

ZAHID USMAN

PERSONAL INFORMATION

Gender: Male

Nationality: Pakistani

Present Address: Department of Physics, University of Education
Lahore, Dera Ghazi Khan Campus, Pakistan

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RESEARCH INTEREST

- Simulation of III-V nitrides using density functional theory.
- Spectroscopic investigation of III-V nitrides.
- Synthesizes and characterization of ZnO/Cu₂O thin film solar cells.
- Modeling and simulation of Perovskites materials.

ACADEMIC QUALIFICATIONS

PhD in Material Science & Engineering (2009- 2013)

At Beijing Institute of Technology, China

✿ Field of Specialization: Materials Physics and Chemistry

PROFESSIONAL QUALIFICATION

Bachelor of Education (Certificate of Teaching)

Academic Achievements

- ✿ Humboldt Postdoctoral fellowship at Institute of Experimental Physics (2015-2017)
- ✿ Fully funded PhD scholarship at Beijing Institute of Technology under Chinese Govt. scholarship scheme (2009-2013).
- ✿ Best International Student Award for PhD research in Year 2012

RESEARCH Skills

a. Theoretical Approaches

- ✳ CASTEP
- ✳ DMole3
- ✳ ARTEMIS (SILVACO)
- ✳ Exciting
- ✳ MATLAB

b. Experimental Methods and Characterization Techniques

- ✳ Spectroscopic Ellipsometry (UV and IR)
- ✳ Photoluminescence Spectroscopy (Low temperature/ room temperature)
- ✳ Raman Spectroscopy
- ✳ SEM
- ✳ Hydrothermal Synthesis

EMPLOYMENT HISTORY

- 1. Assistant Professor, Department of Physics, University of Education
Lahore, D.G.Khan Campus** (January 04,2018 to date)
- 2. Assistant Professor, Department of Physics, The University of Lahore,
Lahore Pakistan** (December 10, 2014 to January 04,2018)
- 3. Assistant Professor, Department of Physics, Gomal University, D. I.
Khan, Pakistan** (October 10, 2013 to September 2014)
- 4. Research Associate at Department of Physics, Gomal University, D. I.
Khan, Pakistan** (January 7, 2007 - October 12, 2008)

Major Responsibilities

- ✳ Teaching Physics to the University students
- ✳ Conducting research and supervise Research students
- ✳ Compiling Curriculum

- ✳ Marking & Grading students
- ✳ Supervising exams
- ✳ Working as a Hostel warden

LIST OF PUBLICATIONS

1. “Length dependent performance of Cu₂O/ZnO nanorods solar cells“ S. Hussaina, Jolly Jacobb, Zahid Usman, K. Mahmood, A. Ali, M.I. Arshad, Waheed S. Khan, Z. Farooq, M.U. Farooq, A. Ashfaaq, U. Rehman, *Superlattices and Microstructures*, **2019**, **126**, pp **181–185**.
2. “Structural, Electronic and Optical Properties of Copper-doped SrTiO₃ Perovskite: A DFT Study”, Muhammad Rizwan, Adnan Ali, **Zahid Usman**, N. R. Khalid, H. B. Jin, C. B. Cao, *Physica B: Condensed Matter*, **2019**, **552**, , Pages **52-57**.
3. “Effect of films morphology on the performance of Cu₂O PEC solar cells”, Sajad Hussain, Chuanbao Cao, **Zahid Usman**, Ghulam Nabi, Faheem K. Butt, K. Mahmood, A. Ali, M.I. Arshad, N. Amin, *Optik*, **2018**, **172**, **72-78**.
4. “Parameters optimization of electroless deposition of Cu on Cr-coated diamond”, A. R. Niazi, Shu-kui Li, Ying-chun Wang, Jin-xu Liu, Zhi-yu Hu, Zahid Usman, *Trans. Nonferrous Met. Soc. China*, **2014**, **24**, **136-145**.
5. “First-Principle Electronic, Elastic, and Optical Study of cubic Gallium Nitride”, **Zahid Usman**, Chuanbao Cao, Ghulam Nabi, Dou Yan Kun, Waheed S. Khan, Tariq Mehmood and Sajad Hussain, , *J. Phys. Chem. A*, **2011**, **115 (24)**, pp **6622–6628**
6. “Structual, Elastic Constant and Vibrational Properties of Wurtzite Gallium Nitride: A First-Principle Approach”, **Zahid Usman**, Chuanbao Cao, Waheed S. Khan, Tariq Mahmood, Ghulam Nabi and Sajad Hussain. *J. Phys. Chem. A*, **2011**, **115 (50)**, pp **14502–14509**
7. “Effect of Charge state on magnetic, electronic and optical properties due to doping of Ni in wurtzite InN”. **Zahid Usman**, Chuanbao Cao, Waheed Khan. *J. Phys. Chem. A*, **2013**, **117 (27)**, pp **5650–5654**

8. "Pressure based First-principles Study of the Electronic, Elastic, Optic and Phonon properties of Zincblende InN", **Zahid Usman**, Chuanbao Cao, Tariq Mahmood, **Physica B: Condense Matter**, 2013, 430, pp 67-73.
9. "The Cu₂O/TiO₂ heterojunction solar cell", Sajad Hussain, Chuanbao Cao, **Zahid Usman**, Zhuo Chen, Ghulam Nabi, Waheed S. Khan, Zulfiqar Ali, Faheem K Butt, Tariq Mahmood.. **Thin Solid films** (2012) 11, 522:430-434
10. "Effect of electrodeposition and annealing of ZnO on optical and photovoltaic properties of the p-Cu₂O/n-ZnO solar cells". Sajad Hussain, Chuanbao Cao, Ghulam Nabi, Waheed S. Khan, **Zahid Usman**, Tariq Mahmood. **Electrochimica Acta** (2011) 56, 8342–8346.
11. "Fabrication and electrical characterization of p-Cu₂O/n-ZnO", heterojunction.,Sajad Hussain, Chuanbao Cao, Waheed S Khan, Ghulam Nabi, Zhuo Chen, **Zahid Usman**, Zulfiqar Ali, Faheem K Butt, Tariq , **Journal of Nanoscience and Nanotechnology** 03/2012; 12(3):1967-71
12. "The controllable synthesis, structural, and ferromagnetic properties of Co doped GaN nanowires", Yanan Li, Zhuo Chen, Chuanbao Cao, **Zahid Usman**, Yajuan Feng, Zhiyun Pan, Ziyu Wu. **Appl. Phys. Lett.** 100 (2012), 232404.
13. "Improvement of a high velocity compaction technique for iron powder" Dil Faraz Khan, Haiqing Yin, **Zahid Usman**, Matiullah Khan, Xianjie Yuan, Wenhao Wang, Xuanhui Qu. **Acta Metallurgica Sinica**, 2013, 26, 4.
14. "Thermal evaporation and condensation synthesis of metallic Zn layered polyhedral microparticles" Waheed S. Khan, Chuanbao Cao, **Zahid Usman**, Sajad Hussain, Ghulam Nabi, Faheem K. Butt, Zulfiqar Ali, Tariq Mahmood, Niaz Ahmad Niaz **Material Research Bulletin**, 2011, 46, , 2261-2265.
15. "Pre-treatment effect of aqueous NH₃ on conductivity enhancement and PL properties of GaN nanowires" Ghulam Nabi, Chuanbao Cao, **Zahid Usman**, Sajad Hussain, Waheed S. Khan, Faheem K. Butt, Zulfiqar Ali, Dapeng Yu, Xuewen Fu. **Materials Letters.** 70 (2012) 19-22.
16. "Hydrogen storage and PL properties of novel Cd/CdO shelled hollow microspheres prepared under NH₃ gas environment", Waheed S. Khan, Chuanbao Cao, Faheem K. Butt, Zulfiqar Ali, **Zahid Usman**, Ghulam Nabi, Ayesha Ihsan, Asma Rehman, Irshad Hussain,

- M. Tanveer, Sajad Hussain, [International Journal of Hydrogen Energy](#) **38(5)** (2013) **2332-2336**.
17. "Electronic, elastic, optical properties of rutile TiO₂ under pressure: A DFT study", Tariq Mahmood, Chuanbao Cao, Waheed S Khan, **Zahid Usman**, Faheem K Butt, Sajad Hussain," [Physica B Condensed Matter](#), **407(2012)** 958-965.
 18. "High yield preparation of single crystalline Cd metal nanotubes by non-catalytic thermal decomposition route", Waheed S Khan, Chuanbao Cao, Faheem K Butt, Zulfiqar Ali, Ghulam Nabi, **Zahid Usman**, Tariq Mahmood, Sajad Hussain, M Tanveer, [Solid State Sciences](#). **2011**, **14(6):693 - 697**.
 19. "Preparation of grass-like GaN nanostructures: Its PL and excellent field emission properties", Ghulam Nabi, Chuanbao Cao, Waheed S Khan, Sajad Hussain, **Zahid Usman**, Noor Abass Din Khattak, Zulfiqar Ali, Faheem K Butt, Sajjad Hussain Shah, Muhammad Safdar, [Materials Letters](#). **2012**, **66(1): 50 – 53**
 20. "Effect of Ag doping concentration on the electronic and optical properties of anatase TiO₂: a DFT-based theoretical study" Matiullah Khan, Junna Xu, Ning Chen, Wenbin Cao, Asad Ullah, **Zahid Usman**, D. F. Khan, [Research on Chemical Intermediates](#) **39(2013)**1633-1644.
 21. "Synthesis, characterization, growth mechanism, photoluminescence and field emission properties of novel dandelion-like gallium nitride" Ghulam Nabi, Chuanbao Cao, Waheed S. Khan, Sajad Hussain, **Zahid Usman**, Muhammad Safdar, Sajjad Hussain Shah, Noor Abass Din Khattak, [Applied Surface Science](#), **257(2011):10289-10293**.
 22. "Synthesis, characterization, photoluminescence and field emission properties of novel durian-like gallium nitride microstructures" Ghulam Nabi, Chuanbao Cao, Waheed S. Khan, Sajad Hussain, **Zahid Usman**, Tariq Mahmood, Noor Abass Din Khattak, SulingZhao, Xu Xin, Dapeng Yu, Xuwen Fu, [Materials Chemistry and Physics](#). **133(2012):793–798**.
 23. "Cu₂O/TiO₂ nanoporous thin-film heterojunctions: Fabrication and electrical characterization" Sajad Hussain, Chuanbao Cao, Waheed S. Khan, Ghulam Nabi, **Zahid Usman**, Abdul Majid, Thamer Alharbi, Zulfiqar Ali, Faheem K Butt, Muhammad Tahir,

Muhammad Tanveer, Faryal Idress. **Materials Science in Semiconductor Processing** 12/2013.

24. " Preparation of ZnO Microstructures by Facile Hydrothermal Route, Their PL and PEC Properties" Hussain Sajad, Cao Chuanbao, Nabi Ghulam, Khan Waheed S, **Zahid Usman**, Butt Faheem K, Ali Zulfiqar, Mahmood Tariq, **Current Nanoscience** 8(2012):414.

Contributed Talks, Conferences & Seminar

1. Invited Talk on **"Going Beyond Conventional Synthesis Techniques in Materials Science"**, in 1st National Conference on Recent Trends in Physics and Materials Science, *25-27 March, 2019*, at Physics Department University of Science and Technology, Bannu
2. Invited Talk on **"Prospects of Density Functional Theory in Materials Science"**, *February 18 – 20, 2019*, International Conference on Material Science and Nanotechnology (MSNANO-2019), GC Faisalabad Spring meeting
3. Invited Talk on **"p-type Conductivity in GaN"**, *February 18 – 20, 2018*, International Conference on Material Science and Nanotechnology (MSNANO-2018), GC Faisalabad Spring meeting.
4. Invited Talk on **"Deep Defects in GaN"**, *April 7-9 2018*, International Conference on Recent Advances in Physics, University of Lahore.
5. Invited Talk on **"Interplay between yellow and blue luminescence bands in GaN:C"**, Zahid Usman, Martin Feneberg, Andreas Lesnik, Marc Hoffmann, Armin Dadger, Rudiger Goldhahn : German Physical Society, Spring meeting March *19-24, 2017*"
6. Abstract presentation on **How Exciting** Workshop (August *3-11, 2016*), Humboldt University, Berlin.
7. International Symposium on **Contemporary Physics** (March 26-30, 2007), National Centre for Physics Quaid- i- Azam University Campus, Islamabad (Pakistan).
8. International Nathiagali **Summer College on Physics and Contemporary Need**, 23rd June to 05th July, 2008

9. National Workshop on **Plasma Physics** (14-15) November, 2005, Department of Physics Quaid- i- Azam University Campus, Islamabad-(Pakistan)
10. Two Weeks Refresher course on Physics (7-22) April, Department of Physics Gomal University D. I. Khan (Pakistan).

M.S SCHOLARS SUPERVISION

1. **Aqsa Mobin (2019)**, “The effect of Pressure on Structural, Electronic and Optical properties of $ZnAl_2Se_4$ ” University of Lahore.

Languages

☀ English, German, Chinese, Urdu, Saraiki

REFERENCES

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