

Dr. Tariq Mahmood

(PhD in Computational Materials Physics),

Assistant Professor
Department of Physics
Government College
Women University

HEC Approved Supervisor



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ACHIEVEMENTS

Academics

- Selected as a Highly Cited Researcher in the year 2016 by Thomson Reuters.
- Total No. of Publications (**Journal** = 42, Conference = 17)
- Cumulative Impact factor (CIF)~86
- **H-Index= 12** and **i10-Index=14** (from Google Scholar on 9th September 2019)
- More than **537 number of citations** of research publication (from Google Scholar 9th September 2019)
- **13 M. Phil.** theses have been supervised.
- Established Central Research Laboratory for MS and Ph.D. Scholars at GC Women University, Sialkot.
- NRPU Research Project (NRPU-10823) of 2.3 million rupees awarded as a PI by HEC, Islamabad, Pakistan.
- Two Startup Research Projects (0.5 million each) awarded as a Co-PI by HEC, Islamabad
- Four M.Phil students have submitted their thesis for evaluation and **Three** student are in-progress under his supervision
- HEC approved supervisor
- Developed M.S and Ph.D Physics Curriculum at GC Women University Sialkot.
- Organized an International Conference 2017 as a Focal person in collaboration with Centre of Excellence in Solid State Physics, University of the Punjab, Lahore.
- Organized two days annual Book Fair 2018 at GC Women University Sialkot.

Administrative

- Manager Industrial Linkages, ORIC, GC Women University Sialkot.
- Chairperson, Central Research Laboratory, GC Women University Sialkot.
- Chairperson, Departmental Research Committee, Department of Physics, GC Women University Sialkot.
- Incharge, MS/Ph.D Program at Department of Physics, GC Women University Sialkot
- In-charge Science Society, GC Women University Sialkot.
- Chairperson MS/PhD Admission Committee, Department of Physics, GC Women University Sialkot.
- Chairperson, Technical Committee of HEC Project for University upgradation and Strengthening in backward areas.
- Member Board of Faculty of Arts and Social Sciences, GC Women University Sialkot.
- Member Board of Studies, Department of Physics, GC Women University Sialkot.
- Member Purchase Committee, GC Women University Sialkot.
- Member Central Admission Committee, GC Women University, Sialkot.
- Member Prospectus Committee, GC Women University Sialkot.
- Incharge Computer laboratories, Centre of excellence in Solid State Physics, University of the Punjab, Lahore.
- Member IT Centre Committee, University of the Punjab, Lahore.
- Incharge Computer Section, Centre for High energy Physics, University of the Punjab, Lahore.

Trainings/Workshops

- Attended a summer camp of “Functional Nano Materials” on July 29 to August 02, 2019 at COMSATS, Lahore.
- Attended a short course of “Public Financial Management” on 15th to 16th February, 2019 at ICAP, Lahore.
- Attended Seminar cum Workshop on “Procurement, Procurement Process and Allied Matters” as per PPRA rules on 21st to 22nd December, 2018 at ICMAP, Lahore.
- Attended Workshop on “Industrial Vacuum Applications” on 28-30 January, 2014 at CHEP, P.U. Lahore.
- Attended Indigenous on-Campus Training program for Management Team on 22-26 December, 2014 at University of the Punjab, Lahore.
- Attended Faculty Orientation Program 2015 on 17-20 August, 2015 at University of the Punjab, Lahore.
- Attended Training on “Communicating Effectively” on August 18, 2015 at University of the Punjab, Lahore.
- Attended Hands on Training on “Available E-Resources” in collaboration with HEC, Islamabad on April 04, 2017 at GC Women University, Sialkot.
- Attended one day workshop on “Use of Turnitin Software and Digital Library” on July 22, 2016 at GC Women University, Sialkot.

- Organized One day National Symposium 2017, funded by PHEC, Lahore.

Area of Interest

My area of research is **Computational Materials Science** particularly **condensed matter physics, DFT based studies**. Following is the detail of my focus points:

- Doping**: the effect of substitutional and interstitial doping in the selected material's structures.
- Modeling and Simulation** of the basic physical properties of metal oxides semiconductor materials using "Density Functional Theory".
- Fabrication and characterization** of Nano-Materials
- Crystal Structures**: study of structural properties by using different simulation and modeling softwares.
- Materials**: Metal oxides, Nitrides, Metals, Binary or Ternary Semiconductor Materials. Magnetic ion doped Semiconductors (i.e DMS), etc
- Properties**: structural, electronic, elastic, thermodynamic, optical and magnetic properties by using first principles methods.

Professional Experience (more than 17 years)

| Institution/ Organization | Position / Job Title | Period | |
|--------------------------------|---|-------------|-------------|
| | | From | To |
| Dpt. Of Physics, GCWU, Sialkot | Assistant Professor | 01-03-2016 | to date |
| CSSP, P. U. Lhr. | Senior Research Associate/Asst. Prof. | 01-Oct-2014 | 29-02-2016 |
| UOE, Lhr | Visiting Assistant Professor (Evening time) | 01-09-2015 | 29-02-2016 |
| CHEP-P.U. Lhr | Assistant Professor | 03-Oct-2013 | 30-Sep-2014 |
| CHEP-P.U. Lhr | System Administrator | 23/09/ 2003 | 02-Oct-2013 |

Research Students (M.Phil)

| Student Name | Thesis Title | Session |
|----------------------------------|---|---------|
| Saher Ijaz (P.U. Lhr) | First Principles Calculations of Electronic, Elastic and Optical Properties of Monoclinic VO ₂ . | 2012-14 |
| Khush Bakhat (P.U. Lhr.) | First Principles Calculations of Electronic, Elastic and Optical Properties of Rutile SnO ₂ under pressure. (work published in IF SCI Journal) | 2013-15 |
| Rabia Farooq (U.E.T. Lhr.) | First-Principles Calculation of Electronic and Optical Properties of Graphene like ZnO (G-ZnO) (Published in IF SCI Journal) | 2014-16 |
| Ghadah Niaz Abbasi (U.E.T. Lhr.) | Adsorption of Water Molecule on Graphene: A Theoretical Study (Presented for publication in Materials Today Proceedings, ICSSP'15) | 2014-16 |
| Saira Shabbir | DFT based study of electronic, elastic and optical properties of Bi ₂ Te ₃ (with Dr Maqsood sb) | 2015-17 |
| Aamir Saeed | First Principles study of Electronic and Optical Properties Molybdenum Trioxide (MoO ₃) | 2016-18 |
| Kashif Hussain | Electronic and Optical Properties of Cubic Zirconium Dioxide (c-ZrO ₂) | 2016-18 |

| | | |
|---------------------|--|-------------|
| Ms. Zahida Parveen | Electronic, Elastic and Optical Properties of SnO ₂ by using Density Functional Theory with and without “U” | 2016-18 |
| Ms. Arbab | Electronic and Optical Properties of Zirconium Dioxide (ZrO ₂) by First Principle Calculations | 2016-18 |
| Ms. Maryam Tariq | First Principles Calculations of Electronic and Optical Properties of Graphene Like Silicon Oxide (g-SiO) | 2016-18 |
| Ayesha Liaqat | Electronic, Elastic and Optical Properties of MoS ₂ by using DFT | 2017-19 |
| Ayesha Manzoor Khan | Electronic, Elastic and Optical Properties of ZnS by using DFT | 2017-19 |
| Zunera Asghar | DFT Study of Electronic and Optical Properties of Ba Doped Na ₂ WO ₄ | In progress |
| Aqsa Zafar | Synthesis, Structural Characterization and Reactivity of Zinc Tungstate (ZnWO ₄) nanoparticles in the oxidative degradation of Toxic materials | In progress |
| Zartar Fatima | DFT Study of Electronic and Optical Properties of Zn Doped Na ₂ WO ₄ | In progress |
| Hafiza Sadia Ayyub | Synthesis and Characterization of Zinc Tungstate (ZnWO ₄) | In progress |

Funded Projects

| Sr.# | Project Title | Funded By | Amount | Year |
|------|--|----------------|----------------|---------|
| 1 | Synthesis of Tungstate based Nanomaterials using Uniform Strategy for Efficient and Low-Cost Photocatalytic Degradation of Toxic Materials (NRPU-10823) (PI) | HEC, Islamabad | 2.3 Million | 2017-18 |
| 2 | Lab scale membrane bioreactor for treatment of waste water (1848/SRGP/R&D/HEC/2018) (Co-PI) | HEC, Islamabad | 0.4899 Million | 2018 |
| 3 | Enhancing performance in HPC Parallel Computing systems under Power Consumption Limitations (Co-PI) | HEC Islamabad | 0.5 Million | 2018 |

Remarkable Contributions as:

1. Chairperson, Central Research Laboratory Committee at GC Women University, Sialkot since 2017.
2. Chairperson, Internal Audit Committee, GC Women University, Sialkot.
3. Chairperson, Departmental MS/Ph.D. Admission Committee, Department of Physics, GC Women University, Sialkot.
4. Chairperson, Departmental Research Committee, Department of Physics, GC Women University Sialkot.
5. Chairperson, Technical Committee (HEC funded project for universities in backward areas), GC Women University, Sialkot.
6. Chairperson, IT Support Centre Committee, GC Women University, Sialkot.
7. Member, Prospectus Committee, GC Women University Sialkot since 2016.
8. Member, Central Admission Committee, GC Women University, Sialkot since 2016.
9. Member, Main Procurement and Auction Committee, GC Women University, Sialkot.
10. Member, Board of Faculty of Arts and Social Sciences, GC Women University, Sialkot.
11. Member Board of Studies, Department of Physics, GC Women University, Sialkot.
12. External Examiner for MS/PhD Thesis Evaluation, Department of Physics, University of Gujrat, Gujrat.
13. External Examiner for MS/PhD Thesis Evaluation, Centre for High Energy Physics, University of the Punjab, Lahore.

14. External Examiner for MS/PhD Thesis Evaluation, Department of Physics, University of the Lahore, Lahore.
15. External Examiner for MS Thesis Evaluation, Department of Physics, Division of Science and Technology, University of Education, Lahore.
16. Member, Inventory/Physical Verification Committee, GC Women University, Sialkot.
17. Member, Technical Committee for IT Equipment and LAN/WAN, GC Women University, Sialkot.
18. Member Financial and Tender Opening Committee, GC Women University, Sialkot.
19. Member, Campus Management Committee, GC Women University, Sialkot.
20. Member, Solarization Committee, GC Women University, Sialkot.
21. Member, External Linkages Committee, GC Women University, Sialkot.
22. Member, Rain Water Harvesting Committee, GC Women University, Sialkot.
23. Member, Clean Drinking Water Committee, GC Women University, Sialkot.

Subjects Taught (BS/MSc and M.Phil/PhD)

| Course Name | Degree Program/Semester |
|---|---|
| Undergraduate Programs (BS/M.Sc) | |
| Solid State Physics | BS (Hons.)/8 th semester (CHEP, P. U. Lhr.) |
| Infinite Series | BS(Hons)/3 rd semester (CHEP, P. U. Lhr.) |
| Computational Physics-I | M.Sc/2 nd semester (CHEP, P. U. Lhr.) |
| Computational Physics Lab-I | BSc (Hons.)/6 th Semester (CHEP, P. U. Lhr.) |
| General Physics Lab | BSc (Hons.)/5 th Semester (CHEP, P. U. Lhr.) |
| Particle Physics | BS/8 th Semester (Dept. of Phys., GCWUS) |
| Quantum Mechanics-I | BS/6 th Semester (Dept. of Phys., GCWUS) |
| Computer Programming for Physics | BS/2 nd Semester (Dept. of Phys., GCWUS) |
| Mathematical Methods in Physics-I | BS/5 th Semester (Dept. of Phys., GCWUS) |
| Mechanics | BS Chemistry/3 rd Semester (Dept. of Phys., GCWUS) |
| Post Graduate Programs (MS/PhD) | |
| Computational and Theoretical Materials Science/DFT | M.S./1 st Semester (CSSP, P. U. Lhr.) |
| Introduction to Computer Science | Undergraduate Classes, GCWU, Sialkot |
| Advanced Mathematical Methods in Physics | MS Physics, Department of Physics, GCWUS, Sialkot |
| Computational Physics/DFT | MS Physics, Department of Physics, GCWUS, Sialkot |
| Optical Properties of Solids | Ph.D Physics, Department of Physics, GCWUS, Sialkot |
| Advanced Condensed Matter Physics | Ph.D Physics, Department of Physics, GCWUS, Sialkot |

Experimental Methods and Characterization Techniques

- Growth of thin film by using Molecular Beam Epitaxy (MBE)
- Spectroscopy Ellipsometry
- Chemical Vapor Deposition
- Hydrothermal Methods
- SEM
- XRD
- PL Properties

Theoretical/Computational Tools

- CASTEP with Materials Studio interface
- Wein2k and associated softwares
- VASP and associated analysis software

- DMOL3 with Materials Studio interface
- ADF-BAND
- Gaussian
- Nsys-2015
- TCAD (Synopsys)
- Origin Lab

Research Articles Published

2020

- 1- Imran Aslam, M. Saqib, M. W. Iqbal, Rajender Boddula, Tariq Mahmood, Usman Ghani, Synthesis of Non-Toxic Fe₂(WO₄)₃ Photocatalyst with Efficient Performance, *Current Analytical Chemistry*, 16(0), 2020, 1-12 (**Impact Factor 1.081**).
- 2- Muhammad Rizwan, Miss Samina Gul, Tariq Mahmood, M. Shakil, Abdul Majid, M. Rafique, Abrar Ahmad Zafar, H.B. Jin, Dr. C.B. Cao, Tailoring Electronic and Optical Properties of LaAlO₃ by Cu Inclusion: A DFT Study, *Canadian Journal of Physics*, (**Impact Factor 1.016**), <https://doi.org/10.1139/cjp-2019-0558>.

2019

- 3- Souleymen Rafai, Chen Qiao, Zhitao Wang, Chuanbao Cao, **Tariq Mahmood**, Muhammad Naveed, Waqar Younas, and Syed Khalid, Cobalt Phosphide Ultrathin and Freestanding Sheets Prepared through Microwave Chemical Vapor Deposition: A Highly Efficient Oxygen Evolution Reaction Catalyst, *ChemElectroChem* 6, (2019) 5469–5478. (**Impact Factor 3.975**).
- 4- Muhammad Rizwan, Rabia Bibi, **Tariq Mahmood**, Imran Aslam, Syed Sajid Ali Gillani, Hai Boa Jin, Chuan Bao Cao, Zahid Usman, and Ahmad Maqsood Band gap modulation effect on electronic and optical properties in PbTiO₃ under stress: a DFT study, *Eur. Phys. J. Appl. Phys.* 88 (2019) 10501. (**Impact Factor 0.765**)
- 5- Muhammad Rizwan, Azeem Shahid; **Tariq Mahmood**, Imran Aslam, N. Adnan, PhD; Abrar Ahmad A Zafar, Talab Hussain, H. B Jin, C. B Cao, Effect of Magnesium on Structural and Optical Properties of CaTiO₃: A DFT Study, *Physica B: Condensed Matter*, 568, (2019) 88-91 (**Impact Factor 1.589**)
- 6- Syed Muhammad Raza Shah Naqvi, Taseer Muhammad, Hyun Min Kim, **Tariq Mahmood**, Adnan Saeed and Babar Shahzad Khan, Numerical treatment for Darcy-Forchheimer flow of nanofluid due to a rotating disk with slip effects, *Canadian Journal of Physics*, 97(8), (2019) 856-863 (**Impact Factor 0.983**)

2018

- 7- M. Younis Ali Khan, Mehvish Zahoor, Ayesha Shaheen, Nuzhat Jamil, M. Imran Arshad, Sadia Zafar Bajwaa, Naveed Akhtar Shad, Rehman Butt, Israt Ali, M. Zubair Iqbal, Aiguo Wu, Ghulam Nabi, Sajad Hussain, **Tariq Mahmood**, Imran Aslam, Waheed S. Khan, Visible light photocatalytic degradation of crystal violet dye and electrochemical detection of ascorbic acid & glucose using BaWO₄ nanorods, , [Materials Research Bulletin](#), Volume 104, August 2018, Pages 38-43. (**Impact Factor 2.873**)
- 8- Muhammad Rizwan, Imran Haider, **Tariq Mahmood**, Muhammad Shakil, Mahmood ul Hassan, Jin Hai-Bo, Cao Chuan Bao, First principles investigation of electronic and optical properties of AgAlO₂, [Chinese Journal of Physics](#), 56 (2018) 2186-2190. (**Impact Factor 1.051**)

2017

- 9- **Tariq Mahmood**, Humma Malik, Rahat Batool, Zahida Perveen, Farhat Saleemi, Haris Rasheed, M.A. Saeed, Chuanbao Cao, Muhammad Rizwan, Elastic, electronic and optical properties of anatase TiO₂ under pressure: A DFT approach, [Chinese Journal of Physics](#), 55 (2017), 1252–1263 ((**Impact Factor 1.051**)).
- 10- Robina Ashraf, **Tariq Mahmood**, Saira Riaz, Shahzad Naseem, Study of the structural and electronic properties of FeO at the LDA and GGA level, [Chinese Journal of Physics](#), 55 (2017), 1135–1141 ((**Impact Factor 1.051**)).

2016

- 11- Muhammad Rizwan, **Tariq Mahmood**, H. M. Rafique, M. Tanveer, Syed Fawad Haider, Design of a negative refractive index material based on numerical simulation, [Chinese Journal of Physics](#), Accepted for publication in 2016. (**Impact Factor 0.464**)
- 12- A. M. A. Bakheet, M. A. Saeed, Riadh Sahoun, A. R. M. Isa, Lawal Mohammed, **Tariq Mahmood**, Density Functional Theory Study of the Electronic and Optical Properties of Pure and Magnesium Doped B-Tricalcium Phosphate Compound, [Journal Technology \(Sciences & Engineering\)](#), 78:3 (2016) 167-172 (**Impact Factor 0.096**).
- 13- Rabia Farooq, **Tariq Mahmood**, Abdul Waheed Anwar, Ghadah Niaz Abbasi, First-Principles Calculation of Electronic and Optical Properties of Graphene like ZnO (G-ZnO), [Superlattices and Microstructure](#), 90 (2016) 165-169 (**Impact Factor 2.097**).
- 14- Khush Bakht, **Tariq Mahmood**, Maqsood Ahmed, Kamran Abid, Pressure induced Electronic and Optical Properties of Rutile SnO₂ by First Principle Calculations, [Superlattices and Microstructure](#), 90 (2016) 236-241 (**Impact Factor 2.097**).
- 15- L. Mohammed, A. R. Mat Isa, A. Musa, **Tariq Mahmood**, M. A. Saeed, Structural, Electronic, Optical and Thermoelectric Properties of β Phase Spinel: Prospects for

Solar Cells Applications, *Chalcogenide Letters*, 13(1) (2016) 1 – 8. (**Impact Factor 0.913**)

2015

- 16- M. M. Alsardia, M.A. Saeed, **Tariq Mahmood**, S Islam, Ahmad Radzi Mat Isa, DFT Investigations of the Structural and Electronic Properties of XN (Al, Ga, In) Compounds, *Advances in Alloys and compounds* (2015) Vol. 2 No. 1 30-36.
- 17- Muhammad Tahir, Nasir Mahmood , Xiaoxue Zhang , **Tariq Mahmood** , Faheem. K. Butt , Imran Aslam , M. Tanveer , Faryal Idrees , Syed Khalid , Imran Shakir , Yi-Ming Yan , Ji-Jun Zou , ChuanbaoCao (*), and Yanglong Hou, Bi-functional Catalysts of Co₃O₄@GCN tubular nanostructured (TNS) hybrids for Oxygen and Hydrogen Evolution Reactions, *Nano Research*: 8(11) (2015) 3725-3736. (**Impact Factor 7.01**)

2014

- 18- **Tariq Mahmood**, Chuanbao Cao, R. Ahmed, M. A. Saeed, Maqsood Ahmed, Comparative Study of Structural and Electronic Properties of TiO₂ at GGA and GGA+U Level, *Journal of Optoelectronics and Advanced Materials*: 16(1-2) (2014) 117-122 (**Impact Factor 0.563**)
- 19- Faheem K Butt; Chuanbao Cao; **Tariq Mahmood**; Faryal Idrees; Muhammad Tahir; Waheed S Khan; Zulfiqar Ali; Muhammad Rizwan; M. Tanveer; Sajad Hussain; Imran Aslam; Dapeng Yu, Metal Catalyzed Synthesis of Ultralong SnO₂ Nanobelts: Their Electrical and Optical Properties with oxygen vacancies related Orange Emission, *Materials Science in Semiconductor Processing*, 26 (2014) 388-394. (**Impact Factor 1.761**).
- 20- **Tariq Mahmooda**, Chuanbao Cao, Zahid Usmana, Zhuo Chena, Waheed S. Khan Yankun Duoa, Elastic, electronic and optical properties of baddeleyite TiO₂ by first-principles, *Materials Science in Semiconductor Processing* 27 (2014) 958-965. (**Impact Factor 1.761**).

2013

- 21- **Tariq Mahmood**, Chuanbao Cao, Rashid Ahmed, Maqsood Ahmed, M.A. Saeed, Abrar Ahmed Zafar, Talab Husain & M.A. Kamran, Pressure Induced Structural and Electronic Bandgap properties of Anatase and Rutile TiO₂, *Sains Malaysiana* 42(2) (2013) 231–237 (**Impact Factor 0.48**).
- 22- **Tariq Mahmood**, Chuanbao Cao, Muhammad Tahir, Faryal Idrees, Maqsood Ahmed, M. Tanveer, Imran Aslam, Zahid Usman, Zulfiqar Ali, Sajad Hussain, Electronic, elastic, acoustic and optical properties of cubic TiO₂: A DFT approach, *Physica B*: 420 (2013) 74-80 (**Impact Factor 1.327**).
- 23- Waheed S. Khan, Chuanbao Cao, Imran Aslam, Zulfiqar Ali, Faheem K. Butt, **Tariq Mahmood**, Ghulam Nabi, Ayesha Ihsan, Zahid Usman, Asma Rehman, Single crystalline multi-petal Cd nanoleaves prepared by thermal reduction of CdO, *Materials Research Bulletin* 48 (2013) 819–822 (**Impact Factor 2.105**).

- 24- Waheed S. Khan, Chuanbao Cao, Faheem K. Butt, Zulfiqar Ali, Ayesha Ihsan, M. Tanveer, Imran Aslam, Ghulam Nabi, Asma Rehman, **Tariq Mahmood**, Sajad Hussain, Preparation of highly pure CdSe hollow structures: Their PL and hydrogen absorption properties, *Materials Letters* 92 (2013) 263–266 **(Impact Factor 2.307)**.
- 25- Faryal Idrees, Cao Chuanbao, Faheem Butt, Muhammad Tahir, Muhammad Tanvir, Imran Aslam, Zulfiqar Ali, **Tariq Mahmood**, Jianhua Hou, Facile Synthesis of Novel Nb₃O₇F Nanoflowers, their Optical and Photocatalytic Properties, *CrystEngComm*, **15** (2013), 8146-8152 **Impact Factor 3.88**..
- 26- Muhammad Tahir, Cao Chuanbao, Faheem Butt, Sajid Butt, Faryal Idrees, Zulfiqar Ali, Imran Aslam, Muhammad Tanvir, Tariq Mahmood, Sajad Hussain, Youqi Zhu, Tubular graphitic-C₃N₄: a prospective material for energy storage and green photocatalysis, *J. Mater. Chem. A*, **1** (2013), 13949-13955 **(Impact Factor 5.97)**.
- 27- Khan, Waheed S.; Cao, Chuanbao; Butt, Faheem K.; Ali, Zulfiqar; Nabi, Ghulam; Rehman, Asma; Ihsan, Ayesha; Tanveer, M.; Aslam, Imran; Hussain, Sajad; Usman, Zahid; **Mehmood, Tariq**, Preparation of Single-Crystalline Zinc Nitride Dandelion-Like Nanostructures: Their Photoluminescence and Hydrogen-Absorption Properties, *Science of Advanced Materials*, 5(4), April (2013) , 328-332 **(Impact Factor 2.51)**.
- 28- Zahid Usman, Chuanbao Cao, **Tariq Mahmood**, “Pressure based First-principles Study of the Electronic, Elastic, Optic and Phonon properties of Zincblende InN” *Physica B*: 430 (2013) 67-73 **(Impact Factor 1.327)**.
- 29- Zahid Usman, Chuanbao Cao, Matiullah Khan, **Tariq Mahmmod**, and A.R. Niazi, Effect of Ni charge states on structural, electronic, magnetic and optical properties of InN *Journal of Physical Chemistry A (ACS)* 117(27) (2013) 5650-5654 **(Impact Factor 2.732)**.

2012

- 30- **Tariq Mahmood**, Chuanbao Cao, Waheed S. Khan, Zahid Usman, Faheem K. Butt, Sajad Hussain, “Electronic, Elastic, Optical Properties of rutile TiO₂ under Pressure; A DFT Study”, *Physica B: Condensed Matter, (Elsevier)*, 407 (2012) 958-965. **(Impact Factor 1.327)**
- 31- **Tariq Mahmood**, ChuanbaoCao, Faheem K. Butt, HaiboJin, ZahidUsman, WaheedS.Khan, Zulfiqar Ali, Muhammad Tahir, FaryalIdrees, MaqsoodAhmed, Elastic, electronic and optical properties of cotunnite TiO₂ from first principles calculations, *Physica B* 407 (2012) 4495–4501 **(Impact Factor 1.327)**.
- 32- Zulfiqar Ali, Chuanbao Cao, Waheed S. Khan, Faheem K. Butt, Sajad Hussain, **Tariq Mahmood**, Ghulam Nabi, Zahid Usman, “Simultaneous growth of ZnSe cactus-like structures and novel microflowers of selenium”, *Journal of Alloys and Compounds, (Elsevier)*, 513 (2012) 620-625. **(Impact Factor 2.289)**
- 33- Sajad Hussain, Chuanbao Cao, Waheed S. Khan, Ghulam Nabi, Zhuo Chen, Zahid Usman, Zulfiqar Ali, Faheem K. Butt, **Tariq Mahmood**,” Fabrication and Electrical Characterization of p-Cu₂O/n-ZnO Heterojunction”, *Journal of Nanoscience and Nanotechnology (American Scientific Publishers)*, 11(2012) 1-5. **(Impact Factor 1.35)**

- 34- Waheed S. Khan, C. B. Cao, Faheem K. Butt, Zulfiqar Ali, Ghulam Nabi, Zahid Usman, **Tariq Mahmood**, Sajad Hussain, M. Tanveer, “High yield preparation of single crystalline Cd metal nanotubes by non-catalytic thermal decomposition route”. *Solid State Sciences (Elsevier)*, 6 (2012) 693-697 **(Impact Factor 1.828)**.
- 35- Ghulam Nabi, Chuanbao Cao, Sajad Hussain, Waheed S. Khan, **Tariq Mehmood**, Zahid Usman, Zulfiqar Ali, Faheem K. Butt, Fu Yan, Li Jili, M. Zubair Iqbal, “Photoluminescence and hydrogen storage properties of gallium nitride hexagonal micro-bricks” *Materials Letter (Elsevier)* 79 (2012) 212-215 **(Impact Factor 2.307)**
- 36- Ghulam Nabi, Chuanbao Cao, Waheed S. Khan, Sajad Hussain, Zahid Usmana, **Tariq Mahmood**, Noor Abass Din Khattak, Suling Zhao, Xu Xin, Dapeng Yu, Xuewen Fu, Synthesis, characterization, photoluminescence and field emission properties of novel durian-like gallium nitride microstructures, *Materials Chemistry and Physics* 133 (2012) 793– 798 **(Impact Factor 2.234)**.
- 37- Faheem K. Butt, Chuanbao Cao, Waheed S. Khan, Zulfiqar Ali, **Tariq Mahmood**, R. Ahmed, Sajad Hussain, Ghulam Nabi, “Fabrication of Novel SnO₂ Nanofibers Bundle and their Optical Properties” *Materials Chemistry and Physics (Elsevier)*, 136 (2012) 10e14 **(Impact Factor 2.234)**
- 38- Sajad Hussain, Chuanbao Cao, Ghulam Nabi, Waheed S. Khan, Zahid Usman, Faheem K. Butt, Zulfiqar Ali, **Tariq Mahmood**, “Preparation of ZnO Microstructures by Facile Hydrothermal Route, Their PL and PEC Properties ” *Current Nanoscience (Bentham Science Publishers)*, 3 (2012) 414-416 **(Impact Factor 1.77)**
- 39- Sajad Hussain, Chuanbao Cao, Zahid Usman, Zhuo Chen, Ghulam Nabi, Waheed S. Khan, Zulfiqar Ali, Faheem K. Butt, **Tariq Mahmood**, “Fabrication and photovoltaic characteristics of Cu₂O/TiO₂ thin film heterojunction solar cell” *Thin Solid Films (Elsevier)*, 522 (2012) 430-434 **(Impact Factor 1.89)**.
- 40- Faheem K. Butt, Chuanbao Cao, Waheed S. Khan, Zulfiqar Ali, R. Ahmed, Faryal Idrees, Imran Aslam a, M. Tanveer, Jili Li, Sher Zaman, **Tariq Mahmood**, Synthesis of highly pure single crystalline SnSe nanostructures by thermal evaporation and condensation route, *Materials Chemistry and Physics* 137(2) (2012) 565 **(Impact Factor 2.234)**.
- 41- Zulfiqar Ali, Chuanbao Cao*, Sajad Hussain, Waheed S. Khan, Faheem K. Butt, Ghulam Nabi, Zahid Usman, **Tariq Mahmood**, Controlled growth of catalyst assisted and catalyst free CdSe micro cactuses with sharply pointed nanorods, their Photoluminescence (PL) and Photo electrochemical (PEC) properties, *Electrochimica Acta* 85 (2012) 122– 130 **(Impact Factor 3.832)**.

2011

- 42- Waheed S. Khan, Chuanbao Cao, **Tariq Mahmood**, Mashkooor Ahmad, Faheem K. Butt, Zulfiqar Ali, Zahid Usman, Fengping Wang, Qurrat ul Ain, “Large-scale synthesis of highly pure Cd metal hexagonal nanosheets” *Materials Letter (Elsevier)* 65 (2011) 1896-1899. **(Impact Factor 2.117)**
- 43- Zahid Usman, Chuanbao Cao, Waheed S. Khan, **Tariq Mehmood**, Sajad Hussain, Ghulam Nabi, Structural, “Elastic Constant, and Vibrational Properties of Wurtzite

Gallium Nitride: A First-Principles Approach”, *The Journal of Physical Chemistry A (ACS)*, 115 (2011) 14502–14509. **(Impact Factor 2.732)**.

- 44- Zahid Usman, Chuanbao Cao, Ghulam Nabi, Dou Yankun, Waheed S. Khan, **Tariq Mahmood**, Sajad Hussain. First principle electronic, elastic and optical study of cubic gallium nitride. *The Journal of Physical Chemistry (ACS)* 115 (2011) 6622-6628. **(Impact Factor 2.732)**
- 45- Sajad Hussain, Chuanbao Cao, Ghulam Nabi, Waheed S. Khan, Zahid Usman, **Tariq Mahmood**, “Effect of electrodeposition and annealing of ZnO on optical and photovoltaic properties of the p-Cu₂O/n-ZnO solar cells”, *Electrochimica Acta, (Elsevier)* 56 (2011) 8342– 8346. **(Impact Factor 3.777)**
- 46- Waheed S. Khan, Chuanbao Cao, Zahid Usman, Faheem K. Butt, Zulfiqar Ali, Sajad Hussain, Ghulam Nabi, **Tariq Mahmood**, “Thermal evaporation and condensation synthesis of metallic Zn layered polyhedral microparticles”, *Materials Research Bulletin, (Elsevier)*, 46 (2011) 2261–2265. **(Impact Factor 2.13)**

Conference Publications

2015

- 47- Tariq Mahmood et al., Sahar Ijaz, Shahzad Naseem, Saira Riaz, Chuanbao Cao, Electronic, Elastic and Optical Properties of Monoclinic VO₂ by using Density Functional Theory, presented as an invited speaker, *International Conference on Solid State Physics 2015* December 13-17, 2015 at CSSP, University of the Punjab, Lahore, Pakistan.
- 48- Rabia Farooq et al. First Principle Calculations of electronic and optical properties of grapheme like ZnO, *International Conference on Solid State Physics 2015* December 13-17, 2015 at CSSP, University of the Punjab, Lahore, Pakistan.
- 49- Ali Hassan Tahir et al. Comparative Study of structural and electronic properties of ZnSe at LDA and LDA+U, *International Conference on Solid State Physics 2015* December 13-17, 2015 at CSSP, University of the Punjab, Lahore, Pakistan.
- 50- Ghadah Niaz Abbasi et al. Absorption of Water Molecule on Graphene: A Theoretical study, *International Conference on Solid State Physics 2015* December 13-17, 2015 at CSSP, University of the Punjab, Lahore, Pakistan.
- 51- Robina Ashraf et al. Comparison of Structural, Optical and Magnetic Properties of Iron Oxide by using GGA+U and LDA+U, *International Conference on Solid State Physics 2015* December 13-17, 2015 at CSSP, University of the Punjab, Lahore, Pakistan.
- 52- Robina Ashraf et al. DFT Analysis of Iron Oxide by using GGA and GGA+U Approach in ADF, *International Conference on Solid State Physics 2015* December 13-17, 2015 at CSSP, University of the Punjab, Lahore, Pakistan.
- 53- Robina Ashraf et al. Effect of Hubbard Potential on Electronic, Structural, Optical and Magnetic Properties of Hematite, *International Conference on Solid State Physics 2015* December 13-17, 2015 at CSSP, University of the Punjab, Lahore, Pakistan.
- 54- Robina Ashraf et al. Investigation of Electronic, Optical and Magnetic Properties of Hematite by using DFT+U Approach, *International Conference on Solid State*

- Physics 2015* December 13-17, 2015 at CSSP, University of the Punjab, Lahore, Pakistan.
- 55- Robina Ashraf et al. Study of Electronic, Optical and Magnetic Properties of Magnetite by Density Functional Theory, *International Conference on Solid State Physics 2015* December 13-17, 2015 at CSSP, University of the Punjab, Lahore, Pakistan.
- 56- Khush Bakhat et al. Pressure Induced Electronic and Optical Properties of Rutile SnO₂ by First Principle Calculations, *International Conference on Solid State Physics 2015* December 13-17, 2015 at CSSP, University of the Punjab, Lahore, Pakistan.
- 57- M. Haroon Saeed et al. Pressure Induced Structural and electronic properties of Gallium Phosphide by First Principle Calculations, *International Conference on Solid State Physics 2015* December 13-17, 2015 at CSSP, University of the Punjab, Lahore, Pakistan.

2012

- 58- A DFT+U calculations: Band structural and equation of states for anatase and rutile TiO₂, *Enabling Science and Nanotechnology (ESciNano), 2012 International Conference* on, January 5-7, 2012, Johor Bahru, Malaysia (IEEE, 10.1109/ESciNano.2012.6149648).
- 59- DFT calculations: Stress dependence structural and band gap study of anatase and rutile TiO₂, *Enabling Science and Nanotechnology (ESciNano), 2012 International Conference* on, January 5-7, 2012, Johor Bahru, Malaysia (IEEE, 10.1109/ESciNano.2012.6149663).

2007

- 60- **Tariq Mahmood**, Abrar Ahmed Zafar, Talib Hussain, and Haris Rashid, "GEANT4: Applications in High Energy Physics", *AIP Conf. Proc.* 888, (2007) 301-304.

Reviewer/Referee of International Journals

- Journal of Advanced Materials and Optoelectronics, Romania.
- Journal of Physics and Chemistry for Solids, Elsevier Publisher, USA.
- Physica B: Condensed Matter Physics, Elsevier Publisher, Netherlands.
- Journal of Physics Letter A, Elsevier Publisher, USA.
- Heliyon, CellPress, Elsevier Inc., USA.

Award/Honour/Scholarship

- Cash prize Rs. 36000/- in response of international research articles published in international Science Indexed journals with impact factor in year 2013-2014.
- H-Index= 12 (from Researcherid on 09-01-2020), h-Index=12 (Google Scholar on 09-01-2020).

- Has been included, in the Highly Cited Researchers 2016 list provided by Thomson Reuters.
- Cumulative Impact factor (CIF)~90
- Total No of Publications (journal=44, Conference=14)
- More than 500 number of citations of research publication (from Publones/Researcherid on 09-01-2020), Citations from Google Scholar=591 on 09-01-2020
- CSC (Chinese Scholarship Council) Scholarship for PhD studies in China.

International Conferences/Workshops Attended

- Second International Meeting on Frontiers of Physics (IMFP2005), July 25-29, 2005, University of Malaya, Kuala Lumpur, Malaysia.
- MODERN TRENDS IN PHYSICS RESEARCH: Second International Conference on Modern Trends in Physics Research MTPR-06, April 6-11, 2006, University Cairo, Cairo, Egypt.
- Enabling Science and Nanotechnology (ESciNano), 2012 International Conference on, January 5-7, 2012, Johor Bahru, Malaysia.

International Conferences/Workshops Oral Presentation

- Tariq Mahmood, Abrar Ahmed Zafar, Talib Hussain, and Haris Rashid, GEANT4: Applications in High Energy Physics, MODERN TRENDS IN Physics Rresearch: Second International Conference on Modern Trends in Physics Research MTPR-06, April 6-11, 2006, University Cairo, Cairo, Egypt (AIP Conf. Proc. 888, pp. 301-304).
- DFT calculations: Stress dependence structural and band gap study of anatase and rutile TiO₂, Enabling Science and Nanotechnology (ESciNano), 2012 International Conference on, January 5-7, 2012, Johor Bahru, Malaysia (IEEE, [10.1109/ESciNano.2012.6149663](https://doi.org/10.1109/ESciNano.2012.6149663)).

National Conferences/Workshops/Trainings

- Training of Electronic Database “Institute of Electrical and Electronics Engineer (IEEE)”, Wednesday January 22, 2014 at main Library of University of the Punjab, Lahore.
- Workshop on Industrial Vaccume Applications at Centre for High Energy Physics, University of the Punjab, Lahore, dated January 28-30, 2014.
- Indigenous on-Campus Training Program for Management Team, December 22 to 26, 2014.
- Faculty Orientation Program 2015, 17th to 20th August 2015.
- New World Concepts, an Accredited Business Edge Training, 18th August, 2015.
- One Day Workshop on Use of Turnitin Software and Digital Library, 22 July, 2016.
- One Day Hands-on-Training for Available Resources in collaboration with HC, Islamabad.
- Two Days Seminar-Cum-Workshop on “Procurement, Procurement Processes and Allied Matters”, 21st and 22nd December, 2018 organized by Pakistan Institute of Public Finance Accounts, Lahore.

- Short Course on “Public Financial Management”, held on 15th and 16th February, 2019 organized by Pakistan Institute of Public Finance Accounts, Lahore.
- A training/Workshop on Functional Nano Materials “First Functional Nano Materials Summer Camp 2019” held on 29 July to 02 August, 2019, COMSAATS University Islamabad, Lahore.

International Conferences/Workshops Poster Presentation

- A DFT+U calculations: Band structural and equation of states for anatase and rutile TiO₂, Enabling Science and Nanotechnology (ESciNano), 2012 International Conference on, January 5-7, 2012, Johor Bahru, Malaysia (IEEE, [10.1109/ESciNano.2012.6149648](https://doi.org/10.1109/ESciNano.2012.6149648)).