DR. A H M ABDUL WASEY
M.Sc (Physics), PhD (Physics)
Assistant Professor
Department of Physics,
Triveni Devi Bhalotia College,
Raniganj 713347, India
Phone No.: +91 8697976944
Mail ID: ahmabdulwasey@gmail.com

Overview:

I have started my journey of life as well as my formal education from a village of Murshidabad district of West Bengal, India. After completing my schooling in Murshidabad, I enrolled at Aligarh Muslim University, Aligarh, India for my Bachelors (2004) and Masters (2009) both in Physics. In the end of 2009, I joined Indian Association for the Cultivation of Science (IACS), Kolkata, India as a Junior Research Fellow under the joint supervision of Prof. G. P. Das (Theoretician) and Prof. B. N. Dev (Experimentalist). After completing my doctoral work from IACS, in the middle of 2016 I moved to Singapore to join the group Prof. S. Y. Quek in the Center for Advanced 2D Materials of National University of Singapore (NUS), Singapore. I worked there as a Post-Doctoral Research Fellow for an year. Then I came back India in the middle of 2017 to join Triveni Devi Bhalotia College as an Assistant Professor of Physics.

Year of appointment to the present job:

2017

Other Academic/ Administrative post:

Coordinator, Department of Electronics, Triveni Devi Bhalotia College, Raniganj, India (June, 2018- June, 2020)

Academic background:

Secondary and Higher Secondary : Chak-Islampur S. C. M. High School, Islampur, Murshidabad, West Bengal, India
Bachelor of Science (Honours) in Physics : Aligarh Muslim University, Aligarh, India
Master of Science in Physics : Aligarh Muslim University, Aligarh, India
Doctorate : Indian Association for the Cultivation of Science (Awarded by University of Calcutta), Kolkata, India
Post-Doctoral : Center for Advanced 2D Materials, National University of Singapore, Singapore

Information about M Phil/Ph D etc.:

- **PhD Topic:** *Studies Of Two-Dimensional Quantum Structures Using First Principles Density Functional Approach.*
  (Web link: http://hdl.handle.net/10603/163775)

- **Masters Thesis Topic:** *Project on Colossal Magnetoresistance.*

Professional Qualifications:

- *National Eligibility Test (NET) conducted jointly by CSIR and UGC*
- *Graduate Aptitude Test in Engineering (GATE)*

Area of present academic/ Research interest/ Research Projects & Schemes and Collaborations:

- **Research interest:** *First principles density functional theory (DFT) based theoretical approach to study electronic, magnetic, vibrational and optical properties of two-dimensional quantum structures. The works are being carried out in collaboration with experimental groups. (Web link: https://scholar.google.com/citations?hl=en&user=FjbX9WcAAAAJ&view_op=list_works&sortby=pubdate)*
- **Research projects:** Nil
- **Collaborations:**

Theory

- *Prof. G. P. Das, IIT Kharagpur (Former Senior Professor at IACS), India*
- *Prof. S. Y. Quek, CA2DM, NUS, Singapore*
- *Prof. R. Thapa, SRM University, Amravati, India*
- *Dr. C. Majumdar, VECC, Kolkata, India*
- *Dr. D. Karmakar, BARC, Mumbai, India*

Experiment

- *Prof. B. N. Dev, IIT Kharagpur (Former Senior Professor at IACS), India*
- *Prof. N. Pradhan, IACS, Kolkata, India*

Ph.D. Supervision:

Nil

Academic Visit Abroad:

- *Visited Germany in March 2014 to attend* 45th IFF Spring School Computing Solids: Models, *ab initio* Methods and Supercomputing, Forschungszentrum, Jülich, Germany.
- *Visited Singapore for Post-Doctoral research*

Publications:

- **A. H. M. Abdul Wasey**, R. Batabyal, J. C. Mahato, B. N. Dev, Y. Kawazoe and G. P. Das, *First principles electronic structure of coincidence site epitaxial Ag/Si (111) interface*, *Phys. Status Solidi* B **250**, No-7, 1313 (2013). (Weblink: https://onlinelibrary.wiley.com/doi/abs/10.1002/pssb.201248542)
- R. Batabyal, **A. H. M. Abdul Wasey**, J. C. Mahato, Debolina Das, A. Roy, G. P. Das and B. N. Dev, *Negative differential resistance in electron tunneling in ultra thin films near the two-dimensional limit*, *J. Appl. Phys.* **113,** 034308 (2013). (Web link: https://aip.scitation.org/doi/10.1063/1.4775816)
- **A. H. M. Abdul Wasey**, D. Karmakar and G. P. Das, *Manifestation of Long Range Ordered State in Layered VX_2 (X= Cl, Br, I) Systems*, *J. Phys: Condens. Matter* **25**, 476001 (2013). (Web link: https://iopscience.iop.org/article/10.1088/0953-8984/25/47/476001)
- **A. H. M. Abdul Wasey**, Soubhik Chakrabarty, G. P. Das and C. Majumder, *h-BN monolayer on the Ni(111) surface: A potential catalyst for oxidation*, *ACS Appl. Mater. Interfaces* **5(21),** 10404 (2013). (Web link: https://pubs.acs.org/doi/abs/10.1021/am404321x)
- **A. H. M. Abdul Wasey**, Soubhik Chakrabarty and G. P. Das, *Substrate induced modulation of electronic, magnetic and chemical properties of $MoSe_2$ monolayer*, *AIP-Adv.* **4**, 047107 (2014). (Web link: https://aip.scitation.org/doi/full/10.1063/1.4871080)
- Riya Bose#, **A. H. M. Abdul Wasey**#, G. P. Das and N. Pradhan, *Hetero-epitaxial Junction in Au/ZnSe Nanostructure: Experiment versus First Principles Simulation*, *J. Phys. Chem. Lett.* **5**, 1892 (2014). ***(#R.B.***

and A.H.M.A.W. contributed equally to this work). (Web link: https://pubs.acs.org/doi/10.1021/jz500777k)

- **A. H. M. Abdul Wasey**, Soubhik Chakrabarty and G. P. Das *Quantum size effects in layered VX_2 (X=S, Se) materials: Manifestation of metal to semimetal or semiconductor transition*, *J. Appl. Phys.* **117**, 064313 (2015). (Web link: https://aip.scitation.org/doi/10.1063/1.4908114)

- Soubhik Chakrabarty, **A. H. M. Abdul Wasey**, Ranjit Thapa and G. P. Das *First Principles Design of Divacancy Defected Graphene Nanoribbon based Rectifying and NDR Device*, *AIP- Adv.* **5**, 087163 (2015). (Web link: https://aip.scitation.org/doi/full/10.1063/1.4929576)

- **A. H. M. Abdul Wasey*,** G. P. Das and C. Majumder, *Exploring the effect of oxygen coverage on the electronic, magnetic and chemical properties of Ni(111) supported h-BN sheet: A density functional study, Chem. Phys. Lett.,* **676**, 124 (2017). (Web link: https://www.sciencedirect.com/science/article/abs/pii/S0009261417302683?via%3Dihub)

- Soubhik Chakrabarty, **A. H. M. Abdul Wasey**, Ranjit Thapa and G. P. Das, *Origin of Spin-polarization in Edge Boron doped Zigzag Graphene Nanoribbon and Its Usage as Spin-filter*, *Nanotechnology* **29,** 345203 (2018). (Web link: https://iopscience.iop.org/article/10.1088/1361-6528/aac9f3/meta)

- R. Batabyal, **A. H. M. Abdul Wasey**, J. C. Mahato, Debolina Das, G. P. Das and B. N. Dev, *Evolution of Fermi Level State Density in Ultrathin Films Near the Two–Dimensional Limit: Experiment and Theory,* (***submitted for publication***) (2020). (Web link: https://arxiv.org/abs/1412.1238)

- **A. H. M. Abdul Wasey***, D. Karmakar and G. P. Das, *Frustrated Non-Collinearity In The Magnetic Behavior Of Layered VX_2 (X= Cl, Br, I) Systems*, *AIP Conf. Proc.*, **Volume-1512,** pp-1114-1115 (2013). (Web link: https://aip.scitation.org/doi/abs/10.1063/1.4791437)

- **A. H. M. Abdul Wasey***, R. Batabyal, B. N. Dev and G. P. Das *Manifestation of surface and interface properties of Ag overlayer on Si (111)*, *AIP Conf. Proc.,* **Volume-1512,** pp-714-715 (2013). (Web link: https://aip.scitation.org/doi/abs/10.1063/1.4791237)

Books and Chapters:

Nil

Seminars, Webinars and Conferences attended:

- **Attended** Workshop on **First Principles Simulation in Condensed Matter Physics, 2010, HPU, Simla, India.** (March, 2010)

- **Oral presentation,** *Ag monolayers on Si (111): Experiment vs Theory*, **ICFANT-2010, Jadavpur University, Kolkata, India**. (December, 2010)

- **Oral presentation**, *Ag/Si (111): A density functional study*, **Multiscale modelling workshop, 2011, JNCASR, Bangalore, India**. (January, 2011)

- **Attended** Workshop on **Computaional Materials Science (ICAM-2011), PSGTECH, Coimbatore, India.** (Decmeber, 2011)

- **Poster presentation,** *Manifestation of interface induced effects in Ag/Si (111) epitaxial hetero-junction*, **ICPNEM-2011, IACS, Kolkata, India**. (November, 2011)

- **Poster presentation**, *First principles investigation of interface induced properties of MSi_2/Si (111) (M = Ni, Co) A and B-type interfaces A 2D nanostructure problem*, **ICANNT-2011, IITG, Guwahati, India**. (December, 2011)

- **Poster presentation**, *Frustrated Non-Collinearity In The Magnetic Behavior Of Layered VX_2 (X= Cl, Br, I) Systems*, **ACCMS-TM2DS-2012, IISc, Bangalore, India**. (July, 2012)

- **Poster presentation**, *Frustrated Non-Collinearity In The Magnetic Behavior Of Layered VX_2 (X= Cl, Br, I) Systems*, **DAE-SSPS-2012, IITB, Mumbai, India**. (December, 2012)

- **Poster presentation**, *First principles investigation of interface induced properties of MSi_2/Si (111) (M = Ni, Co) A and B-type interfaces: A prototype epitaxial nanostructure*, **ISMC-2012, BARC, Mumbai, India.** (December, 2012)

- **Oral Presentation**, *Substrate Induced Functionalization of Hexagonal Boron Nitride Sheet*, **IUMRS-ICA-2013, IISc, Bangalore, India**. (December, 2013)

- **Attended 45th IFF Spring School Computing Solids: Models, *ab initio* Methods and Supercomputing, Forschungszentrum, Jülich, Germany.** (March, 2014)

- **Oral presentation**, *Hexagonal Boron Nitride on Ni(111) substrate : A Case Study for Interface Induced Effects on the Properties of 2D Materials*, **Recent Trends in Condensed Matter Physics-2014, Jadavpur University, Kolkata, India**. (June, 2014)

- **Oral presentation**, *Exploring How Transition Metal Substrate Modulates the Physical and Chemical Properties of a 2D nanostructure*, **32nd Young Physicists' Colloquium, SINP, Kolkata, India**. (August, 2014)

- **Poster presentation**, *DFT Study of 2D Nanostructures on Transition Metal Substrates*, **MMMD-2014, BARC, Mumbai, India**. (October, 2014)

- **Oral presentation,** *Substrate-induced Modulation of the Physical and Chemical Properties of 2D nanostructures: Density Functional Study*, **National Science Day 2015, IACS, Kolkata, India.** (February, 2015)

- **Thesis presentation,** *Studies Of Two-Dimensional Quantum Structures Using First Principles Density Functional Approach*, **DAE-SSPS-2015, Amity University, Noida, India.** (December, 2015)

- **Attended IPS Meeting 2017, Institute of Physics Singapore, Singapore.** (February, 2017)

- **Poster presentation**, *Manifestation of Surface and Interface Effects in Ag/Si Epitaxial Metal/Semiconductor Heterojunction: Experiment and Theory*, **ETPSIN-2017, IACS-SNBNCBS, Kolkata, India.** (November 2017)

- **Oral presentation**, *Manifestation of Surface and Interface Effects in Ag/Si Epitaxial Metal/Semiconductor Heterojunction: Experiment and Theory*, **NCFMP-2018, Amity University, Kolkata, India.** (August 2018)

- **Poster presentation,** *DFT Studies of 2D Nanostructures on Transition Metal Substrates*, **EESTER-2018, SRM-Research Institute and IIT Madras, Chennai, India.** (September 2018)

Conference/ Seminar Organised:

Nil

Life Membership:

- *Indian Association for the Cultivation of Science (IACS)*
- *Asian Consortium for Computational Materials Science (ACCMS)*

Awards:

- *Awarded Bharat Seva Trust Scholarship*
- *Awarded University Medal for standing first in B.Sc (Hons) Physics*
- *Awarded UGC-PG Merit Scholarship for University Rank Holders*
- *Secured Second position in M.Sc Physics*
- *Kawazoe Prize winner for Best Poster in ACCMS-TM2DS-2012, IISc, Bangalore, India*
- *SERB-International Travel Support for visiting Germany to attend a Spring School*

Others/ Miscellaneous:

Being a Bengali, I am a big fan of writings of Rabindranath Tagore. I find his short stories as a perfect conglomeration of reflections of different aspects of life. I choose Rabindra Sangeet to complement my each and every state of mind. Thinking and imagination is my another hobby. I often love to travel through my won imaginary world, beyond the materialistic one. I wish to travel through the earth. The words of Robert Frost often resonate with my mind and I feel...

'The woods are lovely, dark and deep,
But I have promises to keep,
And miles to go before I sleep,
And miles to go before I sleep.'