

MASOOD YOUSAF, Ph.D. PHYSICS

Assistant Professor, University of Education, Lahore

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Research ID (ISI): <http://www.researcherid.com/rid/F-3297-2016>

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STRENGTHS

- Experience of Designing & Executing Research Projects
- Experience of Handling Surfaces & Interfacial Processes
- Expertise with Electronic Structure Codes (VASP, Quantum ESPRESSO, WIEN2k)
- Experimental Collaborations (Raman & IR Spectra, XPS, Prediction of Experimental Conditions)

QUALIFICATION

Ph.D Physics

Universiti Teknologi Malaysia

Research Area

Computational Simulation and Modelling of Materials

2014

EMPLOYMENT HISTORY

- **Assistant Professor (Physics)** (26/10/2017 – Present)
University of Education, Township Campus, Lahore
- **Postdoctoral Researcher** (01/11/2014 – 31/10/2017)
IBS Center for Multidimensional Carbon Materials (CMCM), Ulsan National Institute of Science and Technology (UNIST), South Korea
- **Visiting Researcher** (01/07/2014 – 30/09/2014)
Department of Physics, Universiti Teknologi Malaysia (UTM)
- **Teaching Assistant** (SEM I Session 2012/2013)
Department of Physics, Universiti Teknologi Malaysia (UTM)
- **Lecturer of Physics** (08/08/2008 - 02/15/2012)
Punjab College of Science, Lahore, Pakistan
- **Industrial Training** (10/06/2009 - 09/07/2009)
Ittehad Chemicals Limited

HONORS AND AWARDS

- **Academic Excellence Award (Alumni Award):** For the high achievements during the doctorate study program, awarded by Universiti Teknologi Malaysia. In conjunction with 53rd Convocation ceremony, 2014.
- **Best Postgraduate Student Award:** For the best student in Doctor of Philosophy (Physics) program, awarded by School of Postgraduate Studies (SPS), Universiti Teknologi Malaysia, 2014.

- Succeeded in winning consecutive **UTM International Doctoral Fellowship (IDF)** for Semester I Session 2012-2013, Sem. II Session 2012-2013 and Sem. I Session 2013-2014.
- Certificate of appreciation (**Roll Of Honour**) for securing 1st class in M.Sc Physics.
- **Best Oral Presentation Award** at the 6th International Conference on Education: “Science beyond Classroom” (ICE2018), 15-17 March, 2018

RESEARCH PROJECTS

- Project entitled “Study of Structural and Electronic Properties of III-V Compounds by First Principles” under Foreign Academic Visitors (FAVG) Grant of Universiti Teknologi Malaysia. Grant No. JI3000077264D035; Amount Allocated= RM 40K (**Completed with two publications**).
- Project entitled “Physical properties of optoelectronic materials at elevated condition with an emphasize on the development of generalized mechanism/model” approved under SRGP Higher Education Commission (HEC), Pakistan letter No. 21-2070/SRGP/R&D/HEC/2018; Amount Allocated= PKR 418,950/- (**continue**).

RESEARCH EXPERIENCE

- Research experience on the activation of an unfavorable chemical processes by applying an electric field with an appropriate resonance frequency. The idea is to transfer energy through a harmonic electric pulse to design a particular surface chemistry.
- Exploring the energetics & dynamics of intercalated hydrogen at the metal-graphene interface. Hydrogenation treatment of single and few layers of graphene on various transition metal surfaces such as Cu, Pt, Pd, and Ni, aiming at obtaining ultrathin sp^3 -bonded carbon films is considered.
- My research work involves diverse calculations on the electronic structure and optoelectronic properties of various simple (such as binary phosphides and antimonides) and complex (such as AB_2C_4 type spinels and organic–inorganic hybrids) solid materials using numerical approaches at different level of sophistication. I have also calculated physical properties of materials at elevated conditions. I have calculated a number of structural, electronic and optical parameters and have developed equations for their prediction at above normal conditions.

COURSES TAUGHT

Quantum Mechanics; Introduction to Material Science; Mathematical Methods of Physics; Electronics; Electricity and Magnetism; Electronics; Applications of Quantum Mechanics

CERTIFICATES

- MATLAB for Scientists and Engineers
- Applied Numerical Methods for Engineers and Scientists using MATLAB
- Basic Steady State Simulation using CHEMCAD
- Heat Exchanger Design and Rating using CHEMCAD
- Implementation of QMS(ISO 9001:2008) in Process Industries
- Implementation of ISO 17025 for QA in Testing and Research Labs
- Energy Conservation and Sustainability

- Process Integration and Intensification
- HAZOP Study for Process Industries
- PRIMAVERA PROJECT MANAGER P3 (14-05-2010 to 28-05-2010 Institute of Quality & Technology Management, University of Punjab Lahore)
- Faculty professional development program entitled “Cascading of Master Trainers Faculty Professional Development Program” Held on 12-09-2018 to 18-09-2018

ADMINISTRATIVE EXPERIENCE

UNIVERSITY OF EDUCATION, LAHORE (26/10/2017 – PRESENT)

- Assigned to review **MS/MPhil scheme of study** (Notification No. UE/Dir./S&T/2017-2018/6217)
- Prepared the grant application to Higher Education Commission (HEC), Pakistan for conducting the conference entitled “6th International Conference on Education, ICE 2018” that was approved for a **sum of PRS 1.42 Million Ref No: HEC/R&D/SG(01)/2017-401**. Also, worked as a member of Abstract Review and Publication Committee for the aforementioned conference (Notification No. UE/AR/2017/5933 and UE/Div. S&T/2018-19/6062)
- Involved in the development of **Question Bank (Physics)** for the University of Health Sciences, Lahore (Notification No. UHS/CE/2018/921 and UE/R/2018/3033)
- Worked as a member of **MS Physics Admission Committee** Fall 2018 (Notification No. UE/Dir./S&T/2017-18/6029)
- Member of **Table Tennis Management Committee** for annual sports gala 2018 (Notification No. UE/AR/2018/953)

UNIVERSITI TEKNOLOGI MALAYSIA (SEMESTER I SESSION 2012/2013)

- Assisting faculty in administrative works such as conduction of lab experiments and handling of lab equipments at the Department of Physics.

PUNJAB COLLEGE OF SCIENCE, LAHORE, PAKISTAN (08/08/2008 - 02/15/2012)

- During tenure of the lecturer-ship, I was involved in the conduction of student exams and parent teacher meetings. Appointed as a **Floor Discipline Incharge** of science campus. My responsibilities also included distribution of administrative-tasks among colleagues.

SCIENTIFIC ACTIVITIES ATTENDED

- **International Workshop On Materials Modeling And Simulations** (September 7-10, 2011, Department Of Physics, University Of Malakand, Pakistan).
- One month research visit to **Hakim Sabzevari University Iran** to study the development and implementation of modified approaches.

DOCTORAL THESIS EVALUATOR

- Manzar Ali, PhD Thesis entitled “Opto-electronic response of spinel compounds through modified becke-johnson exchange potential” Department of Physics, Hazara University Mansehra (11/05/2015).

REVIEW SERVICES

Recognized reviewer of various international reputable journal such as

- Journal of Alloys & Compound
- Separation Science & Technology
- AIChE Journal
- Journal of Physics and Chemistry of Solids
- Opto-Electronics Review
- Physica B: Condensed Matter

Some of the peer review activities can be viewed at <http://www.reviewerpage.com/Masood-Yousaf>

STUDENTS UNDER SUPERVISION

GRADUATED

BS

3

CURRENT

PhD

1

MS

2

BS

4

MEMBERSHIPS

- Member of Pakistan Engineering Council
- Membership of Pakistan Institute Of Chemical Engineers (PICHE)

PUBLICATIONS

The articles published in reputed international journals are listed below and have attracted a number of external citations.

1. “Layer-sliding-mediated controlled tuning of physical properties of intercalated silicene/hBN heterostructure”
Masood Yousaf, J. Munir, M. A. Saeed, G. Murtaza and M. J. I. Khan. Materials Research Express, 6 (2019) 035005.
2. “Selective tuning of a particular chemical reaction on surfaces through electrical resonance: An ab initio molecular dynamics study”
Masood Yousaf, Dongbin Shin, Rodney Ruoff, and Noejung Park. Journal of Physical Chemistry Letters, 6 (2015) 5094–5099.
3. “Synergetic interplay between pressure and surface chemistry for the conversion of sp²-bonded carbon layers into sp³-bonded carbon films”
Y. Horbatenko, **Masood Yousaf**, J. Lee, T. H. Choi, R. S. Ruoff and N. Park. Carbon 106 (2016) 158–163.
4. “A Quest for Parsimonious Polyhedral Topology in Metal–Organic Frameworks”, S. Lee, Y-A Kwak, **Masood Yousaf**, S. Lee, H. R. Moon, N. Park & W. Choe.
(Submitted to Nature Communications)
5. “Role of graphene in water assisted oxidation of copper in relation to dry transfer of graphene”, D. Luo, X. You, B. Li, X. Chen, H. Park, M. Jang, T. Y. Ko, K. Wong, **Masood Yousaf**, X. Chen, M. Huang, S. H. Lee, Z. Lee, H. Shin, S. Ryu, N. Park, R. R. Bacsá, W. Bacsá and Rodney S. Ruoff, Chemistry of Materials, 29 (2017) 4546–4556.

6. “Carbon-heteroatom bond formation by ultrasonic chemical reaction for energy storage systems”, H. T. Kim, H. Shin, I. Y. Jeon, **Masood Yousaf**, H. W. Cheong, N. Park, J. B. Baek, and T. H. Kwon. *Advanced Materials*, 29 (2017) 1702747.
7. “Structural, Optoelectronic and Thermoelectric Properties of Ternary CaBe_2X_2 (X = N, P, As, Sb, Bi) Compounds” Abdul Ahad Khan, Aziz Ur Rehman, A. Laref, **Masood Yousaf** and G. Murtaza. *Zeitschrift für Naturforschung A*, 73 (2018) 1-9.
8. “Effect of Ni concentration on optical properties of rocksalt CdS system (A DFT + U study)” M. J. I. Khan, Z. Kanwal, M. N. Usmani, **Masood Yousaf**, P. Akhtar and A. Nabi. *International Journal of Modern Physics B*. 32 (2018) 1850280.
9. “Electronic, magnetic and optical properties of reduced hybrid layered complex $\text{Ni}(\text{pyz})\text{V}_4\text{O}_{10}$ (pyz = $\text{C}_4\text{H}_4\text{N}_2$) by first-principles” J. Munir, A. R. M. Isa, **Masood Yousaf**, H. R. Aliabad, Qurat-ul Ain, M. A. Saeed *Journal of Magnetism and Magnetic Materials* 416 (2016) 241–246.
10. “Structural, elastic, electronic, bonding, and optical properties of BeAZ_2 (A = Si, Ge, Sn; Z = P, As) chalcopyrites” Shah Fahad, G. Murtaza, T. Ouahrani, R. Khenata, **Masood Yousaf**, S. Bin Omran, Saleh Mohammad. *Journal of Alloys and Compound*, 646 (2015) 211–222.
11. “Optoelectronic properties of XIn_2S_4 (X= Cd, Mg) thiospinels through highly accurate all-electron FP-LAPW method coupled with modified approximations” **Masood Yousaf**, S. A. Dalhato, G. Murtaza, R. Khenata, M. Sajjad, A. Musa, H.A. Rahnamaye Aliabad and M. A. Saeed. *Journal of Alloys and Compound*, 625 (2015) 182–187.
12. “Prediction study of structural, electronic and optical properties of XIn_2S_4 (X = Hg, Zn) thiospinels under pressure effect” **Masood Yousaf**, F. Inam, R. Khenata , G. Murtaza, A.R.M. Isa, M.A. Saeed. *Journal of Alloys and Compound*, 589 (2014) 353–363.
13. “An Improved Study of Electronic Band Structure and Optical Parameters of X-Phosphides (X=B, Al, Ga, In) by Modified Becke-Johnson Potential” **Masood Yousaf**, M. A. Saeed, R. Ahmed, M. M. Alsardia, A. R. M. Isa, A. Shaari. *Communications in Theoretical Physics*, 58 (2012), 777–784.
14. “An insight into the structural, electronic and transport characteristics of XIn_2S_4 (X=Zn, Hg) thiospinels using a highly accurate all-electron FP-LAPW+Lo method” **Masood Yousaf**, M. A. Saeed, A. R. M. Isa, H. A. R. Aliabad, M. R. Sahar. *Chinese Physics Letter*, 30 (2013) 077402.
15. “Electronic band structure and optical parameters of spinel SnMg_2O_4 by modified Becke-Johnson potential” **Masood Yousaf**, M. A. Saeed, A. R. M. Isa, A. Shaari, H. A. R. Aliabad. *Chinese Physics Letter*, 29 (2012) 107401.
16. “Ab initio study of optoelectronic properties of spinel ZnAl_2O_4 beyond GGA and LDA” **Masood Yousaf**, M. A. Saeed, A. R. M. Isa, A. Shaari, H. A. R. Aliabad. *International Journal of Modern Physics B*, 26 (2012) 1250198.
17. “Study of electronic band structure and optical parameters of X-Antimonides (X=B, Al, Ga, In) by modified Becke-Johnson potential”

Masood Yousaf, M. A. Saeed, R. Ahmed, M. M. Alsardia, A. R. M. Isa, A. Shaari. Optoelectronics and Advanced Materials–Rapid Communications, 6 (2012) 902 - 910.

18. “Optoelectronic properties of pure and Co doped Indium Oxide by Hubbard and modified Becke Johnson Exchange Potentials”
H. A. R. Aliabad, M. Bazrafshan, H. Vaezi, **Masood Yousaf**, J. Munir, M. A. Saeed. Chinese Physics Letter, 30 (2013) 127101.
19. “Electronic and Optical Properties of Cubic Spinel CdX_2O_4 (X=In, Ga, Al) through Modified Becke—Johnson Potential”
A. Manzar, G. Murtaza, R. Khenata, **Masood Yousaf**, S. Muhammad and Hayatullah, Chinese Physics Letter, 31, (2014) 067401.
20. “Structural, electronic, and optical properties of orthorhombic and triclinic $BiNbO_4$ determined via DFT calculations”
F. Litimein, R. Khenata, S. K. Gupta, G. Murtaza, Ali. H. Reshak, A. Bouhemadou, S. Bin Omran, **Masood Yousaf** and P. K. Jha. Journal of materials sciences, 49 (2014) 7809–7818.

INTERNATIONAL CONFERENCE PRESENTATIONS

1. “Comparison of the electronic band structure profiles and optical properties of XIn_2S_4 (X = Cd, Mg) thiospinels”
Oral Presenter: Masood Yousaf
2nd International Science Postgraduate Conference (ISPC) (March10-12, 2014, Universiti Teknologi Malaysia)
2. “Study of electronic band structure and optical parameters of spinel $SnMg_2O_4$ beyond GGA and LDA”
Oral Presenter: Masood Yousaf
Joint International Conference on Nanoscience, Engineering and Management (BOND21) (August 19-21, 2013, Bayview Beach Resort, Penang, Malaysia)
3. “DFT Investigations of the Structural, Electronic and Optical Properties of XN (X=Al, Ga, B, In) compounds”
Oral Presenter: Masood Yousaf
International Conference on Solid State Physics (December 01-06, 2013, University of the Punjab, Lahore, Pakistan)
4. “Step by step approach in science”
Oral Presenter: Masood Yousaf
The 3rd Fiqh Science & Technology Seminar (May 19-20, 2012, Universiti Teknologi Malaysia)
5. “Study of electronic band structure and optical parameters of spinel $ZnAl_2O_4$ by modified Becke-Johnson potential”
Oral Presenter: Masood Yousaf
4th International Conference on Solid State Science and Technology (December 18-20, 2012, Melaka Malaysia)
6. “Opening of New Paths for Kinetically Limited Chemical Processes using Resonating E-field”
Oral Presenter: Masood Yousaf
The 10th International Conference on New Diamond and Nano Carbons (May 22-26, 2016, Xi’an Shaanxi, China)
7. Designing a specific surface chemistry through electric field induced resonance”
Poster Presentation: Masood Yousaf

20th Nanotube Workshop (January 29-31, 2015, Muju Deogyusan Resort, Republic of Korea)

8. Effect of Shear Sliding on Optoelectronic Properties of In₂Se₃/hBN Heterostructure

Oral Presentation: Masood Yousaf

The 6th International Conference on Education (ICE2018), 15-17 March, 2018