Curriculum Vitae

Dr. Masroor Ikram, *Tamgha-e-Imtiaz (Medal of Distinction)*
Former Professor/Dean Research/Director Academics
Pakistan Institute of Engineering and Applied Sciences
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Education

1986 - 1990:	PhD	(Laser Physics)	University of Cambridge, Cambridge, UK
1982 - 1984:	M.Sc.	(Nuclear Engg.)	Quaid-i-Azam University, Islamabad, Pakistan
1980 - 1982:	M.Sc.	(Physics)	Quaid-i-Azam University, Islamabad, Pakistan
1978 - 1980:	B.Sc.	(Physics & Maths)	Punjab University, Lahore, Pakistan
1975 - 1977:	HSSC	(Pre-Engg)	F.G. Sir Syed College, The Mall, Rawalpindi

Academic/Research Positions

Visiting Professor	PIEAS, Nilore, Islamabad	Oct. 2019 - Till date
Senior Professor	Department of Physics and Applied Mathematics, PIEAS, Nilore, Islamabad.	Dec. 2013 - Oct. 2019
Professor	Department of Physics and Applied Mathematics, PIEAS, Nilore, Islamabad.	Dec. 2005 - Nov. 2013
Associate Professor	Department of Physics and Applied Mathematics, PIEAS, Nilore, Islamabad.	May 2002 - Nov. 2005
Associate Professor	Faculty of Engineering Sciences, GIK Institute, KP	Jan. 2002 - May 2002
Associate Professor	Department of Physics and Applied Mathematics, PIEAS, Nilore, Islamabad.	Aug. 1997 - Dec. 2001
Principal Scientist	Optics Laboratories, PAEC, Islamabad	Dec. 1995 - Aug. 1997
Senior Scientist	Optics Laboratories, PAEC, Islamabad	Dec. 1987 - Nov. 1995
Scientific Officer	Laser Group, PINSTECH, Nilore, Islamabad	July 1984 - Nov. 1987

Administrative Positions

Director (Academics)	PIEAS, Nilore, Islamabad	Nov. 2014 – Oct. 2019
Chair holder	UNESCO Chair, *Light for Health*, PIEAS	May 2012 – Oct. 2019
Head	Department of Physics and Applied Mathematics, PIEAS, Nilore, Islamabad	Nov. 2009 – Feb. 2013
Dean (Research)	Pakistan Institute of Engineering and Applied Sciences, Nilore, Islamabad.	Mar. 2006 – Sep. 2008
Head Laser Group	Department of Physics and Applied Mathematics, PIEAS, Nilore, Islamabad.	Jan. 2002 – Oct. 2019

Funds and Research Grants

1. PIEAS-Harvard linkage through HEC's program of '*International Linkages of Pakistani Universities with Foreign Universities*', with finances of 12.71 Million Rs.
2. A PC-1 "*Development of Biophotonics Laboratory*" of 35.2 M. Rs. from HEC.
3. Award of Research Project under National Research Program for Universities on '*Laser Tissue Interaction and Wave Propagation in Random Media*'.

Summary of the Academic Work

Publications/presentations/Theses supervisions/conference participations	Number
Books: *Lasers and Optics*, Allama Iqbal Open University, Islamabad, 1999.	1
Articles published in refereed journals (citations=1868**;** h-index 25, i10-index 58 Citations: http://scholar.google.com.pk/citations?user=XAbnIEwAAAAJ&hl=en https://orcid.org/0000-0001-7200-9117 ; Web of Science Researcher IDG-9117-2011	83
Impact factor (2018/2019) of 83 publications	>200
Presentations (in national/international conferences and popular talks)	85
PhD Theses Supervised/co-supervised	23
MS/MPhil Theses Supervised	51
Other Thesis Supervised (e.g. BS, SOMC)	12
Participation in national/international conferences, symposia, workshops, etc.	69
Research Laboratories set up	2

Awards and Honours

1. The paper entitled "*An overview of potential natural photosensitizers in cancer photodynamic therapy*" has been selected as a highly cited paper in 2023-2024. A certificate was issued by the journal 'Biomedicine' in 2025.
2. The research contribution was acknowledged by the President of Pakistan. He presented a national civil award of **Tamgha-e-Imtiaz** (Medal of Distinction) on March 23, 2015.
3. Contribution to the national defense projects was acknowledged and national civil honor of **Tamgha-e-Baqa** was awarded by the president of Pakistan in 2001.
4. HEC's outstanding research paper award for the year 2010-11 on the paper:

   M. Atif, M. Fakhr-e-Alam, S. Firdous, S.S.Z. Zaidi, S. Suleman, and **M. Ikram**, *Study of the efficacy of 5-ALA mediated photodynamic therapy on human Rhybdomyosarcoma cell line*. Laser Phys. Lett. **7**(10) 757-764, 2010.

5. Best Research Paper Award for the year 2008-09 by HEC in 2011 on the paper:

   M. Atif, S. Firdous, A. Khurshid, L. Noreen, S.S.Z. Zaidi, and **M. Ikram**, *In vitro study of 5-aminolevulinic acid-based photodynamic therapy for apoptosis in human cervical HeLa cell line*, Laser Phys. Lett. **6**(12) 886-891, 2009.

6. Research and Productivity Awards by Pakistan Council for Science and Technology was presented on five occasion during the years 2004 to 2013.
7. Merit scholarship for PhD studies at Cambridge University, from Ministry of Science and Technology, Government of Pakistan, 1986-90.
8. Fellowship from Pakistan Atomic Energy Commission for MS in Nuclear Engineering, 1982-84.
9. Merit scholarship from Quaid-i-Azam University, Islamabad, 1980-82.
10. Merit scholarship from Board of Intermediate and Secondary Education, Sargodha, 1977-79.

Chair holder, UNESCO Chair 'Light for Health'

UNESCO Chair in PIEAS has been established on '***Light for Health***'. I served as the first Chair holder of the Chair appointed by UNESCO Head Quarter, France. Many activities were organized at this platform.

1. *Workshop on Laser Safety for health professionals*, Agha Khan University Hospital, Karachi, March 2019.
2. *Workshop on Photodynamic Therapy*, PIEAS, Islamabad, July 2-5, 2012.
3. *Symposium on Biophotonics*, PIEAS, Islamabad, March 19, 2013.

4. *2nd Workshop on Photodynamic Therapy*, PIEAS, Islamabad, April 1-2, 2014.
5. A campus walk for the awareness of the importance of International Year of Light on January 26, 2015. A decent number of students/faculty participated with a large banner.
6. A symposium on *'International Year of Light 2015'*, January 27, 2015.
7. A poster competition on the work related to light and optics was held at PIEAS.
8. Short Course on *Laser and its Applications*, May 25 - June 5, 2015, PIEAS, Islamabad.

With the good performance, UNESCO has extended the chair for another four years from 2016 to 2020.

Head, Department of Physics and Applied Mathematics

As Head of the Department, I have promoted basic research in the department and improved infrastructure. Initiated a PhD program in Medical Physics.

Dean Research

It was a period of great pride for me, as I established the PhD program at PIEAS. For the first time, I also established the Council for Graduate Studies and Research, formulated its rules and regulations, and implemented them in letter and spirit. Initially, there was considerable resistance from students, but later they found the system highly beneficial. It streamlined the academic program by ensuring proper checks and balances between students and supervisors and helped maintain the high standing of PIEAS.

Director Academics

As Director of Academics, one of my key responsibilities was to establish international linkages with foreign universities. I successfully developed active collaborations with leading institutions worldwide, including Harvard Medical School, Harvard University, the University of Toronto, the University of São Paulo (Brazil), North China Electric Power University, Hacettepe University (Ankara, Turkey), and many others.

Affiliation with Academic/Administrative Bodies

1. External Member for the selection process of Assistant Professor (Physics) in the Department of Physical Sciences, University of Engineering and Technology, Taxila, 2026
2. *Subject Expert in the Selection Board for Faculty Members*, Khawaja Fareed University of Engineering and Information Technology, Rahim Yar Khan, 2025
3. *Subject Expert in the Selection Board for Faculty Members*, AJK University, Muzaffarabad, 2022.
4. Lifetime member of *Pakistan Nuclear Society* since 2021.
5. Member, *PIEAS Steering Committee (PSC)*, 2016-2019.
6. *Subject Expert in the Selection Board for Faculty Members*, University of Engineering and Technology, Taxila, Rawalpindi.
7. Convener, *PhD Advisory Committee*, Department of Physics and Applied Mathematics, PIEAS, 2015-2019.
8. Member, *PhD Coordination Committee (PCC)*, PAEC Headquarter, February-August 2015.
9. Director (Academics), PIEAS, 2014 - 2019.
10. Member, *Board of Studies*, Department of Physics, Quaid-i-Azam University, Islamabad, 1-1-2014 to 31-12-2016.
11. Member, *Reviewer Editorial Board, Frontiers in Biotechnology* (a section of Frontiers in Molecular Biosciences, Bioengineering and Biotechnology), since November 2013.
12. Member, *Board of Studies*, National Institute of Lasers and Optronics, since September 2013.
13. Member, *Board of Studies*, Department of Basic Sciences, Riphah International University, Rawalpindi, 2013-2016.
14. Member, *Council for Graduate Studies and Research*, PIEAS, 2013-2019.
15. *Subject Expert in the Selection Board for Faculty Members in the Department of Basic Sciences*, Riphah International University, Islamabad.
16. Member, *Board of Trustees*, PIEAS IT & Telecom Endowment Fund, May 2010- Oct. 2019
17. Member, *STEM Organizing Committee*, 2009-2019.
18. Member, *Board of International Physics Olympiad*, 2008-2011.

19. Member, *Board of Studies*, Department of Physics, Federal Urdu University of Arts Science and Technology, Islamabad.
20. Member, *Research Advisory Board*, National Institute of Lasers and Optronics, Islamabad, since August 2007.
21. Member, *Academic Committee*, PIEAS, 2006-2008, and Nov. 2009-Feb. 2013
22. Member, *Finance Committee*, PIEAS, 2006-2008.
23. Secretary, *Council for Graduate Studies and Research*, PIEAS, March 2006-Sep. 2008.
24. Member, *Selection and Promotion Committee*, PIEAS, 2006-2015.
25. Coordinator, "*PIEAS Colloquium*" 2005-2018.
26. Initiator and Member, *Course Committee*, M. Phil Physics Program, PIEAS, 2004.
27. Member, *Optical Society of America*, USA, 2003.
28. Member, *Board of Studies*, Department of Physics and Applied Maths, PIEAS, 2000-2019.
29. Member, *Board of Faculties*, PIEAS, 2000-2019.
30. Member, *Academic Advisory Committee*, PAEC Model College, Nilore, Islamabad.
31. Member, *National Physics Talent Contest Committee*, Pakistan, 1999-2005 & 2007-2019.
32. Member, *Course Committee*, M. Phil. Physics Course, Allama Iqbal Open University, Islamabad, Pakistan, 1998-2001.
33. Member, *Course Committee*, M.Sc. Physics Course, Allama Iqbal Open University, Islamabad, Pakistan, 1998-2001.
34. Member, *Pakistan Physical Society*, 1991.

International Collaborations

1. Pre-screening of breast cancers using optical breast spectroscopy with University Health Network, University of Toronto, Toronto, Canada.
2. Prof. Dr. Hui Ma, Division of Life Science and Healthcare, Graduate School at Shenzhen, Tsinghua University, Tsinghua Campus, University Town of Shenzhen, Shenzhen 518055, China. Submitted a joint research proposal on the '*Development of optical imaging techniques for biomedical applications*'.
3. Mevlana Exchange Program with Hacettepe University, Turkey, for faculty and students exchange and research collaboration.
4. Bilateral interaction with Harvard Medical School, Harvard University, Boston, USA. This linkage program has been sponsored by HEC, Pakistan.
5. Institute of Physics, University of São Paulo, Brazil. Informal but close interactions with Prof. Vanderlei Bagnato in the field of photodynamic therapy. Four of my graduate students had done partial research work in University of São Paulo.
6. Dr. Silke Krol from European Center for Photomedicine, Italy, is actively supporting the research activities related to nano-biophotonics. She also inaugurated 'Photomedicine Research Laboratory' at PIEAS.

Laboratories Set-up

1. **Biophotonics Laboratory**: The research laboratory was designed and got operational from HEC grant of 35.2 MRs during 2006-08. Main equipment includes femto-second laser, autocorrelator, polarimeter etc. several research students have completed their MS and PhD research work in this laboratory.
2. **Photomedicine Research Laboratory**: In biophotonics, we are also working on cancer diagnostics and therapy. For this purpose, a complete facility for incubation of cancer cell line has been established. The cancer cells are grown with photosensitizer and then applications of laser light of appropriate wavelength can destroy the cancer cells. More than twenty research articles have been published from this lab on this multidiscipline area. Some papers are appeared in letters which shows the impact of this work.

Symposia /Workshops Organized

1. Played an advisory role in the *45th International Nathiagali Summer College, held in NCP, Islamabad,* during July 2020 *on Biomedical Optics.*
2. *Workshop on Laser Safety for health professionals*, Agha Khan University Hospital, Karachi, March 2019.
3. Biophotonics in *43rd International Nathiagali Summer College,* NCP, Islamabad, July 16-28, 2018.
4. Short Course on *Laser and its Applications*, May 25 - June 5, 2015, PIEAS, Islamabad.
5. *International Year of Light 2015*, January 27, 2015.
6. *2nd Workshop on Photodynamic Therapy*, PIEAS, Islamabad, April 1-2, 2014.
7. *Symposium on Biophotonics*, PIEAS, Islamabad, March 19, 2013.
8. *Workshop on Photodynamic Therapy*, PIEAS, Islamabad, July 2-5, 2012.
9. *Technology Workshop on Atomic Physics and Nano-fabrication*, PIEAS, Ibd, April 3-5, 2012.
10. *Symposium on Biophotonics*, PIEAS, Islamabad, February 1, 2012.
11. Biophotonics in *34th International Nathiagali Summer College*, June 29-July 4, 2009.
12. *Symposium on Biophotonics*, PIEAS, Islamabad, March 19, 2009.

PIEAS Colloquium

PIEAS Colloquium is a prestigious forum at which distinguished scholars share their knowledge and experience with the faculty and students. I was its coordinator for thirteen years and hosted 171 eminent scholars, including 67 from foreign countries. The number of speakers from foreign countries were:

USA	22	Japan	2	Poland	1
UK	13	Italy	2	Canada	1
France	5	China	2	Brazil	1
Austria	4	Turkey	2	Argentina	1
Germany	4	Saudi Arabia	1	Australia	1
South Korea	3	Russia	1	Ireland	1

PIEAS Thematic Society

I was advisor of a student led extracurricular "PIEAS Thematic Society" during 2014-2019 period, which was one of the active society. With my close interactions, they organized many big events like Pakistan National Olympiad, Parliamentary debates, Synergy for energy (to review the energy crises and its solutions), etc.

STEM Career Program

STEM Career Program a joint venture of PIEAS and HEC has two-fold mission:

- To inspire youth of the Nation to opt for careers in Science, Technology, Engineering and Mathematics (STEM) and preparing them for participation in the annual International Olympiads in Physics, Chemistry, Biology and Mathematics.
- To encourage engineering students to come up with innovative solutions to problems of national interest preferably related to local industry and R & D.

In the first Part, a nationwide test is conducted in four subjects for the students of grade 9-11. Fifty students in each subject are shortlisted for further grooming. Four partner institutes are selected for training the students in their respective subjects: HEJ Institute, Karachi for Chemistry; National Institute of Biotechnology and Genetic Engineering, for Biology, COMSATS University, Lahore Campus for Mathematics; and PIEAS for Physics. Since 2006, Pakistani teams of young brilliant minds are participating in all the four subjects in these Olympiads. The outcome is quite encouraging and our teams have accomplished 139 laurels including 2 Gold, 6 Silver and 63 Bronze medals.

In 2025 a student of Biology Team won Gold Medal, while all four members of the Pakistani Team of International Nuclear Science Olympiad have won of Gold, Silver, and Bronze medals.

PhD Theses Reviewed of Foreign Universities

1. Yuanhuan Zhu, *Backscattering Polarization Imaging in Living Tissues*, Tsinghua University, Shenzhen, China, November 2021.
2. Yue Yao, *Polarization and Image Features for Histopathological Diagnosis*, Tsinghua University, Shenzhen, China, November 2021.

Publications

i) Books

1. Malik Sajjad Mehmood, Masroor Ikram and Tariq Yasin, *UHMWPE blends and hybrids for orthopedic medical applications*, Lambert Academic Publishing, Germany, January 2015.
2. Hafeez Ullah and Masroor Ikram, *Optical coherence tomography for glucose monitoring in blood*, Lambert Academic Publishing, Germany, April 2012.
3. Masroor Ikram and Mohammad Yousaf Hamza, *Lasers and Optics*, Allama Iqbal Open University, Islamabad, 1999.

ii) Articles in International Journals

1. B. Aziz, L. Ahmat, A. Khurshid, J. A. Khan, M. Alam and M. Ikram, *In-vitro* anticancer and anti-migration effect of *Ficus racemosa* leaves extract and its neoadjuvant combination with chemo-photodynamic therapy, Laser Physics **33**(7) 2023.

2. B. Aziz, A. Khurshid, L. Ahmat, J. A. Khan, M. Alam and M. Ikram, *In vitro evaluation of the cytotoxic potential of Ficus palmata and its combination with chemotherapy and photodynamic therapy*, Laser Phys. Lett. **20**(5) 055601, 2023.

3. B. Aziz, I. Aziz, A. Khurshid, E. Raoufi, F. N. Esfahani, Z. Jalilian, M. R. Mozafari, E. Taghavi and M. Ikram, *An Overview of Potential Natural Photosensitizers in Cancer Photodynamic Therapy*, Biomedicine **11**, 224, 2023.

4. B. Aziz, A. Khurshid, R. Mahmood, J. A. Khan, S. Javaid, M. Alam, S. Mujtaba ul Hassan and M. Ikram, *Study of synergistic effects of Ficus Carica leaves extract mediated chemo-photodynamic therapy on rhabdomyosarcoma cells*, Photodiagnosis and Photodynamic Therapy **36**, 102565, 2021.
5. R. Mehmood, A. Khurshid, M.S. Yousaf, M. Alam, M. Salman and M. Ikram, *Effect of Vitamin A as a Neoadjuvant Agent in Chemotherapy and Photodynamic Therapy of Rhabdomyosarcoma Cells*, Photodiagnosis and Photodynamic Therapy **32**, 102088, 2020.
6. M.S. Yousaf, A. Khurshid, R. Mahmood, and M. Ikram, *Polarimetric comparison of fresh and frozen skeletal muscle tissues of goat*, Photodiagnosis and Photodynamic Therapy, **32**, 102071, 2020.
7. M.S. Yousaf, A. Khurshid, I. Ahmad, R. Mahmood, M. Alam, S. B. Bukhari, J. A. Khan, M. Rafi and M. Ikram, *Label free characterization of soft tissue with optical polarization technique*, Laser Physics **30**(7) 075601 2020.
8. S. Ashraf, H. Ullah, F. Andleeb, M. Ikram, A. Nazir and Z. Batool, *Ultrashort autocorrelator using a femtosecond laser for quantification of glucose and salt levels in turbid media*, Laser in Engineering **46**(1-4) 153-161, 2020.
9. M.S. Yousaf, I Ahmad, A. Khurshid and M. Ikram, *Machine assisted classification of chicken, beef and mutton tissues using optical polarimetry and Bagging model*, Photodiagnosis and Photodynamic Therapy, 101779, 2020.
10. M.S. Mehmood, M. Tabasam, M. Ahmed, A. Idris, T. Yasin and M. Ikram, *Mueller matrix polarimetry for characterization of E-Beam irradiated UHMWPE*, Radiation Physics and Chemistry, **166**, 108503, 2020.

11. M.S. Mehmood, I. Tahira, A. Idris, T. Yasin and M. Ikram, *UHMWPE band-gap properties -II: Effect of post e-beam irradiation real time shelf aging in air*, Radiation Physics and Chemistry, **159,** 231-237, 2019.
12. R. Mahmood, A. Khurshid, J. A. Khan, M. Rafi, M. S. Yousaf, M. Maqsood, M. Aalam, M. Salman and M. Ikram, *Enhanced efficacy of chemo-photodynamic therapy of rhabdomyosarcoma cells by using vitamin K3 as a neoadjuvant agent*, Laser Physics **29**, 015603, 2018.
13. R. Mahmood, A. Khurshid, J. A. Khan, M. rafi, A. Aalam, M. Salman and M. Ikram, *Vitamin D3 - assisted chemo-photodynamic therapy of rhabdomyosarcoma cancer cells for effective treatment*, Laser Physics Letters **15**, 125602, 2018.
14. S. Khatoon, H.S. Han, J. Jeon, N.V. Rao, Dae-Woong Jeong, M. Ikram, T. Yasin, Gi-Ra Yi and J. H. Park, *Hypoxia-Responsive Mesoporous Nanoparticles for Doxorubicin Delivery*, Polymers, **10**, 390 2018.
15. M. Maqsood, R. Qureshi, M. Ikram, M. S. Ahmad, B. Jabeen, M. R. Asi, J. A. Khan, S. Ali and L. Lilge, *In vitro anticancer activities of Withania coagulans against HeLa, MCF-7, RD, RG2, and INS-1 cancer cells and phytochemical analysis*, Integrative Medicine Research, 7(2), 184-191, 2018.
16. S. Ali, S. Muhammad, A. Khurshid, M. Ikram, M. Maqsood, C. Fisher, J. Cathcart, L. Lilge, *Effective Phthalocyanines mediated Photodynamic Therapy with Doxorubicin or Methotrexate combination therapy at sub-micromolar concentrations in vitro,* Photodiagnosis and Photodynamic Therapy **22**, 51-64, 2018.
17. M. Bilal, M Saleem, Maria Bilal, S. Khan, R. Ullah, H. Ali, M. Ahmed and M. Ikram, *Raman spectroscopy based screening of IgG positive and negative sera for dengue virus infection*, Laser Physics Letters, **14**, 115601 2017.
18. I. Ahmad, A. Gribble, I. Murtaza, M. Ikram, M. Pop and A. Vitkin, *Polarization image segmentation of radiofrequency ablated porcine myocardial tissue*, PLoS One **12**(4), e0175173 2017.
19. S Ali, S Muhammad, A. Khurshid, M Ikram, C Fisher, J Cathcart, L Lilge, *Doxorubicin or methotrexate exposure followed by aluminum phthalocyanine mediated photodynamic therapy provides for effective co-therapy*, Photodiagnosis and Photodynamic Therapy **17**, A46, 2017.
20. M. Maqsood, R. Qureshi, M. Arshad, M.S. Ahmed and M. Ikram, *Preliminary Phytochemical Screening, Antifungal and Cytotoxic Activities of Level Extractor of Moringa Oleifera Lam from Salt Range, Pakistan*, Pak. J. Bot. **49**(1), 353-359, 2017.
21. S. Khatoon, H.S. Han, M. Lee, H. Lee, Dae-Woong Jung, T. Thambi, M. lkram, Y.M. Kang, Gi-Ra Yi, J. H. Park, *Zwitterionic Mesoporous Nanoparticles with a Bioresponsive Gatekeeper for Cancer Therapy*, Acta Biomaterialia **40**, 282-292, 2016.
22. I. Ahmad, M. Ahmad, K. Khan and M. Ikram, *Polarimetry Based Partial Least Square Classification of Ex Vivo Healthy and Basal Cell Carcinoma Human Skin Tissues*, Photodiagnosis and Photodynmic Therapy **14**, 134-141, 2016.
23. M.S. Mirza, Q. Liu, T. Yasin, X. Qi, Jing-Feng Li and M. Ikram, *Dice-and-fill processing and characterization of microscale and high-aspect-ratio (K,Na)NbO_3-based 1-3 lead-free piezoelectric composites*, Ceramic International **42**, 10745-50, 2016.
24. I. Ahmad, A. Gribble, M. Ikram, M. Pop and A. Vitkin, *Polarimetric assessment of healthy and radiofrequency ablated porcine myocardial tissue*, J. Biophotonics, **9**(7) 750-759, 2016.
25. M.S. Mirza, T. Yasin, M. Ikram, M. Altaf, Z. Mushtaq and M.N. Khan, *Underwater characterizations of monolithic piezoceramic and 1-3 composite by using a self-designed transducer*, European Physical Journal Applied Physics **73**, 30101, 2016.
26. A. Kamal, M. Bashir, S. Firdous, T. Yasin, M. Tariq, M. Ikram and M.S. Mehmood, *Optical properties of ultra-high molecular weight polyethylene (UHMWPE); a material of choice for total joint applications*, Radiation Physics and Chemistry **118**, 102-106 2016.

27. H. Khan, B. Gahfoor, M.S. Mehmood, M. Ahmad, T. Yasin and M. Ikram, *Spectroscopic and sub optical band gap properties of e-beam irradiated ultra-high molecular weight polyethylene,* Radiation Physics and Chemistry **117**, 172-177, 2015.
28. M. Bashir, M.S. Mehmood, M.A. Choudry, T. Yasin, I. Ahmad, M. Noman-ul-Haq, A. Asif, and M. Ikram, *Analysis of pulse laser induced modifications on HDPE for laser processing of polyethylene*, J. Russian Laser Research 36(3), 258-268, 2015.
29. I. Ahmad, A. Rehman, J.A. Khan, M. Rafi, A. Khurshid, H. Nisar, S.S.Z. Zaidi and M. Ikram, *Effects of varying local temperature on the optical properties of cells In-Vitro*, Photodiagnosis and Photodynamic Therapy **12**(3), 459–465, 2015.
30. H. Ullah, F. Hussain, E. Ahmad and M. Ikram, *A rapid and non-invasive bio-photonic technique to monitor the quality of onions*, Optics and Spectroscopy **119**(2), 295-299, 2015.
31. H. Ullah, F. Hussain and M. Ikram, *Optical coherence tomography for glucose monitoring in blood*, Appl. Phys B, **120**(2), 355-366, 2015.
32. M.S. Mehmood, M. Jahan, T. Yasin, M. Tariq, M. Choudhry, M. Ikram, *On the structural analysis of γ-ray induced primary free radicals in virgin and vitamin-E stabilized UHMWPE using ESR spectroscopy*, Journal of Spectroscopy, Vol. 2015, Article ID 653853, 8 pages, 2015.
33. I. Ahmad, M. Ahmad, K. Khan, S. Ashraf, S. Ahmad and M. Ikram, *Ex Vivo Characterization of Normal and Adenocarcinoma Human Colon Tissue Samples by Mueller Matrix Polarimetry*, J. Biomedical Optics **20**(5) 056012, 2015.
34. S. Ali, A. Khurshid, M. Maqsood, M. Rafi, J.A. Khan, S.S.Z. Zaidi, S. Muhammad and M. Ikram *Study of low doses Cisplatin synergistic effect on photodynamic outcome of aluminum phythalocyanine on soft tissue sarcoma (RD) cell line,* Photodiagnosis and Photodynamic Therapy **12** (1), 146-149, 2015.
35. S. Ashraf, G. Hussain and M. Ikram, *Large angular range carousel interferometer for spectroscopic applications*, Optics and Spectroscopy **118**(5), 829-833, 2015.
36. M.S. Mirza, T. Yasin, M. Ikram, S. Khan, and M.N. Khan, *Dielectric and piezoelectric properties of piezoceramic/polymer 1-3 composites fabricated by a modified align-and-fill technique*, Material Chemistry and Physics **149-150**, 670-677, 2015.
37. M. Maqsood, R. Qureshi, M. Ikram, S. Ali, M. Rafi, J.A. Khan and M.S. Ahmed, *Preliminary screening of methanolic plant extracts against human rhabdomysarcoma cell line from salt range, Pakistan*, Pak. J. Bot. **47**(1), 353-357, 2015.
38. M.S. Mirza, T. Yasin, M. Ikram, M.N. Khan and M. Shuaib, *Fabrication of 1-3 connectivity* $(Ba_{0.95}Pb_{0.05})(Ti_{0.99}Co_{0.01})O_3$*/monothane-A-70 composites by die pressing method and their electrical characterizations*, Ceramic International **40**, 11477-11484, 2014.
39. M.S. Mehmood, T. Yasin, M. Ahmad, M.S. Jahan, B. Waters, S. Mishra and M. Ikram, *Correlation of residual radicals with three phases morphology of UHMWPE: Analysis for dependence on heat involved during vitamin E diffusion*, European Polymer Journal **53**, 13-21 2014.
40. H. Ullah, E. Ahmed and M. Ikram, *Monitoring of glucose levels in rat blood with noninvasive optical methods*, Laser Physics **24**(2) 025601, 2014.
41. M. Ahmad, S. Ali, M.S. Mehmood, H. Ali, A. Khurshid, M. Saleh, S. Firdous and M. Ikram, *Ex vivo assessment of carbon tetrachloride (CCl4) induced chronic injury using polarized light spectroscopy*, Applied Spectroscopy **44**(4), 531-542, 2013.
42. Hafeez-Ullah, E. Ahmed and M. Ikram, *Human cervical carcinoma detection and glucose monitoring in blood micro vasculatures with swept source OCT*, JETP Letters 97(12) 793-799 2013.

43. S. Firdous, W. Waqas, M. Idrees, M. Nawaz and M. Ikram, *Polarization sensitive optical imaging of biomaterials using Mueller matrix polarimetric algorithm*, Lasers in Engineering, **26**(3-4), 157-180, 2013.
44. T. Aziz, S. Firdous, M. A. Khan, M. Ikram, Tunzeel-ur-Rahman, *Polarimetric study of leukemia human peripheral blood smears in 400-800 nm spectral range*, Optik **124**(17), 2936-2943, 2013.
45. G. Gilanie, M. Attique, H. Ullah, S. Naweed, E. Ahmed, M. Ikram, *Object extraction from T2 weighted brain MR image using histogram based gradient calculation,* Pattern Recognition Letters **34**, 1356-363, 2013.
46. M. S. Mehmood, T. Yasin, M.S. Jahan, S. R. Mishra, B. M. Walters, M. Ahmad, and M. Ikram, *Assessment of residual radicals in γ-sterilized shelf aged UHMWPE stabilized with α-tocopherol*, Polymer Degradation and Stability **98,** 1256-1263, 2013.
47. S. Firdous, A. Ahmed, M. Nawaz, M. Ikram, *Optical characterization of Chitosan for application as an engineered biomaterial*, Optik **124**(12) 1297-1302, 2013.
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PhD Thesis (Cambridge University)

M. Ikram**,** *Investigations in carbon dioxide laser stabilization and saturation spectroscopy using the Stark effect and acousto-optic modulation*, University of Cambridge, Cambridge, UK, 1990.

iii) Conference Proceedings

1. B. Hussain, M. Ikram, A. Mehmood and S. Firdous, *A Precise Fast High Voltage Pulse Measurement Optical System Using Kerr Cell Containing Nitrobenzene as an Optically Active Material*, Proceedings of the International Conference on Intelligence and Information Technology, Lahore 28-30 October, 2010, Pages VI-473 to VI-476.
2. S. Firdous and M. Ikram, *Laser stokes polarimetry for the Characterization of bio-materials using liquid crystal variable retarders*, Proc. SPIE **6632**, 12-18, 2007.
3. S. Firdous, M. Ikram and M. Faisal, Measurements of the optical properties of breast tissues in vitro using Mueller matrix polarimetry, Visualization, Imaging and Image Processing, Spain, 480-800, 2005.
4. S. Firdous, M. Ikram, *Mueller Matrix Modeling of Atmospheric Scattering Medium Through Polarized Laser Beam*, IEEE-Aerospace Conference 5-12 March, 2005.
5. S. Firdous and M. Ikram, *Imaging of biological tissues with optical coherence tomography system using Jones-Mueller calculus*, Proc. SPIE Vol. **5861** 237-244, 2005.
6. S. Firdous and M. Ikram, *Transmission and scattering matrix of polarization imaging for biological turbid medium*, Proc. SPIE Vol. **5867** 25-35, 2005.
7. S. Firdous and M. Ikram, *Modeling of electro-optic devices for scattering and absorption of polarized light with Muller Matrix*, Proc. VDI-Berichte, Frankfurt, Germany, Nr. **1844**, pp. 285-306, 2004.
8. S. Firdous and M. Ikram, *Modeling and characterization of the material with backscattered laser beam through optics calculus*, Proc. World Conference on 21st Century Mathematics, Lahore, pp. 52-67, 2004.
9. S. Firdous and M. Ikram, *Characterization of turbid medium through diffusely backscattering polarized light and matrix calculus-II*, Proc. IEEE-INCC LUMS, Lahore, pp. 115-123, 2004.
10. M. Ikram and R. J. Butcher, *Behavior of collision induced Lamb-dip over the Doppler profile of a transition in laser Stark spectroscopy*, Proc. 3rd National Symposium on Frontiers in Physics, QAU, Islamabad, 1991.

iv) Conference Presentations

1. M. Ikram, *Optical diagnostics*, Optics and Lasers Symposium, Department of Physics, Karachi University, Karachi, March 28, 2019.

2. M. Ikram, *Laser tissue interaction*, Workshop on Laser Safety, Agha Khan University Hospital, Karachi, March 25-27, 2019.
3. M. Ikram, S. Khatoon, T. Yasin, and J-H Park, *Targeted nano-drug delivery systems for cancer therapy*, 43rd International Nathiagali Summer College, NCP, Islamabad, July16-28, 2018.
4. M. Ikram, *Polarization Imaging for Medical Diagnostics*, International Symposium on Advances in Physics, PIEAS, Islamabad, October 24-26, 2017.
5. M. Ikram, *Polarimetry and Its Applications in Medical Imaging and Precision Rotation Sensing*, TUD - CIIT International mini-School on Quantum and Ultrafast Optics: Theory and Experiment, October 04-06, 2017.
6. A. Khurshid, M.S. Naeem, M. Rafi, J.A. Khan and M. Ikram, *Evaluation of efficacy of photodynamic therapy on chemo-resistant larynx cancer cell lines*, International Conference on Laser Applications in Life Sciences, Shenzhen, China, October 14-18, 2016.
7. M. Ikram, A. Khurshid, A. Irshad, M. Rafi, J.A. Khan and R.U. Khan, *Light for Health: An overview of research work at PIEAS*, International Conference on Laser Applications in Life Sciences, Shenzhen, China, October 14-18, 2016.
8. M. Ikram, *Translational Research in Photomedicine and Nanomedicine*, Symposium on Biophotonics & Photodynamic Therapy, Bannu Institute of Nuclear Medicine Oncology & Radiotherapy (BINOR), Bannu, August 25, 2016
9. S. Ashraf, G. Hussain and M. Ikram, *Carousel interferometer and its applications in precision measurement*, International Symposium on Lasers and Their Applications, NILOP, Islamabad, December 7-9, 2015.
10. M. Ikram, *Role of Nanotechnolgy in Medicine*, International Symposium on Lasers and Their Applications, NILOP, Islamabad, December 7-9, 2015.
11. M. Ikram, *Applications of Light and Light-Based Technologies*, International Year of Light (IYL 2015), University of Malakand, Chakdara, KPK, November 24, 2015.
12. M. Ikram, *Polarimetry and its Applications in Diagnostics*, International Symposium on Light and Life, CIIT, Islamabad, October 14-16, 2015.
13. M. Ikram, *Photodynamic Therapy*, Workshop of Photodynamic Therapy, Swat Institute of Nuclear Medicine, Oncology & Radiotherapy, Saidu Sharif, Swat, August 13, 2015.
14. M. Ikram, *Optical Diagnostics: Polarization Sensitive Optical Imaging*, International Scientific Spring, National Center for Physics, Islamabad, March 16-20, 2015.
15. M. Ikram, *Light for Health*, Celebrating Light, IYL 2015, National Center for Physics, Islamabad, February 2-3, 2015.
16. M. Ikram, *Role of nanotechnology in medicine*, Symposium on Advances in Metallurgy, Nanomaterials and Polymers, PERS 2014, PIEAS, Islamabad, October 1-2, 2014.
17. M. Ahmad and M. Ikram, *Characterization of biological material & phantoms using Mueller matrix polarimetry*, Symposium on Advances in Metallurgy, Nanomaterials and Polymers, PERS 2014, PIEAS, Islamabad, October 1-2, 2014.
18. S. Ashraf, A. Vitikin and M. Ikram, *Polarization properties of an organic material using dual photoelastic modulator*, Symposium on Advances in Metallurgy, Nanomaterials and Polymers, PERS 2014, PIEAS, Islamabad, October 1-2, 2014.
19. I. Ahmad and M. Ikram, *Polarimetric characterization of ex vivo normal & carcinoma colon tissue section*, Symposium on Advances in Metallurgy, Nanomaterials and Polymers, PERS 2014, PIEAS, Islamabad, October 1-2, 2014.

20. M. Maqsood, R.U. Qureshi and M. Ikram, *Biological activity of plant extracts against cancer cells using nano construct,* Symposium on Advances in Metallurgy, Nanomaterials and Polymers, PERS 2014, PIEAS, Islamabad, October 1-2, 2014.
21. S. Ali, S. Muhammad and M. Ikram, *Evaluation of lower dose CDDP-Al(II) phythalocyanine combinational therapy for cancer,* Symposium on Advances in Metallurgy, Nanomaterials and Polymers, PERS 2014, PIEAS, Islamabad, October 1-2, 2014.
22. M. Ikram, *Photodynamic Therapy in Pakistan and role of nanotechnology in medicine*, National Conference on Quantum Technologies: Theory and Applications, Hazara University, Mansehra August 9-10, 2014.
23. A. Khurshid and M. Ikram, *Photodynamic therapy and nanomedicine*, National Conference on Quantum Technologies: Theory and Applications, Hazara University, Mansehra, August 9-10, 2014.
24. M. Ikram, *Photodynamic Therapy: Principles and Practices*, 2nd Workshop on Photodynamic Therapy, PIEAS, Islamabad, April 1-2, 2014.
25. M. Ikram, *Photomedicine: Future Prospectus*, Symposium on Biophotonics, PIEAS, March 19, 2013.
26. S. Ashraf, G. Hussain and M. Ikram, *Carousel Interferometers*, Symposium on Biophotonics, PIEAS, March 19, 2013.
27. S. Ali, M. Ahmad, S. Muhammad and M. Ikram, *Ex-vivo study for assessment of liver injury induced by carbon tetrachloride by using Mueller matrix analysis*, Symposium on Biphotonics PIEAS, March 19, 2013.
28. M. Ikram, S. Ali, A. Ahmat, *Role of nanomaterials in cancer therapy*, International Conference on Condensed Matter Physics and Engineering, Bahauddin Zakariya University, Multan, December 27-29, 2012.
29. M. Ikram, *Photodynamic Therapy: Historical Perspective,* Workshop on Photodynamic Therapy, PIEAS, Islamabad, July 2-5, 2012.
30. M. Ikram, *Biophotonics research at PIEAS*, Technology Workshop on Atomic Physics and Nano-Fabrication, PIEAS, Islamabad, April 3-5, 2012.
31. M. Ikram, *Biophotonics research at PIEAS*, Symposium in Biophotonics, PIEAS, Islamabad, February 1, 2012.
32. M. Ikram, *Optical Detection of Hepatitis in Liver Tissue Using Polarization Technique*, 6th International Symposium on Quantum Optics, CIIT, July 18-19, Islamabad, 2011.
33. R.U. Khan, N. Khurshid, M. Ikram, S. Firdous and M. Atif, *Pain during topical photodynamic therapy in Pakistani and Afghani patients*, International Photodynamic Therapy Association World Congress, Innsbruck, Austria, May 2011.
34. M. Ikram, *Laser Safety in Biomedical Applications*, Training Workshop on Latest Laboratory Methodologies in the Discipline of Laboratory Medicine for Pathologists and Scientists, NIH, Islamabad May 19-20, 2011.
35. M. Ikram, M. Umair, A. Rahat, S. Ali and S. Firdous, *Optical Detection of Hepatitis in Liver Tissue Using Polarization Technique,* PIERS 2011, Marrakesh, Morocco, March 19-23, 2011.
36. M. Ikram, *Optical detection of hepatitis*, 1st Annual HCV Management Symposium, NCVI, NUST, Islamabad, 10-11 February, 2011.
37. B. Hussain, M. Ikram, A. Mehmood and S. Firdous, *A Precise Fast High Voltage Pulse Measurement Optical System Using Kerr Cell Containing Nitrobenzene as an Optically Active Material*, 2010 International Conference on Intelligence and Information Technology, Lahore 28-30 October, 2010.
38. M. Ikram, *Interferometers for Precision Measurements of Angle and Axis of Rotation*, 5th International Symposium on Quantum Optics, August 3-4, 2010.

39. Hafeez-Ullah, M. Sajjad Mehmood, C. Kurachi, C. Grecco, G. Nicolodelli, V.S. Bagnato, and M. Ikram, *Femtosecond light distribution at skin and liver of rats: analysis for use in optical diagnostics*,19th International Laser Physics Workshop, Foz do Iguacu, Brazil, July 5-9, 2010.
40. M. Ikram, *Light: Its Applications in Interferometry, Polarimetry and Photodynamic Therapy*, First Symposium on Lasers, Punjab University, May 13, 2010
41. M. Ikram, *Photodynamic Therapy: Principles and Applications in Cancer Treatment*, Nilore, PIEAS International Conference on Nuclear Medicine and Oncology, Islamabad, 21-22 October, 2009.
42. M. Ikram, *Laser applications in life sciences*, 4th International Symposium in Quantum Optics, Center for Quantum Physics, Islamabad, 3-4 August, 2009.
43. M. Ikram, *Biophotonics research in Nilore*, 34th International Nathiagali Summer College in Physics and Contemporary Needs, Islamabad, June 22- July 4, 2009.
44. M. Ikram, S. Firdous, M. Atif, L. Noreen, and R.U. Khan, *Biophotonics research in PIEAS*, First NCP Scientific Spring, Islamabad, April 6-9, 2009.
45. N. Firdous, M. Ikram and M. Miraj, *Stokes polarimetry of scattering medium for analysis of degree of polarization*, Laser World of Photonics China 2008, March 18-19, 2008.
46. A. Rehman, M. Atif, and M. Ikram, *Fluence effects in photodynamic therapy using photobleaching models*, Comsats Institute of Information Technology, 2007.
47. M. Ikram, *Introduction to photodynamic therapy in cancer treatment*, 3rd International Oncology and Nuclear Medicine Conference and 1st International Conference on Paediatric Oncology, KIRAN, Karachi, July 8-10, 2005.
48. S. Firdous and M. Ikram, *Measurements of the optical properties of cancerous tissues in vitro using Mueller matrix polarimetry,* 3rd International Oncology and Nuclear Medicine Conference and 1st International Conference on Paediatric Oncology, KIRAN, Karachi, July 8-10, 2005.
49. S. Firdous and M. Ikram, *Transmission and scattering matrix of polarization imaging for biological turbid medium*, 2nd National Conference on Biotechnology and Emerging Sciences, Baluchistan University of Information Technology and Management Sciences, Quetta, March 15-17 , 2005.
50. S. Firdous and M. Ikram, *Mueller matrix modeling of atmospheric scattering medium through polarized laser beams*, IEEE Aerospace Conference, Big Sky, Montana, March 5-12, 2005.
51. B. A. Khan, S. Firdous, and M. Ikram, *Material characterization using transmission Mueller matrix*, 10th National Symposium on Frontiers in Physics, G. C. University Lahore, January 11-14, 2005.
52. S. Firdous and M. Ikram, *Monte Carlo simulation of biological tissues with polarized laser radiation, using parallel computing algorithms*, SCONEST Karachi, December 29-30, 2004.
53. S. Firdous and M. Ikram, *Polarized laser beam scattering through turbid medium for application in tissue imaging*, 4th International Science Conference, AJK University, Muzaffrabad, 6-9 October, 2004.
54. S. Firdous and M. Ikram, *Modeling of electro-optic devices for scattering and absorption of polarized light with Muller Matrix*, International Symposium on Photonics in Measurement, 23-24 June, Institute of Optics Technology, Frankfurt, Germany, 2004.
55. S. Firdous and M. Ikram, *Characterization of turbid medium through diffusely backscattering polarized light and matrix calculus-II*, International Networking and Communications Conference, 11-13 June, Lahore University of Management Sciences, Lahore, 2004.
56. S. Firdous, M. Ikram, M. Nawaz, and M. Aslam, *Measurement of optical parameters, absorption, scattering, and autofluorescence in vitro*, National Conference on Biotechnology and Informatics April 15-17, held in BUITMS, Quetta, 2004.
57. S. Firdous and M. Ikram, *Modeling of electro-optic devices with depolarizing laser beam*, First International Conference: Modern Trends in Physics Research, Physics Department, Faculty of Science, Cairo University, April 4-9, 2004.
58. S. Firdous, K. Hassan, and M. Ikram, *Characterization of turbid medium through polarized laser beam using optics calculus*, World Conference on 21st Century Mathematics, March 17-20, School of Mathematical Sciences, G. C. University, Lahore, 2004.

59. K. Hassan, S. Firdous, and M. Ikram, *Formulation of Muller Matrix and Modelling of depolarizing and scattering of nitrobenzene in a Kerr Cell*, Pakistan Institute of Physics Conference, October 20-23, University of the Punjab, Lahore, 2003.
60. A. Hussain, M. Iqbal, and M. Ikram, Vibration measurements of the research reactor at PINSTECH, 8th National Symposium on Frontiers in Physics, Government College, Lahore, 2000.
61. G. Hussain and M. Ikram, *Nnonlinearity in carousel interferometers*, 7th National Symposium on Frontiers in Physics, Quaid-i-Azam University, Islamabad, 1998.
62. A. Hussain and M. Ikram, *Microbending losses in multimode optical fiber*, 7th National Symposium on Frontiers in Physics, Quaid-i-Azam University, Islamabad, 1998.
63. A. Khan and M. Ikram, *Refractive index measurements of optical tissue,* 7th National Symposium on Frontiers in Physics, Quaid-i-Azam University, Islamabad, 1998.
64. M. Ikram and G. Hussain, *Michelson interferometer for precision angle measurements*, 6th National Symposium on Frontiers in Physics, Quaid-i-Azam University, Islamabad, 1997.
65. M. Ikram and R. J. Butcher, *Behavior of collision induced Lamb-dip over the Doppler profile of a transition in laser Stark spectroscopy*, 3rd National Symposium on Frontiers in Physics, Quaid-i-Azam University, Islamabad, 1991.
66. M. Ikram, S. A. Janjua, and S. H. Khan, *Effects of photodegradation on fluorescence intensity, quantum yield and fluorescence lifetime of coumarine 120*, 91 International Workshop on Lasers and Laser Applications, Shanghai, China, 1991.
67. M. Ikram and R. J. Butcher, *Laser Stark spectrometer*, 8th National Conference on Quantum Electronics, Oxford, UK, 1989.

Popular Talks

68. *Light for Health: Research and Clinical Applications in Pakistan*, Federal Urdu University of Arts, Science and Technology, Karachi, March 2, 2015.
69. *Light for Health: Progress in health care with Light based technologies*, NILOP Seminar Series: IYL-2015, January 22, 2015.
70. *Biophotonics: an overview of the research at PIEAS*, Faculty of Pharmacy, Hacettepe University, Ankara, Turkey, May 18, 2015.
71. *Photodynamic therapy: a new modality of cancer therapy, its principle and practice in Pakistan*, Faculty of Pharmacy, Hacettepe University, Ankara, Turkey, May 19, 2015.
72. *Nano drug delivery: in vitro studies at PlEAS*, Faculty of Pharmacy, Hacettepe University, Ankara, Turkey, May 20, 2015.
73. *Optical biopsy and imaging for soft tissues*, Faculty of Pharmacy, Hacettepe University, Ankara, Turkey, May 21, 2015.
74. *Biomaterial charachterization using Mueler Matrix polarimetry*, Faculty of Pharmacy, Hacettepe University, Ankara, Turkey, May 22, 2015.
75. *Light for Health*, Let's Talk Physics, Department of Physics and Applied Mathematics, PIEAS, Islamabad, June 20, 2013.
76. *Laser Tissue Interaction*, Bahauddin Zakariya University, Multan, June 18, 2012.
77. *Applications of Lasers in Optical Imaging, Medical Diagnostics & Photodynamic Therapy*, Lahore University of Management Sciences, Lahore, April 6, 2010.
78. *Photodynamic Therapy: Principles and Applications in Cancer Treatment*, Institute of Nuclear Medicine & Oncology (INMOL), Lahore, April 6, 2010.
79. *Photodynamic Therapy: Principles and Applications in Cancer Treatment*, Shaukat Khanum Memorial Hospital, Lahore, April 5, 2010.
80. *Polarization imaging*, University of Gujrat, Gujrat, November 27, 2009.
81. *Photodynamic Therapy*, Center for Nuclear Medicine & Radiotherapy (CENAR), Quetta, January 19, 2008.
82. *Photodynamic Therapy*, Multan Institute of Nuclear Medicine & Radiotherapy (MINAR), Multan, December 21, 2007.

83. *Photodynamic Therapy in Cancer Treatment*, Nuclear Medicine Oncology & Radiotherapy (NORI), Islamabad, June 23, 2007.
84. *Laser Tissue Interaction*, Applied Physics Division, PINSTECH, Nilore, Islamabad, May 5, 2005.
85. *Michelson Interferometers for Precision Angle Measurement*, Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad, January 9, 2002.

Thesis Supervision

i) Ph.D. Thesis supervised/co-supervised

1. Bushra Aziz*, Plant extract mediated chemo photodynamic therapy,* PIEAS 2023 (co-supervisor) [Supervisor Dr Ahmat Khurshd].
2. Muhammad Aamir Israr, *Detection of Trace Elements using Laser Induced Breakdown Spectroscopy (LIBS*), PIEAS 2022 (co-supervisor) [Supervisor Dr Ali Nadeem].
3. Sajid Yousaf, *Ex-vivo Label Free Polarization Spectroscopy of Soft Tissue*, PIEAS 2021 (co-supervisor) [supervisor: Dr Ahmat Khurshid].
4. Rashid Mehmood, *In Vitro Evaluation of Vitamin Mediated Chemo-Photodynamic Therapy, PIEAS* 2020 (co-supervisor) [supervisor: Dr Ahmat Khurshid].
5. Shakera Khatoon Rizvi, *Targeted nano-drug delivery system for cancer therapy*, PIEAS 2019.
6. Hira Shakeel, *Calibration free double pulse laser induced breakdown spectroscopy (CF-DP-LIBS) of Silicon, Germanium and their alloys*, PIEAS 2019 (co-supervisor) [Supervisor Dr Sami ul Haq]
7. Mehwish Nawaz, *Atomic Hyperentanglement: Generation and Application*, PIEAS 2018 (co-supervisor) [supervisor: Dr Manzoor Ikram]
8. Misbah Qurban, *Generation and Protection of Entanglement in the Presence of Local Decay Processes*, PIEAS 2018 (co-supervisor) [supervisor: Dr Manzoor Ikram].
9. Bilal Khan, *Raman Spectroscopy based Diagnosis of Dengue Virus Infection in Human Blood Serum*, PIEAS 2018 (co-supervisor) [supervisor: Dr. Mushtaq Ahmed]
10. Muhammad Imran, *Analysis of Atomic Coherence Effects in Alkali Atoms*, PIEAS 2017 (co-supervisor) [supervisor: Dr Manzoor Ikram]
11. Safdar Ali, *Investigations in the Combination of Photodynamic and Chemotherapy for Cancer Treatment*, Hazara University, Mansehra, KPK [supervisor: Dr. Muhammad Saleh] 2017.
12. Sumara Ashraf, *Carousel interferometer and its applications in precision measurement*, PIEAS 2017.
13. Muhammad Maqsood, *Cytotoxic and phytochemical analysis of selected medicinal plants from salt range, Pakistan,* PAMS Arid Agricultural University, Rawalpindi [supervisor: Dr. Rahmat Ullah Qureshi] 2017.
14. Iftikhar Ahmad, *Polarization imaging for pathological diagnosis*, PIEAS 2016.
15. Muhammad Anwar, *Laser cooling and trapping of cesium atoms*, PIEAS 2016 (co-supervisor) [Supervisor: Dr Mushtaq Ahmad].
16. Muhammad Saleem, *Fabrication and characterization of piezoelectric ceramic/polymer composite with 1-3 connectivity,* PIEAS 2015 (co-supervisor) [Supervisor: Dr. Tariq Yasin].
17. Manzoor Ahmad, *Characterization of turbid media using Stokes and Mueller-matrix polarimetery,* PIEAS 2014.
18. Malik Sajjad Mahmood, *Characterization of gamma sterilized and cross-linked vitamin-E stabilized ultra-high molecular weight polyethylene (UHMWPE) for total joint replacement*, PIEAS 2013.
19. Ahmat Khurshid, *Study of the efficacy of photodynamic therapy and nanoparticles as drug delivery vehicle*, PIEAS 2012.
20. Hafeez Ullah, *Imaging of biological tissues using diffuse reflectance and optical coherence tomography*, PIEAS 2012.
21. Muhammad Fakhr-e-Alam, *Photosensitizer's dynamics studies in different biological samples using laser irradiation*, PIEAS 2011 (co-supervisor) [Supervisor: Dr. Muhammad Atif].

22. Sohail Ahmed Janjua, *Study of physical mechanism and regenerative sooting discharge*, PIEAS 2008 (co-supervisor) [Supervisor: Dr. Shoaib Ahmad].
23. Shamaraz Firdous, *Laser tissue interaction and wave propagation in random media*, PIEAS 2007.

ii) MS/M.Phil Thesis Supervised

1. Habibullah, *Correlation between light depolarization and transport albedo for phantoms*, MPhil (Applied Physics), FUUAS, Islamabad Campus, 2018 (co-supervisor).
2. Bushra Aziz, *Detection of cell death induced by photodynamic therapy using elastic scattering spectroscopy*, MPhil(Physics), University of Malakand, KPK, 2016.
3. Muhammad Shehbaz Naeem, *Evaluation of efficacy of photodynamic therapy on chemo-resistant larynx cancer cell lines*, MS(Phys) PIEAS 2016 (co-supervisor).
4. Rafia Rana, *Optical Sensor for the Characterization of Biomaterials Based on Surface Plasmon Resonance*, MS(Phys) PIEAS 2016.
5. Humaira Mushtaq, *Characterization of Turbid Media Using Differential Decomposition of Mueller Matrix*, MPhil (Applied Physics), FUUAST, Islamabad Campus, 2016 (co-supervisor).
6. Shafaat Ali, *Laser isotope separation of lithium*, MPhil (Phys), PIEAS 2015.
7. Bahadar Zeb, *In vitro study of photosense-mediated therapy on human rhabdomyoscarcoma cell line*, MPhil (Phys), Gomal University, 2014.
8. Abdul Rehman, *Study of the optical properties of biological tissues using diffused reflectance and transmittance*, MPhil (Phys), PIEAS 2013.
9. Muhammad Tahir, *Utilizing second harmonic generation of femto second laser to enhance therapeutic outcome of 5-ALA mediated photodynamic therapy*, MPhil (Phys), PIEAS 2013.
10. Irfan Akhtar, *Spectroscopic characterization of laser induced plasma*, MPhil (Physics) PIEAS 2012 (co-supervisor).
11. Saboohi Arshad, *Study the plasma parameters of Germanium using neutral and ionized transitions*, MPhil (Physics) PIEAS 2012 (co-supervisor)
12. Sheraz Ahmad, *To study the effect of Temperature and pH on the Rhodamin dye mediated photodynamic therapy*, MS (Medical Physics) PIEAS 2012.
13. Farwah Amjad, *Intracellular localization and photodynamic application of Rhodamin dye*, MS(Medical Physics) PIEAS 2012.
14. Nadeem Akram, *Synthesis and Characterization of Amorphous Carbon & Carbon-Copper Composite Thin Films*, MPhil (Phys) PIEAS 2011 (co-supervisor)
15. Shujat Ali, *Pegylated $BaMnO_3$ Nanoparticle as a potential drug delivery vehicle enhances the outcome of photodynamic therapy in cervical cancer in-vitro*, MS (Medical Physics), PIEAS 2011.
16. Safdar Ali, *Material Characterization Using 3x3 Mueller Matrix Polarimetry*, MPhil (Phys), Hazara University, 2011(co-supervisor).
17. Muhammad Tayyab Qadeer, *Effects of annealing on Optical Properties of Chromium Doped Zinc Oxide Thin Films by Electron Beam Evaporation*, MPhil (Phys) PIEAS 2011 (Co-Supervisor).
18. Asad Ali, *Effect of Ni Concentration on Physical Properties of $Cd_{1-x}Ni_xTe$ Thin Films*, MPhil (Phys) PIEAS 2010(Co-supervised).
19. Ijaz Ali, *Effect of Zn Concentration on Structural and Optical Properties of $Cd_{1-x}Zn_xSe$ Thin Films*, MPhil (Phys) PIEAS 2010(Co-supervised).
20. Muhammad Saqib Awan, *Synthesis and Characterization of $Zn_{1-x}Ni_xTe$ Thin Films by Electron Beam Evaporation*, MPhil (Phys) PIEAS 2010(Co-supervised).
21. Aamir Rahat, *Material Characterization with Mueller matrix polarimetry using Symmetric Decomposition Method*, MPhil (Phys) PIEAS 2010.
22. Muhammad Umair, *Material Characterization with Muellar matrix polarimetry using Lu-Chipman Decomposition Method*, MPhil (Phys) PIEAS 2010.

23. Imran Shaukat, *Electron beam surface modification of iron based alloys for the improvement of surface properties*, MS (Nuclear Engg.), PIEAS 2009.(Co-supervised)
24. Adnan Khalid, *Effect of nitrogen floe rate on properties of CrN film prepared by DC magnetron sputtering*, MS (Nuclear Engg.), PIEAS 2009.(Co-supervised)
25. Faiza Athar, Design of electrical energy analyzer for carbon cluster ion beam and its operational test in 250 keV charged particle accelerators, MS (Nuclear Engg.), PIEAS 2009.(Co-supervised)
26. Muhammad Amin Khan, *Modeling of laser light through human tissue*, MS (Nuclear Engg.), PIEAS 2009.(Co-supervised)
27. Muhammad Imran, *Optical coherence tomography*, M.Phil (Phys), PIEAS 2009.
28. Wajahat Ali Waqas, *Polarization sensitive optical imaging for biomaterial using the Mueller matrix polarimetric technique*, M.Sc. (Appl. Phys), FUUAST 2009.(Co-supervised)
29. Lubna Noreen, *In vitro studies at cellular level using laser radiation*, MPhil (Phys), PIEAS 2008.
30. Muhammad Shahid, *Optical and structural analysis of sputtered aluminium nitride films*, MS(Nuclear Engg.), PIEAS 2008.(Co-supervised)
31. Yasir Shuja, *Envelop solitons in plasmas*, MS(Nuclear Engg.), PIEAS 2008.(Co-supervised)
32. Farhan Zahid, *Generation of ion beam of clusters in 250 keV charged particle accelerator and mass analysis*, MS(Nuclear Engg.), PIEAS 2008. (Co-supervised)
33. Muhammad Sajid Yousuf, *Photodiagnostics study of tissues*, MS (Medical Physics), PIEAS 2008.
34. Babar Hussain, *Precise fast high voltage measurement system*, MS (System Engg), PIEAS 2007.
35. Aziz-ur-Rehman, *Fluence effects in photodynamic therapy using photobleaching models*, MS (Medical Physics), PIEAS 2007.
36. Shehzad Anwar, *Development of laser Doppler velocity interferometer for the study of dynamic behavior of a vibrating object*, MS (Nuclear Engg.), PIEAS 2006.
37. Mudassar Miraj, *Nuclear data transmission through optical fiber*, M.Phil (Phys), University of Agriculture Faisalabad, 2006. (Co-supervised).
38. Bakht Afzal Khan, *Characterization of materials with lasers using Mueller matrices*, M.Phil, University of Peshawar, 2005 (Co-supervisd)
39. Zia-ur-Rehman, *Free space laser communication using diode lasers*, M.Sc. (Phys), Punjab University, September 2004. (Co-supervised)
40. Mohammad Waqas Mahmood, *Laser generation, discharge parametric studies and beam diagnostics of He:Ne laser*, MS (Nuclear Engg.), PIEAS, 2004. (Co-supervised)
41. Abdul Hannan, *Designing, fabrication and analysis of optical narrow band filter for Nd:YAG laser application*, MS (Nuclear Engg.), PIEAS, 2004. (Co-supervised)
42. Khalid Hassan, *Development of an "Optical Modulator" using Kerr Cell, Modeling of scattering and depolarizing electro-optic devices (using Kerr Cell): Characterization of Nitrobenzene*, M. Phil. (Electronics), Quaid-i-Azam University, 2004. (Co-supervised)
43. Ejaz Ahmed, *Laser eye interaction*, MS (Nuclear Engg.), PIEAS, 2001. (Co-supervised)
44. Ahmad Hashmi, *Study of ring laser gyroscope*, MS (System Engg.), PIEAS, 2001.
45. Nadeem Akhtar, *Development of computer software for optical system design*, MS (Nuclear Engg.), PIEAS, 2001.
46. Azhar Mahmood, *Modeling and simulation of electro-optic modulators*, MS (Nuclear Engg.), PIEAS, 2000.
47. Samiullah, *Design and construction of a laser Doppler velocimeter*, MS (Nuclear Engg.), PIEAS, 2000.
48. Ashraf Ali, *Fabrication of transmission and Fourier transform holograms and their reconstruction*, M.Sc. (Phys), UAF, 1998. (Co-supervised)
49. Akhtar Hussain, *Design and construction of an optical accelerometer*, MS (Nuclear Engg.), PIEAS, 1998.
50. Asifullah Khan, *Laser tissue interaction*, MS (Nuclear Engg.), PIEAS, 1998.
51. Aqueel Ahmed Mudassar, *Michelson interferometer for angle measurement*, MS (Nuclear Engg.), PIEAS, 1998.

iii) Thesis Supervision, [B.Sc. (Engg)]

1. Fahad Mahboob, Naveed R. But, Awais Mansoor and Zakaria Hadi, *Laser particle analyzer*, B.Sc. (Engg. Sciences), GIK Institute, 2002.
2. Kehkashan Mansoor, *Laser light fractionation to enhance the therapeutic effect of photoactivable drug*, BS (Phys), COMSATS Institute of Information Technology, Islamabad, 2013 (co-supervisor).

iv) Thesis Supervision, [Others]

1. Dr. Muhammad Faheem, DCM, NORI, *Progress in Photodynamic Therapy for Cancer Treatment*, Senior Officers Management Course-24, 2019
2. Dr. Zahra Naveed ur Rehman, DCM, *Review of photodynamic therapy in cancer treatment and evaluation of its merits and limitations*, Senior Officers Management Course-23, 2019
3. Dr. Taiba Shahzad, DCM, NESCOM, *Review of photodynamic therapy in cancer treatment and evaluation of its merits and limitations*, Senior Officers Management Course-21, 2018
4. Mr. Asdar-ul-Haque, DCS, KIRAN, *Photodynamic therapy (PDT): Its prospects in oncology***,** Senior Officers Management Course-20, 2018.
5. Dr. Nadeem Murtaza, DCM, NESCOM, *Photodynamic Therapy (PDT): Its prospects for the treatment of skin cancers***,** Senior Officers Management Course-19, October 2017.
6. Dr. Ayesha Rafay, DCM, NESCOM, *Head and Neck Cancer: Demographic and stage-wise existence in Pakistan*, Senior Officers Management Course-15, May 2016.
7. Dr. Ahmad Qureshy, Deputy Chief Medical Officer, INMOL, *Occurrences and treatment modalities of head and neck cancers in Pakistan,* Senior Officers Management Course, October 2015.
8. Mr. Muhammad Aslam, DCS, NILOP, *Feasibility and establishment plan of photodynamic therapy clinics in favor of skin cancer*, Senior Officers Management Course, July 2012.
9. Mr. Muhammad Aslam Zahid, DCS, Optics Laboratories, *Medical Applications of Lasers: Progress of Technology*, Senior Officers Management Course, July 2012.
10. Dr. S. Jawad Akhtar Hussain, PMO, IRNUM, *Launch of PDT for Cancers in PAEC Hospitals*, Senior Officers Management Course, June 2011.

Participation in seminars, summer schools, conferences

Sr. No.	Conference Details	Year
1	50th International Nathiagali Summer College, Nathiagali, June 16-29	2025
2	International conference on the Applications of Nuclear Techniques for Sustainable Socio-economic Development, 24-26 October, Islamabad Hotel, Islamabad	2022
3	45th International Nathiagali Summer College, NCP, Islamabad, July 20-25	2020
4	Optics and Lasers Symposium, Department of Physics, Karachi University, Karachi, March 28	2019
5	Workshop on Laser Safety, Agha Khan University Hospital, Karachi, March 25-27	2019
6	43rd International Nathiagali Summer College, NCP, Islamabad, July16-28	2018
7	International Symposium on Advances in Physics, PIEAS, Islamabad, October 24-26	2017
8	TUD - CIIT International mini-School on Quantum and Ultrafast Optics: Theory and Experiment, CIIT, Islamabad, October 04-06.	2017
9	3rd PIEAS Research Summit, October 20-21, PIEAS, Islamabad.	2016
10	International Conference on Laser Applications in Life Sciences, October 14-18, Shenzhen, China	2016
11	Symposium on Biophotonics & Photodynamic Therapy, BINOR, Bannu, August 25	2016
12	International Symposium on Lasers & their Applications, NILOP, Islamabad, Dec. 7-9	2015
13	International Year of Light (IYL 2015), University of Malakand, Chakdara, KPK, Pakistan, November 24, 2015	2015
14	Symposium on Re-Designing Engineering Education in Pakistan, Islamabad Club, October 19	2015
15	International Symposium on Light and Life, CIIT, Islamabad, October 14-16	2015
16	Workshop on Photodynamic Therapy, SINOR, Saidu Sharif, Swat, August 13	2015
17	Short course on Laser and its Applications, PIEAS, May 25-June 5	2015
18	International Scientific Spring, National Center for Physics, Islamabad, March 16-20	2015
19	Symposium on Global Trends in Curriculum Development and its Implementation, Higher Education Commission, Islamabad, February 3-4	2015
20	Celebrating Light, IYL 2015, National Center for Physics, Islamabad, February 2-3	2015
21	International Year of Light 2015, PIEAS, January 27	2015
22	Symposium on Advances in Metallurgy, Nanomaterials and Polymers, PERS 2014, PIEAS, Islamabad, October 1-2	2014
23	World Beyond 2015: Is Higher Education Ready? CIIT, Serena Hotel, Islamabad, September 10	2014
24	National Conference on Quantum Technologies: Theory and Applications, August 9-10, Hazara University, Mansehra	2014
25	2nd Workshop on Photodynamic Therapy, April 1-2, PIEAS, Islamabad	2014
26	3-Day Regional Consultative Workshop on National Innovation System and Intellectual Property, Islamabad, Oct. 7-9	2013
27	Workshop on 'Fundamentals of Intellectual Property', NUST, Sep. 18	2013
28	Symposium on Biophotonics, PIEAS, March 19	2013
29	International Conference on Condensed Matter Physics and Engineering, Bahauddin Zakariya University, Multan, December 27-29.	2012
30	Workshop on Photodynamic Therapy, July 2-5, PIEAS, Islamabad	2012
31	Technology Workshop on Atomic Physics & Nano-Fabrication, PIEAS, April 3-5	2012
32	Symposium on Biophotonics, February 1, PIEAS, Islamabad	2012
33	6th International Symposium in Quantum Optics, CIIT, 18-19 July, Islamabad	2011
34	Training Workshop on Latest Laboratory Methodologies in the Discipline of Laboratory Medicine for Pathologists and Scientists, May 19-20, NIH, Islamabad	2011

35	Progress in Electromagnetic Research Symposium, Marrakesh, March 19-23	2011
36	International Scientific Spring, 1-4 March, NCP, Islamabad	2011
37	1st Annual HCV Management Symposium, NCVI, NUST, 10-11 Feb., Islamabad	2011
38	5th International Symposium in Quantum Optics, 3-4 August, Islamabad	2010
39	41st International Physics Olympiad, 17-25 July, Zagreb, Croatia	2010
40	First Symposium on Lasers, Punjab University, Lahore, 13 May	2010
41	First PIEAS International Conference on Nuclear Medicine and Oncology, 21-22 October, PIEAS, Islamabad	2009
42	4th International Symposium in Quantum Optics, 3-4 August, Islamabad	2009
43	40th International Physics Olympiad, 12-19 July, Merida, Mexico	2009
44	34th International Nathiagali Summer College, June 22-July 4, Islamabad	2009
45	First NCP Scientific Spring, April 6-9, 2009, Islamabad	2009
46	Symposium on Biophotonics, March 19, 2009, PIEAS, Islamabad	2009
47	39th International Physics Olympiad, 20-29 July, Hanoi, Vietnam	2008
48	First Capacity Building Workshop on '*Leading Transformational Change'*, 17-18 April, Learning Innovation Division, HEC, Islamabad, Pakistan	2007
49	WIPO Roundtable on Formulation and Implementation of a National Intellectual Property Strategy, August 16-18, Islamabad, Pakistan	2006
50	31stInternational Nathiagali Summer College, Nathiagali, Pakistan	2006
51	3rd International Oncology and Nuclear Medicine Conference & 1st International Conference on Paediatric Oncology, July 7-10, KIRAN, Karachi.	2005
52	35th International Physics Olympiad, 15-23 July, Pohang, South Korea	2004
53	29th International Nathiagali Summer College, Nathiagali, Pakistan	2004
54	34th International Physics Olympiad, 2-11 August, Taipei, Taiwan	2003
55	Winter College on Biophotonics 10-21 February, Trieste, Italy.	2003
56	Preparatory School on Biophotonics, 7-9 October, QAU, Islamabad	2002
57	26th International Nathiagali Summer College, Bhurban, Pakistan	2001
58	2nd Workshop on Particle Physics, National Center for Physics, QAU, Islamabad.	2000
59	24th International Nathiagali Summer College, Bhurban, Pakistan	1999
60	7th National Symposium on Frontiers in Physics, QAU, Islamabad, Pakistan	1998
61	23rd International Nathiagali Summer College, Pakistan	1998
62	6th National Symposium on Frontiers in Physics, QAU, Islamabad, Pakistan	1997
63	5th National Symposium on Frontiers in Physics, QAU, Islamabad, Pakistan	1996
64	4th National Symposium on Frontiers in Physics, QAU, Islamabad, Pakistan	1994
65	19th International Nathiagali Summer College, Pakistan	1994
66	3rd National Symposium on Frontiers in Physics, QAU, Islamabad, Pakistan	1992
67	17th International Nathiagali Summer College, Pakistan	1992
68	8th National Conference on Quantum Electronics, Oxford, UK	1989
69	7th National Conference on Quantum Electronics, St. Andrew, UK	1987