CURRICULUM VITAE

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Personal Information:

Father's name:	Tahir Ayyub Abbasi
Date of Birth:	19-04-1983
Domicile:	Muzaffarabad, Azad Jammu & Kashmir
Nationality:	Pakistani
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Education:

Degree	Field/Major subjects	University/Institute	Duration
PhD	Laser Produced Plasma	University of Azad Jammu & Kashmir,Pakistan	2012-19
M.Phil	LIBS	University of Azad Jammu & Kashmir,Pakistan	2006-09
M.Sc	Physics	University of Azad Jammu & Kashmir,Pakistan	2003-05
B.Sc	Physics, Mathematics	University of Azad Jammu & Kashmir,Pakistan	2000-02
F.Sc/HSSC	Pre Engineering	Govt. Post Graduate College. Muzaffarabad	1998-2000
Matric/SSC	Science	Govt. High School, Muzaffarabad	1996-98

PhD dissertation title: ***"Electromagnetic Characterization of Energetic Ions Produced by Pulsed Laser Ablation of Solid Targets"***

M.Phil dissertation title: ***"Laser Induced Breakdown Spectroscopy of Marbles and Measurement of Their Plasma Parameters"***

Research Interests:

- Laser produced highly charged ions
- Laser –Induced Periodic Surface Structures (LIPSS)
- To investigate effect of magnetic field on Laser produced plasma
- Surface modification by laser ablation
- Laser-Induced Breakdown Spectroscopy (LIBS)
- Pulsed Laser Ablation in Liquid (PLAL)
- Pulsed Laser Deposition (PLD)
- Transparent Conducting Oxides (TCOs)
- Surface Enhanced Raman Spectroscopy (SERS)
- COMSOL MultiPhysics simulations
- Radiation Physics
- Nanotechnology

Academic Travel:

• China	2014	To attend International Symposium on Heavy Ion Inertial Fusion (HIF) at Lanzhou
• Ireland	2017	For PhD research at Trinity College Dublin, Ireland

Employment Record:

• 2024-Date	Marie skłodowska-curie Cofund postdoc fellow, Institute of Physics of the Czech Academy of Science, Prague, Czechia
• 2019-Date	Assistant Professor at the Department of Physics, University of Azad Jammu & Kashmir, Muzaffarabad, Pakistan
• 2013-19	Lecturer at the Department of Physics, University of Azad Jammu & Kashmir, Muzaffarabad, Pakistan
• 2009-13	Lecturer in Physics at Govt. colleges of Muzaffarabad, AJ&K

Research Experience:

- Three years (2014-17) research experience at Pakistan Institute of Nuclear Science and Technology (PINSTECH), Islamabad, Pakistan
- Six months (January 2017 to July 2017) research experience at Trinity College Dublin, Ireland

Research Collaborations

- Pakistan Institute of Science and Technology (PINSTECH), Islamabad
- National Institute of Lasers and Optronics (NILOP) Islamabad
- Quaid-i-Azam University Islamabad
- King Saud University, Riyadh, Kingdom of Saudi Arabia
- National Autonomous University of Mexico
- Bina Nusantara University, Indonesia
- Universiti Kebangsaan Malaysia
- Sunway University, Malaysia

Teaching Experience:

Courses taught at BS, M.Sc. and M.Phil/PhD level:

- Introduction to Laser Physics
- Electrodynamics- I, II
- Laser Matter Interaction
- Atomic and Molecular Physics
- Statistical Mechanics and Thermal Physics
- Nuclear Physics-I,II
- Classical Mechanics and Theory of Relativity
- Atomic Physics
- Lab Course: Modern Physics
- Lab Course: Nuclear Physics

Students Supervised:

- **Ph.D. students: 02**
- **M. Phil students: 08**

Computer Skills:

- COMSOL MultiPhysics
- Origin
- MATLAB
- LabVIEW
- MS Office

Languages:

- Urdu
- English
- Hindko

Conferences/Seminars:

1. 8th International Symposium on Laser Matter Interaction (ILMI) – September 23-24, 2024, National Centre for Physics (NCP), Islamabad
2. 7th International Symposium on Laser Matter Interaction (ILMI) – September 18-19, 2023, National Centre for Physics (NCP), Islamabad
3. 6th National Symposium on Laser Matter Interaction (LMI) – September 12-13, 2022, National Centre for Physics (NCP), Islamabad
4. 47th International Nathia Gali Summer College, (20th - 25th June, 2022), (Virtual)
5. 5th National Symposium on Laser Matter Interaction (LMI) – September 14-15, 2021, National Centre for Physics (NCP), Islamabad (Virtual)
6. Education and Training in Optics & Photonics Conference (ETOP), 2021 (Virtual)
7. 2020 OSA Laser Congress, Canada, 2020 (Virtual)
8. LIBS2020, Japan, 2020 (Virtual)
9. International Nathia Gali Summer College On Physics And Contemporary Needs, July 15-20 , 2019, Islamabad, Pakistan
10. Symposium on 'Light and Life' is being, 14-16 October 2015, COMSATS Institute of Information Technology (CIIT), Islamabad, Pakistan
11. 20th International Symposium On Heavy Ions Inertial Fusion (HIF) , August 11-15, 2014, Lanzhou, China.
12. International Nathia Gali Summer College On Physics And Contemporary Needs, August 4-9 , 2014, Islamabad, Pakistan
13. Seminar On Physics , Accelerators And Applications Of Synchrotron Radiation , May 11-15 ,2014 , Pakistan Institute Of Nuclear Science And Technology(PINSTECH) ,Islamabad ,Pakistan
14. International Scientific Spring, March 10-14, 2014, National Centre For Physics (NCP), Islamabad, Pakistan
15. First ICTP-NCP International College On Plasma Physics, February 12-16 ,2014, National Centre For Physics (NCP), Islamabad , Pakistan

Research Grants won as a PI:

1. **Project:** Fabrication of Plasmonic Active Substrates by Novel Atmospheric Pulsed Laser Deposition (APLD) Technique for detection of chemical and biomedical materials using Surface Enhanced Raman Spectroscopy (SERS).

Source: Higher Education Commission Pakistan (HEC)

Amount: 7.7 million PKR

Year: 2022

2. **Project:** Development of Spray Pyrolysis System for Thin Film Fabrication of Transparent Conducting Oxides (TCOs)

   Source: University of Azad Jammu and Kashmir, Muzaffarabad

   Amount: 0.285 million PKR

   Year: 2019

Fellowships:

1. Marie skłodowska-curie Cofund postdoc fellowship under Physics for Future (P4F) Program, Institute of Physics, Czech Academy of Science, Prague, Czechia, 2024
2. Won the Presidents International Fellowship Initiative (PIFI) fellowship at Changchun Institute of Optics and Fine Mechanics and Physics (CIOMP), Chinese Academy of Science (CAS) Changchun, China, 2024
3. Won the Postdoctoral Fellowship, Research Council of Lithuania, 2024
4. Research Fellowship at Trinity College Dublin (TCD), Ireland, under Higher Education Commission (HEC) International research support initiative program (IRSIP), 2017.

Professional Associations:

1. Member of American Physical Society (APS)
2. Member of Health Physics Society (HPS)
3. Member of Optical Society of America (OSA)

Publications:

1. Aslam, N., Khan, T. M., Zakria, M., **Abbasi, S. A.**, & Ahmed, I. (2025). ns laser-Si interaction in air flow: The phenomena of surface etching and hetero-structuration. *Optik*, *321*, 172171.

2. **Abbasi, S. A**., Javed, J., Qayyum, H., Khan, T. M., Ali, D., Iqbal, A., ... & Nazir, N. (2024). Composite Liquid Media Influence on the Optical and Bactericidal Properties of Silver Nanoparticles Synthesized by Pulsed Laser Ablation in Liquids. *Plasmonics*, 1-12.

3. Aslam, N., Khan, T. M., Javed, M. Q., Rehman, A., **Abbasi, S. A**., Shah, A., & Raffi, M. (2023). Formation Mechanisms of Silicon Surface Structuring using Single-Multiple Nanosecond Laser Pulses in Ambient Air and Cold Plasma. Surfaces and Interfaces, 103252.

4. Khan, T. M., Aslam, N., Iqbal, A., **Abbasi, S. A**., & Ali, D. (2023). Cold Plasma Jet Coupled Nanosecond Laser Ablation Scheme For Plasmonic Nanostructured Surfaces. Advanced Materials Interfaces, 2300280.

5. Ishtiaq, M., Ali, D., Ahmad, R., Muneer, I., Bashir, F., Hanif, M., Khan, T.M. and **Abbasi, S.A.,** 2023. A comparison of antibacterial activity in dark-UV light in perspective of surface and structural properties of spray pyrolysis grown Cu doped Cr2O3 thin films. *Surfaces and Interfaces*, p.102741.

6. **Abbasi, S. A.,** Dogar, A. H., Rafique, M., Dawood, A., Qayyum, H., & Qayyum, A. (2023). Influence of axial magnetic field on angular distribution of charge and energy of laser produced slow and fast tungsten ion groups. Vacuum, 209, 111781

7. **Abbasi, S.A**., Ilyas, B., Dogar, A., Qayyum, H., Ahmed, N., Khan, T.M. and Qayyum, A., 2022. Charge state and Energy distribution of carbon ions and protons emitted from laser-produced graphite plasma. *Physica Scripta*.

8. Rafique, M., Iqbal, J., Lone, K.J., Mir, A.A., Kearfott, K.J., Iqbal, A., Qureshi, S.A., **Abbasi, S.A**. and Nikolopoulos, D., 2022. Multifractal detrended cross-correlation analysis of radioactivity borne radon, thoron and meteorological time series. *Physica A: Statistical Mechanics and its Applications*, *607*, p.128214.

9. Dawood, A., Bashir, S., Ahmed, N., Hayat, A., AlFaify, A.Y., Sarfraz, S.M.A., **Abbasi, S.A.** and Ur Rehman, A., 2022. Surface Structuring and Thin Film Coating through Additive Concept Using Laser Induced Plasma of Mg Alloy: A Comparison between the Presence and Absence of Transverse Magnetic Field (TMF). *Coatings*, *12*(9), p.1316.

10. Ahmed, N., Awan, J.A., Fatima, K., Iqbal, S.M.Z., Rafique, M., **Abbasi, S.A**. and Baig, M.A., 2022. Machine learning-based calibration LIBS analysis of aluminium-based alloys. *The European Physical Journal Plus*, *137*(6), pp.1-14.

11. Ahmed, N., Shahida, S., Kiani, S.M., Razzaq, M.I., Hameed, M.U., Iqbal, S.M.Z., **Abbasi, S.A**., Rafique, M. and Baig, M.A., 2022. Analysis of an Iron-Copper Alloy by Calibration-Free Laser-Induced Breakdown Spectroscopy (CF-LIBS) and Inductively Coupled Plasma–Mass Spectrometry (ICP-MS). Analytical Letters, pp.1-12.

12. Rafique, M., Shahzadi, C., Jabbar, A., Khan, M., Ur Rahman, S., Bukhari, S.S.H., **Abbasi, S.A**. and Ahmed, N., 2022. Measurement of age-dependent radiation ingestion doses due to gross alpha and gross beta exposure from medicinal plants. Isotopes in Environmental and Health Studies, pp.1-14.

13. Ahmad, A., **Abbasi, S.A**., Hafeez, M., Khan, T.M., Rafique, M., Ahmed, N., Ahmad, P., Faruque, M.R.I., Khandaker, M.U. and Javed, M., 2021. Detection and Quantification of Precious Elements in Astrophyllite Mineral by Optical Spectroscopy. *Materials*, *14*(21), p.6277.

14. **Abbasi, S.A.,** Rafique, M., Khan, T.M., Khan, A., Ahmad, N., Faruque, M.R.I., Khandaker,

M.U., Ahmad, P. and Saboor, A., 2021. Chemical Analysis of Thermoluminescent Colorless Topaz Crystal Using Laser-Induced Breakdown Spectroscopy. *Minerals*, *11*(4), p.367.

15. D. Ali, M.Z. Butt, I. Muneer, F. Bashir, M. Hanif, T. M. Khan, **S. A. Abbasi**. Synthesis, characterization and antibacterial performance of transparent c-axis oriented Al doped ZnO thin films, *Surfaces and Interfaces*, 2021

16. **Abbasi, S. A.,** Aziz, Z., Khan, T. M., Ali, D., ul Hassan, T., Iqbal, J., ... & Khan, E. M. (2020). Enhancement of optical signal and characterization of palladium plasma by magnetic field-assisted laser-induced breakdown spectroscopy. *Optik*, *224*, 165746.

17. Ahmed, N., Farooq, K., Shahida, S., ul Haq, K., **Abbasi, S. A.,** Umar, Z. A., & Baig, M. A. (2020). Spectrochemical Analysis of Pakistani Bakery Breads Using Laser Induced Breakdown Spectroscopy. *Optik*, 165743.

18. Ahmad, A., Hafeez, M., **Abbasi, S. A.,** Khan, T. M., Faruque, M. R. I., Khandaker, M. U., ... & Haleem, N. (2020). Compositional Analysis of Chalcopyrite Using Calibration- Free Laser-Induced Breakdown Spectroscopy. *Applied Sciences*, *10*(19), 6848.

19. Andleeb, S., Tariq, F., Muneer, A., Nazir, T., Shahid, B., Latif, Z., **Abbasi, S.A.,** ul Haq, I., Majeed, Z., Khan, S.U.D. and Khan, S.U.D., 2020. In vitro bactericidal, antidiabetic, cytotoxic, anticoagulant, and hemolytic effect of green-synthesized silver nanoparticles using Allium sativum clove extract incubated at various temperatures. *Green Processing and Synthesis*, *9*(1), pp.538-553.

20. Khan, T.M., Khan, S.U.D., Khan, S.U.D., Ahmad, A., **Abbasi, S.A.,** Khan, E.M. and Mehigan, S. 2020. Silver nanoparticle films by flowing gas atmospheric pulsed laser deposition and application to surface-enhanced Raman spectroscopy. *International Journal of Energy Research*. https://doi.org/10.1002/er.5767

21. Khan, T.M., Khan, S.U.D., Khan, S.U.D., Ahmad, A. and **Abbasi, S.A.,** 2020. A new strategy of using dielectric barrier discharge plasma in tubular geometry for surface coating and extension to biomedical application. *Review of Scientific Instruments*, *91*(7), 073902.

22. J. Iqbal, H. Asghar, S. K. H. Shah, M. Naeem, **S. A. Abbasi**, and R. Ali. 2020. Elemental analysis of sage (herb) using calibration-free laser-induced breakdown spectroscopy. *Applied Optics* 59(16): 4927-4932.

23. **S. A. Abbasi**, M. Rafique, A. A. Mir, K. J. Kearfott, S. U. Khan, S. U. Khan, T. M. Khan, J. Iqbal. 2020. Quantification of Elemental Composition of Granite Gneiss collected from Neelum Valley using Calibration free Laser-Induced Breakdown and Energy-dispersive X-ray Spectroscopy. *Journal of Radiation Research and Applied Sciences* 13 (1): 362-72

24. M. Hafeez, **S. A. Abbasi**, M. Rafique, R. Hayder, M. Sajid, J.Iqbal, N. Ahmad and S. Shahida. 2020. Calibration Free-Laser Induced Breakdown Spectroscopic Analysis of Copper-Rich Mineral Collected from GilgitBaltistan Region of Pakistan. *Applied Optics*. 59(1) : 68-76

25. M. Firdos, K. Abbas ,**S. A. Abbasi,** and N. Y. Abbasi. (2020). Modeling And Comparison Of

Maximum Likelihood And Median Rank Regression Methods With Fréchet Distribution. *Proceedings on Engineering Sciences*. 2(2) : 2683-4111

26. **S. A. Abbasi**, A.H. Dogar, S. Ullah, M. Rafique and A. Qayyum. 2017. Highly charged tungsten ions generated by nanosecond pulsed laser and influence of magnetic field on ion charge state. *Nuclear Instruments and Methods in Physics Research B.*, 408: 244-247.

27. Dogar, A.H., **S.A. Abbasi**, H. Qayyum, S. Ullah, S. and A. Qayyum. 2017. Estimation of ion accelerating potential inside the nanosecond pulsed laser produced tungsten plasma. *European Physical Journal D.*,71(10): 250.

28. **S.A. Abbasi**, A.h. Dogar, A. B. Ilyas, S. Ullah, M. Rafique, A. Qayyum. 2016. Ion charge state and energy enhancement by axial magnetic field applied during laser produced plasma expansion. *Laser and Particle Beams.*, 34(4): 606-614.

29. Hussain, M. S., A.H. Dogar, A. Qayyum and **S.A. Abbasi.** 2016. Angular Distribution of Tungsten Material and Ion Flux during Nanosecond Pulsed Laser Deposition. *Surface Review Letters.*, 23(03): 1650004.

30. **S.A. Abbasi**, M.S. Hussain, B. Ilyas, M. Rafique, A.H. Dogar and A. Qayyum. 2015. Characterization of highly charged titanium ions produced by nanosecond pulsed laser. *Laser and Particle Beams.*, 33(1): 81.

31. Rafique, M., Mirza, N. M., Mirza, S. M., Kearfott, K. J., **Abbasi, S. A**., & Naeem, S. F. (2015). Parametric Study of Time-Dependent Corrosion Product Activity due to 56Mn, 58Co, and 60Co in the Primary Coolant Circuit of a Typical Pressurized Water Reactor. *Journal of Chemistry*, 2015.

32. S. Mahmood, **S.A. Abbasi**, S. Jabeen, & M. A. Baig. 2010. Laser-induced breakdown spectroscopic studies of marbles. *Journal of Quantitative Spectroscopy and Radiative Transfer*, 111(5), 689-695.

33. Iqbal, A., Baig, M. S., Akram, M., & **Abbasi, S. A.** (2010). Indoor radon concentration, outdoor gamma dose rates and impact of geology in the Dhirkot area, Azad Jammu and Kashmir, sub-Himalayas, Pakistan. *Radioprotection*, 45(4), 523-535.

References:

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2. Dr. Abdul Qayyum , Deputy Chief Scientist, Pakistan Institute Of Nuclear Science and Technology (PINSTECH), Nilor , Islamabad, Pakistan. Cell: +923348755355, Email: aqayyum11@yahoo.com
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