

Curriculum Vitae

Dr. Manzoor Ahmad

Assistant Professor (TTS)

Mailing Address: Department of Physics, Faculty of Sciences, Ibn ul Haytham block, International Islamic University, H-10, Islamabad, Pakistan

Nationality: Kohat (Pakistan)

Mobile No: +92 344 5427506

Email: manzoor-ahmad@iiu.edu.pk
mkohatian@gmail.com



ACADAMICS

PhD *Department of Physics & Applied Mathematics (DPAM), Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad, Pakistan, 2014.*

Thesis title: Characterization of turbid media using Stokes and Mueller- matrix polarimetry

M. Phil *Department of Physics & Applied Mathematics (DPAM), Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad, Pakistan (M. Phil leading to PhD)*

M. Sc *University of Peshawar, Peshawar, Khyber Pakhtunkhwa, Pakistan 2003*

B. Sc *Government Post graduate College, Kohat, Khyber Pakhtunkhwa, Pakistan, University of Peshawar 2001*

RESEARCH FIELD

Tissue optics, Mueller matrix polarimetric imaging for tissue characterization, simulation and experimental generation of various laser beams including LG beam and Vector beam, Integrating Vector Beam illumination into Mueller matrix imaging for biomedical applications

PROFESSIONAL EXPERIENCE

1. **Visiting PhD student**, PhD research and training (Polarimetry lab) under the supervision of **Professor Alex Vitkin** at Ontario Cancer Institute UHN, Department of Medical Biophysics and Radiation Oncology, University of Toronto, Canada (2009). Sponsor (HEC, Pakistan)
2. **Teacher's Assistant**, Pakistan Institute Engineering and Applied Science, Islamabad, Pakistan (2012 & 2013).
3. **Assistant Professor (IPFP, HEC)**, Department of Physics, Islamia College (Public Sector University), Peshawar, Khyber Pakhtunkhwa, Pakistan, **2014- 2015**

4. **Assistant Professor (Contract)**, Islamia College (Public Sector University), Peshawar, Khyber Pakhtunkhwa, Pakistan, **2015-Nov 2018**
5. **Assistant Professor (Adjunct Faculty)**, Department of Physics, University of Lahore (Sargodha campus), Punjab, Pakistan, **2015-2018**
6. **Assistant Professor (TTS)**, Department of Physics, Faculty of Sciences, International Islamic University, H-10, Islamabad **2018-to date**
7. **Member/Secretary** of various administrative departmental committees, Department of Physics, International Islamic University, Islamabad

RESEARCH PROJECTS

- ❖ **PI: Dr. Manzoor Ahmad, Co-PI: Dr. Abdul Waheed,**
Project No. 344
Title: *Assessment of Glucose concentrations in different turbid media using Mueller matrix polarimetry*
Funding Agency: Higher Education Commission of Pakistan

LIST OF PUBLICATIONS

1. **Manzoor Ahmad**, S. Alali, A. Kim, M. F. G. Wood, M. Ikram and I. A. Vitkin, “*Do different turbid media with matched bulk optical properties also exhibit similar polarization properties?*”, Biomedical Optics Express **2** (12), 3248-3258, **2011**.
 DOI: <https://doi.org/10.1364/BOE.2.003248>
2. Alali, **Manzoor Ahmad**, A. Kim, N. Vurgun, M. F. G. Wood, I. A. Vitkin “*Quantitative correlation between light depolarization and transport albedo of various porcine tissues*”, Journal of Biomedical Optics, volume 17(4), 045004, **2012**.
 DOI: <https://doi.org/10.1117/1.JBO.17.4.045004>
3. **Manzoor Ahmad**, S. Ali, M. S. Mehmood, H. Ali, A. Khurshid, S. Firdous, S. Muhammad and M. Ikram, “*Ex vivo assessment of carbon tetrachloride (CCl₄) induced chronic injury using polarized light spectroscopy*”, Applied Spectroscopy, **67** (12), 1382-1389, **2013**.
 DOI: <https://doi.org/10.1366/13-07090>
4. I. Ahmad, **Manzoor Ahmad**, K. Khan, S. Ashraf, S. Ahmad, M. Ikram, “*Ex vivo characterization of normal and adenocarcinoma human Colon tissue samples by Mueller matrix polarimetry*” Journal of Biomedical Optics, **20** (5), pp. 056012–8, **2015**.
 DOI: <https://doi.org/10.1117/1.JBO.20.5.056012>
5. H. Khan, B. Ghafoor, M. S. Mehmood, **Manzoor 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, **177**, 172-177, **2015**.
 DOI: <https://doi.org/10.1016/j.radphyschem.2015.08.013>
6. I. Ahmad, **Manzoor Ahmad**, K. Khan, M. Ikram, “*Polarimetry based partial least square classification of ex vivo healthy and basal cell carcinoma human skin tissues*”, Photodiagnosis and Photodynamic therapy, **14**, 134-141, **2016**.
 DOI: <https://doi.org/10.1016/j.pdpdt.2016.04.004>
7. M. S. Mehmood, M. Tabasam, **Manzoor Ahmad** et al., “*Mueller matrix polarimetry for characterization of e-beam irradiated UHMWPE*”, Radiation Physics and Chemistry, volume 166 (108503) **2020**.
 DOI: <https://doi.org/10.1016/j.radphyschem.2019.108503>

8. M. Iqbal, S. Khan, B. Gul, **Manzoor Ahmad**, I. Ahmad, “*Comparison of Mueller matrix differential decomposition and transformation*”, Biomedical Signal Processing and Control, volume 69 (102815), **2021**.
DOI: <https://doi.org/10.1016/j.bspc.2021.102815>
9. M. S. Mehmood, T. Yasin, M. S. Jahan, B. M. Walters, **Manzoor Ahmad** & M. Ikram “EPR study of γ -Irradiated UHMWPE doped with vitamin E: Assessment of thermal effects on the organic radicals during vitamin E diffusion”, Applied Magnetic Resonance, **44**, 531–542, **2013**.
DOI: <https://doi.org/10.1007/s00723-012-0421-y>
10. M. S. Mehmood, T. Yasin, M. S. Jahan, S. R. Mishra, B. M. Walters, **Manzoor Ahmad** and M. Ikram “*Assessment of residual radicals in α -sterilized shelf-aged UHMWPE stabilized with α -tocopherol*”, Polymer Degradation and Stability, **98**, 1256-1263, **2013** (IF: 5.03)
DOI: <https://doi.org/10.1016/j.polyimdegradstab.2013.03.001>
11. M. S. Mehmood, B. M. Walters, T. Yasin, **Manzoor Ahmad**, M. S. Jahan, S. R. Mishra, and M. Ikram, “*Correlation of residual radical's with three phase morphology of UHMWPE: Analysis for the dependence on heat involved during vitamin E diffusion*”, European Polymer Journal, **53**, 13-21, **2014**. (IF: 4.598)
DOI: <https://doi.org/10.1016/j.eurpolymj.2014.01.013>
12. R. Bibi, Z. Zada, A. A. Khan, S. Azam, M. Irfan, B. Haq, **Manzoor Ahmad**, S. A. Khan, “First-principles calculations of structural, electronic, magnetic, thermoelectric, and thermodynamic properties of BaMn₂P₂ in the Anti and ferromagnetic phase”, Journal of Solid State Chemistry, volume 302 (122388), **2021**.
DOI: <https://doi.org/10.1016/j.jssc.2021.122388>
13. M. A. Siddique, M. Akhtar, M. A. Majid, E. A. Khera, Manzoor Ahmad, G. Gilanie *et al.*, “*A Multi-Modal Approach for Exploring Sarcoma and Carcinoma Using FTIR and Polarimetric Analysis*”, Microscopy Research and Technique, Published Online, **2025**.
<http://doi.org/10.1002/jemt.24853>
14. M. Akhtar, M. A. Siddique, **Manzoor Ahmad**, M. A. Majid, *et al.*, “*Early Prognosis and Feasible Panacea for Cervical Cancer through Math and Optics*”, Optics and Lasers in Engineering, 191, **2025**
<https://doi.org/10.1016/j.optlaseng.2025.108984>

CONFERENCES/WORKSHOPS

1. **Organized** the Workshop on Photodynamic Therapy for Medical Professionals at PIEAS from 2 July to 5 July, **2012**.
2. **Organized** symposium on Biophotonics held at PIEAS on 19 March, **2013**.
3. **Attended** one day workshop on "What is Quality and Importance of QEC in the University" Jan 06, 2015 organized by Islamia College (University), Peshawar in collaboration with HEC.
4. **Workshop** on “*SESMAE 1st Industry & Applied Science workshop*”, organized by Synchrotron-Light for Experimental Science and Applications in the Middle East (SESAME), funded by Open SESMAE project, Jordan, **2019**.
5. **Poster presentation**, 16th International Symposium on Advanced Materials organized by Pakistan Advanced Materials Forum at National Centre for Physics, Islamabad, Pakistan Poster presentation **2019**

6. **Invited speaker**, 3rd International conference on “Advances in Theoretical and Applied Physics-2021, organized by Department of Physics, Government College Women University, Faisalabad, Pakistan **2021**.
7. **Invited speaker**, Two days Webinar 2nd International Symposium on Modern Trends in Physics (ISMTP-2021) organized by Department of Physics, Government College University, Faisalabad, Pakistan **2021**
8. Attended webinar on Research management with IEEE Xplore: Tips and practices, organised by Asia IEEE, May 11, **2022**.
9. Invited Speaker in “1st International conference on Physics Horizons and Multidisciplinary Sciences”, organized by COMSATS University Islamabad (Lahore Campus) on Feb 27 & 28, **2023**.

HONORS AND AWARDS

1. Award for MS/M. Phil leading to PhD under Indigenous 5000 PhD Fellowship Scheme, Batch 3, **2006**.
2. International research support initiative program for University of Toronto, Canada, **2009**.
3. Interim Placement for Fresh PhD's, Department of Physics, Islamia College (Public Sector University), Peshawar, Khyber Pakhtunkhwa, Pakistan, **2014**.

TEACHING

I am teaching various courses both at under graduate and graduate level at the Department of Physics. Frequently, I teach Physics of Laser, Laser Spectroscopy, Electrodynamics and Biophotonics at graduate level and Electromagnetic Theory, Optics, Mathematical Methods for Physics and Laser Physics at undergraduate level.

SUPERVISION

Currently, 02 PhD and 05 MS students are working in my supervision in the field of polarization imaging and vector beam generation. I have supervised over 25 MS projects majorly focused on Mueller matrix imaging and spectroscopic polarimetry, implementation of various Mueller matrix decomposition methods for extraction of polarization properties of biological tissues, Cancer diagnosis by Mueller matrix polarimetry, hepatitis B diagnosis with Mueller matrix imaging and artificial intelligence, vector beam generation and its applications, Metamaterials perfect absorber. I have also supervised 06 BS students in the field of LG beam generation by fork grating.

DEPARTMENTAL ACTIVITIES

- 1) Departmental Hifz Committee
- 2) Departmental focal person for fund raising activities.
- 3) Course allocation committee (Member/Secretary)
- 4) Departmental QEC committee (Member)
- 5) Technical committee (Member)
- 6) Under-Grad labs monitoring committee (Member)

- 7) Secretary Comprehensive Exam committee.
- 8) Convener MS/PhD seminar committee.

COMPUTER LANGUAGES

❖ I have experience working in MATLAB and MATHEMATICA

REFERENCES

1. Prof. Dr. Mushtaq Ahmad

Dean Faculty of Sciences, Ex-Chairman Department of Physics, FOS, Ibn ul Haytham Block, International Islamic University, H-10, Islamabad.

Phone: +92-51-9019514

E-mail: m.ahmad@iiu.edu.pk
mshperpao@gmail.com

2. Prof. Dr. Masroor Ikram

T. I, Chair holder, UNESCO Chair Light for Health & Coordinator, International Universities Linkage Program , *Department of Physics and Applied Mathematics, Pakistan Institute of Engineering and Applied Science, Islamabad.*

E-mail: masroor@pieas.edu.pk

3. Prof. Dr. Shahid Qamar

T. I & Associate member of Abdus Salam ICTP, Itlay, *Department of Physics and Applied Mathematics, Pakistan Institute of Engineering and Applied Sciences, Islamabad, Pakistan.*

E-mail: shahid_qamar@pieas.edu.pk