**Curriculum Vitae**

**Md. Ashraf Ali, Ph.D.**

Associate Professor

Department of Physics

Chittagong University of Engineering and Technology (CUET)

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**Scopus Author** **ID**: 57188628267

**Orcid ID**: orcid.org/0000-0003-4957-2192

I have completed the M.Sc., M. Phil., and Ph.D. degrees in Physics with a specialization in Condensed Matter Physics. In the past years, my research area has been focused on advanced computational and experimental materials science research. Some of my articles have received significant attention from the scientific community (**Google scholar citations: 918,** **i10 index: 32, h index: 19**). The total impact factor of the journals where my papers were published is **128.3** (JCR-2020).

I have been granted (as Principal Investigator) a research fund of 40210 USD for the Development of an Advanced Computational Materials Research Laboratory (CMRL) in the Department of Physics, Chittagong University of Engineering & Technology (CUET), Bangladesh from The World Academy of Sciences (TWAS), ICTP, Italy.

**Educational Qualification:**

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| --- | --- | --- | --- | --- |
| **Degree** | **Group/ Subject** | **Passing Year** | **Institution** | **Grade/**  **Class** |
| S.S.C. | Science | 2002 | Pakri high school  (Rajshahi Board) | A |
| H.S.C. | Science | 2004 | Rajshahi Govt. City College  (Rajshahi Board) | A |
| B.Sc. (Hons)  (4 years Integrated) | Physics | 2008  (held in 2009, Result in 2010) | Rajshahi University | First Class |
| M.Sc. (Solid State  Physics) | Physics | 2009  (held in 2010, Result in 2011) | Rajshahi University | First Class |
| M.Phil. | Physics | 2015  (12.08.2019 | Chittagong University of Engineering and Technology | Awarded |
| Ph.D. | Physics | 2019  (02.11.2019) | Chittagong University of Engineering and Technology | Awarded |

**M. Sc. Thesis entitled “*First principles study of tin oxides SnO*2 *and SnO*”** submitted to the Department of Physics, University of Rajshahi - work done as a partial fulfillment of Master degree.

**M. Phil. Thesis entitled “*Study of the structural, magnetic and electrical properties of Sn-substituted Ni-Zn ferrites*”** submitted to the Department of Physics, CUET - work done as a partial fulfillment of Master of Philosophy degree.

**Ph.D. Thesis entitled “*Synthesis and characterization of Y and Sn ions substituted Mg-Zn ferrites*”**submitted to the Department of Physics, CUET - work done as a partial fulfillment of Doctor of Philosophy degree.

**List of Publications**

1. **Research Articles: [\*Indicates corresponding authorship, Citations: 933, h-index: 19, i10 index: 32, Cumulative Impact Factor (JCR-2020) ~ 128.3]**
2. M. M. Hossain, **M. A. Ali**, M. M. Uddin, A. K. M. A. Islam, S. H. Naqib*, Newly synthesized 3D boron-rich chalcogenides B12X (X = S, Se): Theoretical characterization of physical properties for optoelectronic and mechanical applications,* **ACS Omega (2021)**
3. **M. A. Ali’\***, M. M. Hossain, M. M. Uddin, A. K. M. A. Islam, S. H. Naqib*, Understanding the improvement of thermo-mechanical and optical properties of 212 MAX phase borides Zr2AB2 (A = In, Tl),* **Journal of Materials Research and Technology** 15 (2021) 2227-2241.
4. Md. Mizanur Rahman, Anisur Rahman, Shafiul Hossain, P.K. Das, **Md. Ashraf Ali**, Md. Abdul Malek Soner and Abdullah-Al-Mahmud, *Calculation of fuel burnup and excess reactivity using TRIGLAV code for the BAEC TRIGA research reactor*, **Int. J. Nuclear Energy Science and Technology** 14 (2020) 291.
5. Muhammad Waqas Qureshi, **M. A. Ali’\***, Xinxin Ma, *Screen the physical properties of the new ductile 314 MAX phase boride Zr3CdB4: A DFT insight*, **Journal of Alloys and Compounds** 877 (2021) 160248.
6. **M. A. Ali’\***, Muhammad Waqas Qureshi, *Newly synthesized MAX phase Zr2SeC: DFT insights into physical properties towards possible applications,* **RSC Advances** 11 (2021) 16892.
7. M. M. Hossain, **M. A. Ali**, M. M. Uddin, A.K.M.A. Islam, S. H. Naqib, *Origin of high hardness and optoelectronic and thermo-physical properties of boron-rich compounds B6X (X = S, Se): a comprehensive study via DFT approach*, **Journal of Applied Physics 129 (2021) 175109**.
8. M. S. Hossain, **M. A. Ali’\***, M M. Hossain, M. M. Uddin*, Physical properties of predicted MAX phase borides Hf2AB (A = Pb, Bi): A DFT insight*, **Materials Today Communications** 27 (2021) 102411.
9. M. D. Hossain, M. N. I. Khan, **M. A. Ali**, M. A. Matin, S. M. Hoque, M. A. Hakim, A. T. M. K. Jamil, *Impact of V substitution on the physical properties of Ni-Zn-Co ferrites: Structural, magnetic, dielectric and electrical properties,* **Materials Research Express** 8 (2021) 046102.
10. **M. A. Ali’\***, M.N.I. Khan, F.-U.-Z. Chowdhury, M.M. Hossain, S.M. Hoque, M.M. Uddin; *Impact of Sn4+ substitution in Mg-Zn ferrites: deciphering the structural, morphological, dielectric, electrical and magnetic properties*, **Materials Chemistry and Physics** 263 (2021) 124357**. [From Ph.D. Thesis]**.
11. M. M. Uddin, **M. A. Ali**, M. M. Hossain, S. H. Naqib, A. K. M. A. Islam; *Comparative study of predicted MAX phase Hf2AlN with recently synthesized Hf2AlC: A first principle calculation,* **Indian Journal of Physics (2021).**
12. **M. A. Ali’\***, M. M. Hossain, M. M. Uddin, A. K. M. A. Islam, S. H. Naqib*, Physical properties of new MAX phase borides M2SB (M = Zr, Nb, Hf) in comparison with conventional MAX phase carbides M2SC (M = Zr, Nb, Hf): Comprehensive insights,* **Journal of Materials Research and Technology** 11 (2021) 1000-1018**.**
13. A.M. M. Tanveer Karim, M. A. Helal, M. A. Alam, **M. A. Ali**, I. Ara, *Optoelectronic, thermodynamic and vibrational properties of intermetallic MgAl2Ge: A first‑principles study,* **SN Applied Sciences** 3 (2021) 229**.**
14. **M A Ali’\***,M. M. Uddin, M. N. I. Khan, F -U -Z Chowdhury, D. K. Saha, S. M. Hoque, S. I. Liba, and S. Akhter; *Effect of sintering temperature on structural and magnetic properties of Ni0.6Zn0.4Fe2O4 ferrite: Synthesized from nanocrystalline powders*; **J. Phys. Conf. Series** 1718 (2021) 012013. **[From M.Phil. Thesis]**
15. M. M. Hossain, M A Hossain, S. A. Moon, **M. A. Ali**, M. M. Uddin, S. H. Naqib, A. K. M. A. Islam, M. Nagao, S. Watauchi and I. Tanaka; *NaInX2 (X = S, Se) layered materials for energy harvesting applications: First-principles insights into optoelectronic and thermoelectric properties;* **Journal of Material Science: Materials In electronics** 32(2021) 3878-3893.
16. M. M. Hossain, **M. A. Ali**, M. M. Uddin, M A Hossain, M. Rasadujjaman, S. H. Naqib, M. Nagao, S. Watauchi and I. Tanaka, *Influence of Se doping in recently synthesized NaInS2-xSex solid solutions for potential thermo-mechanical applications studied via first-principles method*  **Materials Today Communication** 26 (2021) 101988**.**
17. **M. A. Ali’\***, M.N.I. Khan, F.-U.-Z. Chowdhury, M.M. Hossain, S.M. Hoque, M.M. Uddin; *Mechanical, optical and high temperature magnetic properties of Sn substituted Mg-Zn ferrites,* **Phase Transitions**. [94](https://doi.org/10.1080/01411594.2020.1865535) (2021) 23-36. **[From Ph.D. Thesis].**
18. **M. A. Ali’\***, M. M. Hossain, M. M. Uddin, A. K. M. A. Islam, D. Jana, S. H. Naqib; *A DFT insights into new B-containing 212 MAX phases: Hf*2*AB*2 *(A = In and Sn)*, **Journal of Alloys and compounds** 860 (2021) 158408**.**
19. **M. A. Ali’\***, M. M. Hossain, A. K. M. A. Islam, S. H. Naqib; *Ternary boride Hf*3*PB*4*: Insights into the physical properties of the hardest possible boride MAX phase*, **Journal of Alloys and compounds** 857 (2021) 158264**.**
20. **M.A. Ali’\***; *Newly synthesized Ta based MAX phase (Ta1-xHfx)4AlC3 and (Ta1-xHfx)4Al0.5Sn0.5C3 (0 ≤ x ≤ 0.25) solid solutions: Unravelling the mechanical, electronic and thermodynamic properties* **Physica Status Solidi (b)** 258 (2021) 2000307.
21. K. Das, **M. A. Ali**, M. M. Hossain, S. H. Naqib, A. K. M. A. Islam and M. M. Uddin; *Dynamical stability, Vibrational and optical properties of anti-perovskite A3BX (Ti3TlN, Ni3SnN and Co3AlC) phases: A first principles study,* **AIP Advances** 10 (2020) 095226.
22. **M. A. Ali’\***, S. H Naqib, *Recently synthesized (Ti1-xMox)2AlC (0 ≤ x ≤ 0.20) solid solutions: deciphering the structural, electronic, mechanical and thermodynamic properties via ab initio simulations,* **RSC Advances** 10 (2020) 31535.
23. **M. A. Ali’\***, M.N.I. Khan, F.-U.-Z. Chowdhury, M.M. Hossain, M N Hossain, R. Rashid, S.M. Hoque, M.A. Hakim and M.M. Uddin, *Mechanical behavior, enhanced dc resistivity, energy band gap and high temperature magnetic properties of Y-substituted Mg-Zn ferrites,* **Materials Research Express** 7 (2020) 036101 **[From Ph.D. Thesis]**.
24. M. A. Matin, M. N. Hossain, F. A. Mozahid, **M. A. Ali**, M. A. Hakim, M. F. Islam, *Dielectric and optical properties of Ni doped LaFeO3 nanoparticles* **SN Applied Sciences**1 (2019) 1479.
25. M. D. Hossain, M. N. I. Khan, A. Nahar, **M. A. Ali**, M. A. Matin, S. M. Hoque, M. A. Hakim, A. T. M. K. Jamil, *Tailoring the properties of Ni-Zn-Co ferrites by Gd3+ substitution.* **Journal of Magnetism and Magnetic Materials**497(2020) 165978.
26. **M. A. Ali’\***, M.N.I. Khan, F.-U.-Z. Chowdhury, M.M. Hossain, M.Z. Rahaman, S.M. Hoque, M.A. Matin and M.M. Uddin, *Study of physical properties towards optimizing sintering temperature of Y-substituted Mg-Zn ferrites,* **Results in Physics** 14 (2019) 102517. **[From Ph.D. Thesis]**.
27. **M. A. Ali**, M.N.I. Khan, F.-U.-Z. Chowdhury, M.M. Hossain, A.K.M. Akhter Hossain, A. Nahar, S.M. Hoque, M.A. Matin, M.M. Uddin; *Yttrium substituted Mg-Zn ferrites: correlation of physical properties with Yttrium content*. **Journal of Materials Science: Materials in Electronics** 30 (2019) 13258–13270. **[From Ph.D. Thesis]**.
28. M. A. Matin, M. N. Hossain, **M. A. Ali**, M. A. Hakim, M. F. Islam*, Enhanced dielectric properties of prospective Bi0.85Gd0.15Fe1-xCrxO3 multiferroics*, **Results in Physics** 12 (2019) 1653-1659.
29. **M. A. Ali**, M. A. Hossain, M. A. Rayhan, M. M. Hossain, M. M. Uddin, M. Roknuzzaman, K. Ostrikov, A. K. M. A. Islam, S. H. Naqib*; First-principles study of elastic, electronic, optical and thermoelectric properties of newly synthesized K2Cu2GeS4 chalcogenide,* **Journal of Alloys and Compounds** 781 (2019) 37-46.
30. F. Sultana, M. M. Uddin, **M. A. Ali**, M. M. Hossain, S. H. Naqib, A. K. M. A. Islam, *First principles study of M2InC (M = Zr, Hf and Ta) MAX phases: The effect of M atomic species* **Results in Physics** 11 (2018) 869-876.
31. P. Barua, M. M. Hossain, **M. A. Ali**, M. M. Uddin, S. H. Naqib, A. K. M. A. Islam, *Effects of transition metals on physical properties of M2BC (M = V, Nb, Mo and Ta): A DFT calculation*. **Journal of Alloys and Compounds** 770 (2019) 523-534.
32. **M. A. Ali’\***, M. M. Hossain, M. A. Hossain, M. T. Nasir, M. M. Uddin, M. Z. Hasan, S. H. Naqib, A. K. M. A. Islam;*Recently synthesized (Zr1-xTix)2AlC (0 ≤ x ≤ 1) solid solutions: Theoretical study of the effects of M mixing on physical properties;* **Journal of Alloys and Compounds** 743 (2018) 146-154.
33. A. Chowdhury, **M. A. Ali**, M. M. Hossain, M. M. Uddin, S. H. Naqib, A. K. M. A. Islam; *Predicted MAX phase Sc2InC: Dynamical stability, vibrational and optical properties*; **Physica Status Solidi B** 255 (2018) 1700235.
34. M. R. Khatun, **M. A. Ali**, F. Pervin, A. K. M. A. Islam; *Elastic,* *thermodynamic and optical behavior of V2AC (A=Al, Ga) MAX phases*; **Results in Physics** 7 (2017) 3634-3639.
35. M. T. Nasir, M. A. Hadi, M. A. Rayhan, **M. A. Ali**, M. M. Hossain, M. Roknuzzaman, S. H. Naqib, A. K. M. A. Islam, M. M. Uddin, K. Ostrikov; *First-principles study of superconducting ScRhP and ScIrP pnictides;* **Physica Status Solidi B** 254 (2017) 1700336.
36. M. Roknuzzaman, M. A. Hadi, **M. A. Ali**, M. M. Hossain, N. Jahan, M. M. Uddin, J.A. Alarco, K. Ostrikov; *First hafnium-based MAX phase in the 312 family, Hf3AlC2: A first-principles study*; **Journal of Alloys and Compounds** 727 (2017) 616-626.
37. **M. A. Ali**, M. M. Uddin, M.N.I. Khan, F.-U.-Z. Chowdhury, S.M. Hoque, S.I. Liba; *Magnetic properties of Sn-substituted Ni-Zn ferrite: synthesized from nano-sized powders of NiO, ZnO, Fe2O3 and SnO2***; Chinese Physics B** 26 (2017) 077501. **[From M.Phil. Thesis].**
38. **M. A. Ali**, M. A. Hadi, M. M. Hossain, S. H Naqib, A.K.M. A. Islam; *Theoretical investigation of structural, elastic and electronic properties of ternary boride MoAlB;* **Physica Status Solidi B** 254 (2017) 1700010.
39. **M. A. Ali’\***, M. R. Khatun, N. Jahan, M. M. Hossain;*Comparative study of Mo2Ga2C with superconducting MAX phase Mo2GaC: first-principles calculations*; **Chinese Physics B** 26 (2017) 033102.
40. **M. A. Ali**, M. M. Hossain, N. Jahan, S. H. Naqib, A. K. M. A. Islam; *Newly synthesized Zr2(Al0.58Bi0.42)C, Zr2(Al0.2Sn0.8)C, and Zr2(Al0.3Sb0.7)C MAX phases: A DFT based first-principles study;* **Computational Materials Science** 131 (2017) 139-145.
41. **M. A. Ali**, M. M. Uddin, M. N. I. Khan, F.-U.-Z. Chowdhury, S. M. Hoque; *Structural, morphological and electrical properties of sn-substituted ni-zn ferrites synthesized by double sintering technique*; **Journal of Magnetism and Magnetic Materials** 424 (2017) 148-154. **[From M.Phil. Thesis].**
42. **M. A. Ali’\***, A.K.M.A. Islam, N. Jahan, S. Karimunnesa; *First-principles study of SnO under high pressure*; **International Journal of Modern Physics B** 30 (2016) 1650228. **[From M.Sc. Thesis].**
43. **M. A. Ali**, M. T. Nasir, M. R. Khatun, A. K. M. A. Islam, S. H. Naqib; *Ab initio investigation of vibrational, thermodynamic, and optical properties of Sc2AlC MAX compound*; **Chinese Physics B** 25 (2016) 103102.
44. **M. A. Ali**, M.S. Ali, M. M. Uddin; *Structural, elastic, electronic and optical properties of metastable MAX phase Ti5SiC4 compound*; **Indian Journal of Pure and Applied Physics** 54 (2016) 386.
45. M. S. Ali, M. A. Rayhan, **M. A. Ali**, R. Parvin, A. K. M. A. Islam; *New MAX phase compound Mo2TiAlC2: first-principles study*; **Journal of Scientific Research** 8 (2016) 109.
46. **M. A. Ali**, M. Roknuzzaman, M. T. Nasir, S. H. Naqib, A. K. M. A. Islam; *Structural, elastic, electronic and optical properties of Cu3MTe4 (M=Nb, Ta) sulvanites: an ab-initio study;* **International Journal of Modern Physics B** 30 (2016) 1650089.
47. **M. A. Ali**, M. N. I. Khan, F.-U.-Z. Chowdhury, S. Akhter, and M. M. Uddin; *Structural properties, impedance spectroscopy and dielectric spin relaxation of ni-zn ferrite synthesized by double sintering technique*; **Journal of Scientific Research** 7 (2015) 65-75. **[From M.Phil. Thesis].**
48. M. A. Rayhan, **M. A. Ali’\***, S. H. Naqib, A. K. M. A. Islam; *First-principles study of vickers hardness and thermodynamic properties of Ti3SnC2 polymorphs;* **Journal of Scientific Research** 7 (2015) 53-64.
49. **M. A. Ali’\***, N. Jahan, A. K. M. A. Islam; *Sulvanite compounds Cu3TMS4 (TM= V, Nb and Ta): elastic, electronic, optical and thermal properties using first-principles method*; **Journal of Scientific Research** 6 (2014) 407-419.
50. N. Jahan, **M. A. Ali**; *A theoretical study of elastic, electronic, optical and thermodynamic properties of AlB2 and TaB2*; **Bangladesh Journal of Physics** 15 (2014) 93-103.
51. **M. A. Ali**, A. K. M. A. Islam; *Sn1-xBixO2 and Sn1-xTaxO2 (0 ≤ x ≤ 0.75): A First-principles Study*; **Physica B** 407(2012) 1020-1026. **[From M.Sc. Thesis].**
52. **M. A. Ali**, A. K. M. A. Islam; M. S. Ali; *Ni-rich nitrides ANNi3 (A = Pt, Ag, Pd) in comparison with superconducting ZnNNi3*; **Journal of Scientific Research** 4 (2012) 1-10.

**B. Published as abstract in Conferences:**

# First-Principles Study of Tin Oxides; National Conference on Physics for Development, Organized by the Bangladesh Physical Society, At Bangladesh University of Engineering and Technology (BUET), February 10, 2011.

1. A theoretical study of elastic, electronic and optical properties of AlB2 and TaB2; National Conference on Physics for Energy and Development, Organized by the Bangladesh Physical Society, At Atomic Energy Center, Dhaka; December 27-28, 2012.
2. Sulvanite Compounds Cu3TMS4 (TM = V, Nb and Ta): Elastic, Electronic, Optical and Thermal Properties using First-principles Method; International Conference on Physics for Energy and Environment, Organized by the Bangladesh Physical Society, At Atomic Energy Center, Dhaka; March 6-8, 2014.
3. Sintering Temperature Dependence of Structural and Magnetic Properties of Ni0.6Zn0.4Fe2O4 Ferrite; International Conference on Advances in Physics (ICAP-2-15), Organized by the Department of Physics, Rajshahi University, Bangladesh, April 3-4, 2015.
4. Effect of sintering temperature on dielectric loss, conductivity relaxation process and activation energy in Ni0.6Zn0.4Fe2O4 ferrite; National Conference on Physics Research and Education in Bangladesh, Organized by the Bangladesh Physical Society, At Atomic Energy Center, Dhaka, April 19-20, 2015.
5. First Principles Study of Structural, Electronic and Optical Properties of Cu3TaTe4; International Conference on Physics for Sustainable Development & Technology (ICPSDT-2015), Organized by the Department of Physics, CUET, Bangladesh. August 19-20, 2015.
6. Studies on structural, electrical, and magnetic properties of double sintering technique derived Ni0.6-x/2Zn0.4-x/2SnxFe2O4; International Conference on Nanoscience, Nanotechnology & Advanced Materials (NANOS 2015), Organized by the Department Of Chemistry, Gitam University, Gandhinagar Campus, Rushikonda Visakhapatnam-530 045, A.P., India.
7. Structural, elastic, electronic and optical properties of Mo2Ga2C: A first-principles study. International conference of Physics-2016, Organized by Bangladesh Physical Society, At Atomic Energy Center, Dhaka, March 10-12, 2016.
8. First-principles calculations of structural, elastic and electronic properties of MoAlB. National conference of Physics-2017, Organized by Bangladesh Physical Society, At Atomic energy Center, Dhaka, January 5-7, 2017.
9. Newly synthesized Zr2AlC, Zr2(Al0.58Bi0.42)C, Zr2(Al0.2Sn0.8)C, and Zr2(Al0.3Sb0.7)C MAX phases: A DFT based first-principles study. National conference of Physics-2017, Organized by Bangladesh Physical Society, At Atomic energy Center, Dhaka, January 5-7, 2017.
10. First-Principles Study of Newly Synthesized Quaternary Chalcogenide BaLa2In2Se7. National conference of Physics-2017, Organized by Bangladesh Physical Society, At Atomic energy Center, Dhaka, January 5-7, 2017.
11. Structural, Elastic, Electronic and Optical Properties of Quaternary Chalcogenides BaLa2In2S7: First Principle Study. National conference of Physics-2017, Organized by Bangladesh Physical Society, At Atomic energy Center, Dhaka, January 5-7, 2017.
12. Comparative study of Mo2Ga2C with superconducting MAX phase Mo2GaC: A first-principles calculations. National conference of Physics-2017, Organized by Bangladesh Physical Society, At Atomic energy Center, Dhaka, January 5-7, 2017.
13. Topological Weyl Semimetal NbP: A First Principles Study. 2nd International Conference on Physics for Sustainable Development & Technology (ICPSDT-2017), Organized by the Department of Physics, CUET, At Motel Shaikat, Bangladesh, December 10-11, 2017.
14. Predicted MAX Phase Sc2InC: Dynamical Stability, Vibrational and Optical Properties. 2nd International Conference on Physics for Sustainable Development & Technology (ICPSDT-2017), Organized by the Department of Physics, CUET, At Motel Shaikat, Bangladesh, December 10-11, 2017.
15. First-principles study of superconducting ScRhP and ScIrP pnictides. 2nd International Conference on Physics for Sustainable Development & Technology (ICPSDT-2017), Organized by the Department of Physics, CUET, At Motel Shaikat, Bangladesh, December 10-11, 2017.
16. First hafnium-based MAX phase in the 312 family, Hf3AlC2: A first-principles study. 2nd International Conference on Physics for Sustainable Development & Technology (ICPSDT-2017), Organized by the Department of Physics, CUET, At Motel Shaikat, Bangladesh, December 10-11, 2017.
17. Physical Properties of Mo2Bc: A First Principles Calculation. 2nd International Conference on Physics for Sustainable Development & Technology (ICPSDT-2017), Organized by the Department of Physics, CUET, At Motel Shaikat, Bangladesh, December 10-11, 2017.
18. Tetragonal Phase of BC2N: A Possible New Superhard Material. 2nd International Conference on Physics for Sustainable Development & Technology (ICPSDT-2017), Organized by the Department of Physics, CUET, At Motel Shaikat, Bangladesh, December 10-11, 2017.
19. Elastic, electronic, optical and thermoelectric properties of K2Cu2GeS4: a new chalcogenide material. International Conference on Nanotechnology and Condensed Matter Physics 2018 (ICNCMP 2018), Organized by the Department of Physics, BUET–Dhaka, Bangladesh, January 11–12, 2018.
20. Structural, elastic, electronic and optical properties of Ta2BC: A DFT calculations. International Conference on Nanotechnology and Condensed Matter Physics 2018 (ICNCMP 2018), Organized by the Department of Physics, BUET–Dhaka, Bangladesh, January 11–12, 2018.
21. Recently synthesized (Zr1-xTix)2AlC (0 ≤ x ≤ 1) solid solutions: Theoretical study of the effects of M mixing on physical properties. International Conference on Nanotechnology and Condensed Matter Physics 2018 (ICNCMP 2018), Organized by the Department of Physics, BUET–Dhaka, Bangladesh, January 11–12, 2018.
22. Ab initio calculation of the physical properties of nanolayered ternary carbides M2ZrC, International conference on Physics-2018. Organized by Bangladesh Physical Society, Dhaka University, Dhaka, March 8-10, 2018,
23. Study of the structural, magnetic and transport properties of Mn doped Co-Zn Ferrite, Conference on "Weather Forecasting and Advances in Physics”. Organized by Department of Physics, KUET–Khulna, Bangladesh, May11–12, 2018.
24. Physical properties of Y substituted Mg-Zn ferrites. International conference on Electronics and ICT on 2018, Organized by Bangladesh Electronics Society, At Atomic energy Center, Dhaka November 25 -26, 2018.
25. The effect of Yttrium substitution on the magnetic properties of Mg-Zn ferrites; 5Th Conference of Bangladesh Crystallographic Association, Organized by Bangladesh Crystallographic Association, held on 25-26 January, 2019.
26. The structural, electrical and dielectric properties of Y substituted Mg-Zn ferrites; National Conference on Physics-2019, Organized by Bangladesh Physical Society, held on 7-9 February, 2019.
27. Study of physical properties towards optimizing sintering temperature of Y-substituted Mg-Zn ferrites, 3rd International Conference on Physics for Sustainable Development & Technology (ICPSDT-2017), Organized by the Department of Physics, CUET, Bangladesh, held on December 18-19, 2019.
28. Dynamical stability and vibrational properties of hypothetical MAX phase compound Sc2AC(A = Ga/Tl) : First principle calculations, 3rd International Conference on Physics for Sustainable Development & Technology (ICPSDT-2017), Organized by the Department of Physics, CUET, Bangladesh, held on December 18-19, 2019.
29. Influence of Gd Substitution in Ni-Zn-Co Ferrites, 3rd International Conference on Physics for Sustainable Development & Technology (ICPSDT-2017), Organized by the Department of Physics, CUET, Bangladesh, held on December 18-19, 2019.
30. Influence of V Substitution in Ni-Zn-Co Ferrites, International Conference on Physics-2020, Organized by Bangladesh Physical Society, held on March 5-7, 2020.
31. Prospects of B-containing 212 MAX phases as their counterpart of 211 MAX phases, International Conference of Science and Technology for celebrating the Birthday centenary of Bangabandhu, Organized by Bangladesh Council of Scientific and Industrial Research, held on 11-13 March-2021.
32. Structural, mechanical and electronic properties of MAX phase borides Hf2AB (A = Pb, Bi): a DFT insight, International Conference of Science and Technology for celebrating the Birthday centenary of Bangabandhu, Organized by Bangladesh Council of Scientific and Industrial Research, held on 11-13 March-2021.

**Research Experience**

* **Jan 2010 to March 2011**

M. Sc.thesis work - for partial fulfilment of Master dergree.

**Supervisor: Dr. A. K. M. Azharul Islam,** Rtd. Professor, Department of Physics, University of Rajshahi, Bnagladesh.

* **March 2011 to June 2012**

As a Research Assistant at Condensed Matter Physics Lab, Dept. of Physics, R.U.

* **June 2013 to August 2015**

M. Phil.thesis work - for partial fulfilment of M.Phil. dergree.

**Supervisor: Dr. Md. Mohi Uddin,** Professor,Department of Physics, Chittagong University of Engineering and Technology, Bangladesh.

* **August 2015 to November 2019**

Ph.D. Thesis work - for partial fulfilment of Ph.D. dergree.

**Supervisor: Dr. Md. Mohi Uddin,** Professor,Department of Physics, Chittagong University of Engineering and Technology, Bangladesh.

* **November 2019 to till date**

My duties involve, teaching undergraduate and graduate students, supervising graduate students, and research on various materials of interest. TWAS granted us a research grant of 40210 USD for the “Development of an Advanced Computational Materials Research Laboratory (CMRL) in the Department of Physics, Chittagong University of Engineering & Technology (CUET), Bangladesh”, I am involed in the project as the Principal Investgator. As an active collaborator, I am keeping close contacts with the several institutions from home and abroad including Bangladesh Atomic Energy Commission (BAEC), Bangladesh University of Engineering and Technology (BUET), University of Rajshahi (BD), University of Calcutta (India), University of Yamanashi (Japan), Queensland University of Technology (Australia), Harbin Institute of technology (China).

**Teaching Experience:**

* **18.11.2020 to till date**

**Associate Professor,** Department of Physics, Chittagong University of Engineering and Technology (CUET), Chattogram-4349, Bangladesh.

* **20.09.2015 to 17.11.2020**

**Assistant Professor**, Department of Physics, Chittagong University of Engineering and Technology (CUET), Chattogram-4349, Bangladesh.

* **10.06.2012 to 19.09.2015**

**Lecturer**, Department of Physics, Chittagong University of Engineering and Technology (CUET), Chattogram -4349, Bangladesh.

* **Main Topics Taught**:

**Physical Optics:** Interference of light, Diffraction of light, Polarization of light

**Properties of Matter:** Elasticity, Surface Tension of water and mercury, Hydrodynamics, Viscosity

**Modern Physics:** Relativity, Photo electric effect, Compton Effect, de Broglie wave, Bohr’s postulates, Wave mechanics.

**Nuclear Physics:** Radioactivity, Nuclear reactions, Reactor Physics, etc.

**Waves and Oscillation:** Vibrations, Forced vibration, Damped vibration, Wave motion, Sound waves, Acoustics.

**Heat and Thermodynamics:** Heat, Hygrometry, Heat Radiation, Measurement of temperatures, Transmission of heat, Laws of thermodynamics.

**Solid State Physics:** States of matter, Crystallography, X-rays, Crystal defects, bonding in solids, Band theory, Magnetism.

**Materials Science:** Introduction to materials science, Charecterization methods of materials, Ceramic and Bio-ceramic materials, Magnetic Materials.

**Condensed Matter Physics:** Band theory of solids, Thermal, optical, magnetic and dielectric properties of solids.

**Experimental Techniques in Solid State Physics:** Synthesis techniques: Solid states reaction, sol-gel and hydrothermal techniques, Characterization: XRD, SEM; Magnetic, Mechanical and Optical properties of solids.

**Research Methodology:** Various stages of a research, Report/Thesis/Article writing.

**Research Projects**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sl No** | **Role** | **Title** | **Funding**  **organization** | **Duration** | **Amount** |
| 1 | Project leader | Development of an Advanced Computational Materials Research Laboratory | **TWAS** | 03/11/2021-03/11/2023 | 40210 USD |
| 2 | Project member | Synthesis and characterization of 2D transition metal carbides (MXenes, Ti2C and Ti3C2): A theoretical and an experimental approach | **CUET DRE** | 2021-2023 | 450000 BDT |
| 3 | Project Student | Synthesis and characterization of Y and Sn ions substituted Mg-Zn ferrites | **CUET DRE** | July 2017-June 2019 | 450000 BDT |
| 4 | Project member | Study of Ni-Sn-Zn nano ferrites for high frequency electronics  applications | **CUET DRE** | July 2014-June 2016 | 300000 BDT |

**Student Supervision**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl No.** | **Name** | **Identity** | **Level** | **Status** |
| 1. | Md. Abu Rayhan | 20PPHY002P | PhD | Ongoing |
| 2 | Shuib mahmud | 20PPHY003P | PhD | Ongoing |
| 3 | Prima Das | 19MSPHY001F | M.Sc. | Ongoing |
| 4 | Md. Sumon Hossain | 18MSPHY004F | M.Sc. | Ongoing |

**Collaborators/Co-authors from Home and Abroad:**

* 1. **Dr. A.K.M. Azharul Islam** (Rtd. Professor of Physics, University of Rajshahi, **Bangladesh**).
  2. **Dr. Faruque-Uz-Zaman Chowdhury** (Professor of Physics, Chittagong University of Engineering and Technology (CUET), **Bangladesh**).
  3. **Dr. A. K. M. Abdul Hakim** (Visiting Professor, Bangladesh University of Engineering and Technology (BUET), **Bangladesh**).
  4. **Dr. A. K. M. Akhter Hossain** (Professor of Physics, Bangladesh University of Engineering & Technology (BUET), Dhaka, **Bangladesh**).
  5. **Dr. Saleh Hasan Naqib** (Professor of Physics, University of Rajshahi, **Bangladesh**).
  6. **Dr. Md. Mohi Uddin** (Professor of Physics, Chittagong University of Engineering & Technology (CUET), Chittagong, **Bangladesh**).
  7. **Dr. Sheikh Manjura Hoque** (Chief Scientific Officer, Materials Science Divsion, Atomic Energy Centre, Dhaka, **Bangladesh**).
  8. **Dr. Md. Nazrul Islam Khan** (Principal Scientific Officer, Materials Science Divsion, Atomic Energy Centre, Dhaka, **Bangladesh**).
  9. **Dr. Md. Anwar Hossain** (Professor of Physics, Department of Physics, Mawlana Bhashani Science and Technology University, **Bangladesh**).
  10. **Dr. Md. Mukter Hossain** (Assistant Professor of Physics, Chittagong University of Engineering and Technology, **Bangladesh**).
  11. **Dr. Md. Abdul Matin** (Professor of Glass & Ceramic Engineering, Bangladesh University of Engineering and Technology (BUET), **Bangladesh**).
  12. **Dr. M. F. Islam** (Professor of Glass & Ceramic Engineering, Bangladesh University of Engineering and Technology (BUET), **Bangladesh**).
  13. **Dr. A. T. M. Kaoser Jamil** (Professor of Physics, Dhaka University of Engineering & Technology (DUET), Gazipur, **Bangladesh**).
  14. **Md. Abdul Hadi** (Department of Physics, University of Rajshahi, **Bangladesh**).
  15. **M. Roknuzzaman** (PhD Research Scholar, Queensland University of Technology, **Australia**).
  16. **Dr. K. Ostrikov** (Professor of Physics, Queensland University of Technology and Commonwealth Scientific and Industrial Research Organization, **Australia**).
  17. **Dr. Jose Alarco** (Professorial Fellow, Institute for Future Environments, Queensland University of Technology, **Australia**).
  18. **Dr. Debnarayan Jana** (Professor of Physics, University Calcutta, Kolkata, **India**)
  19. **Dr. Isao Tanaka** (Professor, Center for Crystal Science and Technology, University of Yamanashi, **Japan**)
  20. **Dr. Satoshi Watauchi** (Professor, Center for Crystal Science and Technology, University of Yamanashi, **Japan**)
  21. **Dr. Masanori Nagao** (Professor, Center for Crystal Science and Technology, University of Yamanashi, **Japan**)
  22. **Dr. Xinxin Ma** (Professor, Harbin Institute of Technology, Harbin 150001, **China**)

**Reviewer:**

1. Journal of Physics and Chemistry of Solids (Elsevier)
2. Chinese Physics B (IOP Science)
3. Journal of Nanoelectronics and Optoelectronics
4. Materials Research Express (IOP Science)
5. Surfaces and Interfaces (Elsevier)
6. Optical and Quantum Electronics (OQEL) (Springer)
7. Phase Transition (Taylor and Francis)
8. Ceramic International (Elsevier)
9. Physica Status Solidi B (Wiley)
10. Physica B (Elsevier)
11. Journal of Materials Research and Technology (Elsevier)
12. Materials Chemistry and Physics (Elsevier)
13. RSC Advances (RSC)
14. Journal of Materials Science (Springer)
15. Journal of Taibah University for Science (Taylor and Francis)
16. ECS journal of solid state science and technology (IOP Science)
17. Materials Science & Engineering B (Elsevier)

**Awards and Honors:**

* Awarded a research fellowship of National Science and Technology (NST) by Ministry of NST for the period of 2010-2011.
* Awarded University Scholarship (General) on the basis of B.Sc. (Hons.) result.
* Awarded Rajshahi Board Scholarship (General) on the basis of H.S.C. result.
* Awarded local MP’s Scholarship (General) on the basis of S.S.C. result.

#### Administrative/Professional Experience

|  |  |  |
| --- | --- | --- |
| Post | **Institution/organization** | Duration |
| Member | **Academic Council, CUET** | 18.11.2020 to till date |
| Member | Academic Committee for Post-graduate Studies (ACPGS), **Department of Physics, CUET** | April 2019 to till date |
| Member | Academic Committee for Post-graduate Studies (ACPGS), **Department of ETE, CUET** | July 2019 to till date |
| Assistant Provost | **Bangabandhu Hall, CUET** | 27.02.2017 to 28.02.2018 |
| Assistant Provost | **Shaheed Tareq Huda Hall, CUET** | 10.11.2014 to 31.12.2016 |
| Member | **Steering committee, International Journal of Integrated Sciences &**  **Technology (IJIST) published by the Faculty of**  **Engineering & Technology, CUET.** | 2014-2016 |
| External Examiner | **Pabna University of Science and Technology (PUST), Pabna** | 2015 |

**Notable Professional Society Involvements**

1. Life Member, Bangladesh Physical Society.

**Language Proficiency:**

Considerably good both in written and spoken in English. The medium of instruction was English at the Bachelor of Science (Honors), Master of Science, Master of Philosophy and Doctor of Philosophy levels.

**Experimental Skills:**

(i)Materials Synthesis Techniques: Solid state Reaction techniques and Sol-gel process;

(ii) Measurement Techniques: Structural, Electrical and Magnetic Properties.

**Analysis Techniques and Computer Software:**

WINDOWS based application software's like MS-Word, excel, Power point, Microsoft word-2007; Plotting software: Sigma Plot and Origin Lab; Simulation software: CASTEP code; Data analysis: XRD, FTIR, EDS, Dielectric behavior, VSM, Permeability, UV data.

#### References

1. **Prof. Dr. A.K.M. Azharul Islam**

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I do hereby declare that all the above information is true and correctly describes my qualifications and myself to the best of my knowledge.

Date: December, 2021

(Md. Ashraf Ali, PhD)