scotland) 2013, 2014, 2015
16. Tarun Gupta (USA) 2013
17. Xin Han (China) 2014
18. Tomas Tolenis (Lithuania) 2014
19. Mikhail V. Shuba (Belarus) 2014-2015
20. Natalia M. Dushkina (USA) 2015
21. Annunzia Diovisalvi (Italy) 2016
22. Muhammad Faryad (Pakistan) 2016
23. Rajan Agrahari (India) 2017
24. Peter Monk (USA) 2019

VISITING UNDERGRADUATE INTERNS

1. Kartiek Agarwal (India) 2008
2. Devender (India) 2009

GRADUATE COMMITTEE MEMBERSHIPS

1. Thomas R. Howarth (MS, Engineering Science) 1988
2. Terry Guire (MS, Solid State Science) 1988
3. Anne T. Barrett (MS, Engineering Science) 1990
4. Grant A. Gordon (MS, Engineering Science) 1990
5. Robert Hollinger (MS, Engineering Science) 1990
6. Yongrae Roh (PhD, Engineering Science and Mechanics) 1990
7. Shiuh–Kiang Yang (PhD, Engineering Science and Mechanics) 1990
8. Clifford E. Dungey (PhD, Meteorology) 1990
9. C.–C. Sung (PhD, Engineering Science and Mechanics) 1991
10. Ruyan Ro (PhD, Engineering Science and Mechanics) 1991
11. S. Joseph (MS, Electrical Engineering) 1991
12. S.–H. Kim (PhD, Electrical Engineering) 1992
13. Balasubramaniam Shanker (MS, Engineering Science) 1992
14. Y.–W. Kim (PhD, Engineering Science and Mechanics) 1992
15. Maher Umari (PhD, Electrical Engineering) 1992
16. Scott A. Wymer (MS, Engineering Science) 1992
17. J.-P. Chen (PhD, Meteorology) 1992
18. John B. Fahnline (PhD, Acoustics) 1992
19. Kamau wa Gachigi (MS, Solid State Science) 1993
20. Frank Papa (MS, Engineering Science) 1994
21. Angeliki Karali (PhD, Engineering Science and Mechanics) 1994
22. Steven L. Means (PhD, Acoustics) 1994
23. Boris N. Pavlakovic (MS, Engineering Science) 1994
24. William Howland (PhD, Engineering Science and Mechanics) 1995
25. Karthikeyan Chittayil (PhD, Industrial and Manufacturing Engineering) 1995

26. William A. Jester (MS, Engineering Mechanics)1996
27. David R. Campbell (PhD, Engineering Science and Mechanics) 1997
28. R.A. Rodriguez Solis (PhD, Electrical Engineering) 1998
29. E. Macaroglu (PhD, Science Education) 1999
30. D. Arakaki (PhD, Electrical Engineering) 2000
31. J. Stamm (PhD, Electrical Engineering) 2000
32. Wei Guo (MS, Engineering Mechanics)2000
33. J.A. Strait (MS, Engineering Mechanics)2000
34. S. Chakravarty (PhD, Electrical Engineering) 2001
35. Robert A. Knepper (MS, Engineering Science) 2001
36. David P. Lewis (MS, Engineering Science) 2002
37. Thomas A. Artman (MS, Engineering Science) 2002
38. Farrah Gaskins (MEng, Engineering Mechanics) 2003
39. James R. Kirk (PhD, Meteorology) 2006
40. Eric So (MS, Engineering Science) 2006
41. Murat Cetinkaya (MS, Engineering Science) 2006
42. Anthony J. Schulz (MEng, Engineering Mechanics) 2007
43. R. Chandrasekharan (MEng, Engineering Mechanics) 2007
44. A. Desai (PhD, Mechanical Enggineering) 2007
45. Ashutosh Tewari (PhD, Engineering Science and Mechanics) 2008
46. Murat Cetinkaya (PhD, Engineering Science and Mechanics) 2008
47. Alexis Likhanskii (PhD, Engineering Science and Mechanics) 2009
48. Ambuj Sharma (PhD, Engineering Science and Mechanics) 2010
49. Stuart A. Friesen (PhD, Chemistry) failed 2012
50. Mengqian Lu (PhD, Engineering Science and Mechanics) 2014
51. Alexander C. Archer (PhD, Physics) 2014
52. Cihang Lu (PhD, Nuclear Engineering) 2019
55. Christopher Gray (PhD, Chemistry) 2019
53. Anubhav Roy (PhD, Engineering Science and Mechanics)
54. Michael J. Kelly (PhD, Engineering Science and Mechanics)
55. Md. Tarekul Alam (PhD, Mechanical Engineering)

UNDERGRADUATE (MAJOR) ADVISEES AT PENN STATE

Academic Year	**Advisees**
1988–1989	R.S. Andrulis, Jr., T.L. Knepp, D.B. Morris, E.F. Prechtl, B. Smith
1989–1990	R.S. Andrulis, Jr., K.T. Galvin, T. J. Hall, D.B. Morris, E.F. Prechtl, G. Sharkowicz
1990–1991	K.T. Galvin, T. J. Hall, D.B. Morris, R.D. Kampia, E.F. Prechtl, G. Sharkowicz
1991–1992	K.T. Galvin, G.C. McCarty, R.D. Kampia, M.T. Prinkey, G. Sharkowicz, S.F. Nagle
1992–1993	K.T. Galvin, R.D. Kampia, M.T. Prinkey, G. Sharkowicz, S.F. Nagle, W.A. Jester, M. Wyczalkowski
1993–1994	S.F. Nagle, W.A. Jester, M. Wyczalkowski, K.A. Messerle, J.M. Yerger

1994–1995	M.D. Bundy, J. Greenbaum, W.A. Jester, J. Pospisil, J.M. Yerger, M. Wyczalkowski
1995–1996	J. Greenbaum, W.A. Jester, M. Wyczalkowski
1996–1997	T.R. Artman, R.A. Knepper, S. McCracken, J.L. Shannon
1997–1998	T.R. Artman, R.A. Knepper, S. McCracken, J.L. Shannon, M.D. Stubna
1998–1999	J.S. Ahn, T.R. Artman, H.–L. Assouman, D.P. Lewis, M.D. Stubna
1999–2000	J.S. Ahn, T.R. Artman, H.–L. Assouman, D.P. Lewis, T.T. Muench
2000–2001	D.P. Lewis, T.T. Muench, C.J. O'Brien, S.F. Rohrbacher, A.L. Romasco, A. Verma
2001–2002	B.N. Bond, T.T. Muench, C.J. O'Brien, A.L. Romasco, A. Verma, K.E. Weaver
2002–2003	C.J. O'Brien, A. Verma, K.E. Weaver
2003–2004	C.J. O'Brien, A. Verma, J.R. Waldeisen, K.E. Weaver
2004–2005	A. Verma, J.R. Waldeisen, K.E. Weaver
2005–2006	M. Dixit, J.R. Waldeisen, C. Robinson
2006–2007	M. Dixit, M.E. Hitchcock, J.R. Waldeisen, C. Robinson, J.I. Rodgers
2007–2008	W.K. Bisbee, M.E. Hitchcock, J.I. Rodgers
2008–2009	W.K. Bisbee, M.E. Hitchcock, D. Olvett, J.I. Rodgers, R. Shao
2009–2010	O. Malinowski, J. Park, J.I. Rodgers, M. Reed, R. Shao, D.A. Rydzewski
2010–2011	J.Z. Park, J.I. Rodgers, M. Reed, R. Shao, D.A. Rydzewski
2011–2012	E.D. Burlingame, J.P. Crane, S. Finkel, L.N. Frederick, J.Z. Park, J.I. Rodgers, D.A. Rydzewski, M. Weller
2012–2013	J.Z. Park, J.I. Rodgers
2013–2014	Y. Ding, A.E. Fodel, C.M. Graham, L.R. Hauber, J.E. Nasr, J.Z. Park, C.R. Weiss, J.P. Wiand
2014–2015	V.P. Acero, Y. Ding, A.E. Fodel, C.M. Graham, J.E. Nasr, J.P. Wiand
2015–2016	V.P. Acero, Y. Ding, A.E. Fodel
2016–2017	V.P. Acero, C.J. Bergen, Y. Li, M.S. Sow, C.B. Stutzman, Z. Yu
2017–2018	Y. Li, M.S. Sow, C.B. Stutzman, Z. Yu
2018-2019	C.J. Bergen, Y. Li, T.F. Schranghammer
2019-2020	
2020-2021	K. Schmauk

OTHER ACTIVITIES

1. **Managing Editor**, *Electronic and Acoustic Materials News* (CEEAM), 1986–87
2. **Judge**, *Science Scholars '91* (science exposition organized by WPSX–TV with Pennsylvania participants from Grades 9–12), April 5–6, 1991
3. **Star Teacher (Mathematics)**, *MsWiz '91* (science camp organized by NSF and Penn State College of Engineering for disadvantaged female students from Grades 5–7), July 26, 1991. Lecture: Powers of Ten.

4. **Lecturer** (**General Science**), *Science & Engineering Research Academy* (science camp organized at Penn State by Robert S. Pangborn for High School students), July 21, 1992. Lecture: Uwa t'uwa, A Nigerian Proverb
5. L**ecturer** (**General Engineering**), *Science & Engineering Research Academy* (science camp organized at Penn State by Robert S. Pangborn for High School students), July 26, 1993. Lecture: Materials for Green Design
6. **Lecturer** (**General Engineering**), *Science, Technology, and Research Summers* (science camp organized at Penn State by Robert S. Pangborn for High School students), July 17, 1995. Lecture: Sustainable Designs.