Profile

Dr. A.K.M. Azharul Islam ***FInstP*** **(Lond)**, ***CPhys*** **(Lond)**, ***FBAS***
ISESCO Laureate

Senior Grade Professor of Physics (Retired)
Former Vice-Chancellor, International Islamic University Chittagong
Former Chairman, Department of Physics, Rajshahi University
Former Dean of the Faculty of Science, Rajshahi University
Now: Professor Emeritus, International Islamic University Chittagong

1. Academic Qualification, Teaching, Research and Publication

A. Educational Qualification:

Institution/Board	Degree	Subject	Year	Class (Place)
London University	Ph.D.	Physics	1972	Awarded
Imperial College of Science & Technology, London	D.I.C.	Physics	1969	successfully completed
Rajshahi University	M.Sc.	Physics	1967	I (First)
Rajshahi University	B.Sc.(Hons)	Physics	1966	I (First)
Rajshahi Govt College	I.Sc.	Science	1963	I (Fifth)*
East Pakistan Second. Educ. Board	Matriculation	Common	1961	I (Eighth)

**In spite of being unable to appear in English paper-I examination.*

- **Recipient of the President's (of former Pakistan) Gold Medal, Monetary & Travel Award f**or **Best Student** of erstwhile East Pakistan at postgraduate level in 1967-1968.
- Recipient of University Gold Medals and Book prizes for both B.Sc. and M.Sc. results.

B. Teaching Experience:

Position	University	From -- To
Lecturer	Rajshahi University	January 1968 – Septem 1968
Asstt. Professor	Rajshahi University	Septem 1968 – June 1975
Assoc. Professor	Rajshahi University	June 1975 – April 1984*
Professor	Rajshahi University	April 1984 – June 2012**

**On deputation to Alfateh Univ, Tripoli ~ 5 yrs (1977-1983); **Vice-Chancellor, International Islamic University for 5 yrs (2002 Oct – 2008 Jan); Nov 2012- till 7 August 2017 for a total of 11 years.*

C. Special Achievements in Research & Publication:

■ **RESEARCH including other Academic Works: 272+34+151 = 457**

Research Publications etc = **272** **visit:** https://www.researchgate.net/profile/A-K-M-Islam
https://scholar.google.com/citations?hl=en&user=yO2PTYQAAAAJ

ICTP Preprints (Trieste, Italy)etc = **5**

Books published (3 book-chap)	=	**17***	*Of these: 1 from New Delhi, 1 from Beirut, 1 book chapter from NY.
Intern. Conf. Proc. (peer-reviewed)	=	**2**	Catalogued by US Library of Congress
Articles on Physics Education	=	**10**	Published in UK & other places.
General Sci. & other Articles	=	**151**	Mostly presented in National & International Seminars, Symposia.

■ Postdoctoral & Related Research Abroad

- Imperial College of Science & Technology, London: 1972-1973.
- The University of Reading (U.K.) as a Royal Society Fellow: 1987.
- Jawaharlal Nehru Centre for Advanced Research, Bangalore: 1996.
- The University of Cambridge: (brief period) 1999.
- ICTP (Trieste, Italy) – **7 times** in summers during 1985–1997 (under Associateship visits).
- Short visit to Yamanashi University (Japan) under joint UGC-Japan project (2006).

2. Publication and Contribution recognized Nationally & Internationally

More than 95% of the research articles have been published in International journals of repute including Physical Review B, Journal of Physics: Condensed Matter, Elsevier Science etc. Few of the recently published articles have been declared as "**SciVerse – Elsevier: Among Top 25 Hottest Articles".**

■ Recognition of Contribution by National and International Bodies:

- **United Group Outstanding Research Award 2017** – (awarded in April 2019 at Dhaka).
- **The Bangladesh Education Leadership Award 'EMERITUS PROFESSOR AWARD'** judged by Asian Confederation of Businesses with CMO Asia as its Strategic Partner and Stars of the Industry Group as a research partner - presented at Hotel Radisson Blu on 23 September 2018.
- **United Group Outstanding Research Award 2016** – (Awarded by the Education Minister at Dhaka, 22 April 2016).
- **Honor as Author: UGC Accorded Reception to Authors of Books published by UGC** (Certificate & Crest by the Education Minister at Dhaka UGC Auditorium, 9 March 2016).
- **International Recognition (CSE Award 2010)** as one of the three Editors of Science Journals of the Third World on the occasion of 52nd Annual Conference of the Council of Science Editors (Atlanta, 14-18 May 2010), Hyatt Regency Atlanta, Atlanta, Georgia
- **Bangladesh Academy of Sciences Gold Medal 2006** – in Recognition of significant contributions in the field of Condensed Matter Physics (2006)" (Awarded 31 July 2008) – awarded by the Hon'ble President of Bangladesh.
- **International ISESCO Science Award 2001** - in Recognition of Meritorious Achievements in the Field of Physics (award money $5000 + Travel & stay abroad also provided) – awarded in Sharjah (UAE) Meeting.
- **University Grants' Commission Award (1997)** for Original Research in Science – 2006 – awraded by the Education Minister.
- **International CSE Award (2010)** as an Editor of Science Journal of the Third World on the occasion of 52nd Annual Conference of the Council of Science Editors (Atlanta, 14-18 May 2010).
- **Regular Associates (six years) and Senior Associate**, The AS International Centre for Theoretical Physics (Trieste).

- **President's Medal for Pride of Performance (1968) –** (Gold Medal, Prize-money & Whole Pakistan tour-cost to only one student in the then East Pakistan at the PG stage) - presented by the President of erstwhile Pakistan at an Investiture Ceremony in the President's House.

Other Academic Recognitions:

I. Editorial Board/Reviewer of Professional Journals etc.

- Former Editor-in-Chief, Journal of Scientific Research ISSN 2070-0237 (Print); ISSN 2070-0245 (Online)
- Former Member of the Editorial Board, Journal of Bangladesh Academy of Sciences.
- Former Member of the Editorial Board, Rajshahi University Studies.
- Reviewer of twenty International/National Journals.
  a. American J Physics, Physica B: Condensed Matter Physics, Physica C: Superconductivity & Applications, Solid State Commun. Physics Letts A, Journal of Magnetism and Magnetic Materials, J. Alloys & Comps, Intermetallics, Applied Surface Science, J. Phys. Chem. Solids, Chinese Physics etc.
  b. Eight National journals.

II. Membership of Professional Bodies

- Fellow, The Institute of Physics, London.
- Fellow, Bangladesh Academy of Sciences.
- Fellow, Bangladesh Physical Society.
- Former Member, American Physical Society.
- Former Member, New York Academy of Science.
- Life Member, Bangla Academy and few other Societies.

III. University Administration etc.

- Vice-Chancellor, International Islamic University Chittagong (2002 Sep-2008 Jan & 2012-2017August).
- Dean of the Faculty of Science, Rajshahi University (elected for 2 years in 1986).
- Chairman, Department of Physics, Rajshahi University, 1988-1991.
- Member of the Syndicate, Rajshahi University, 1992 –.
- Member of the Senate, Rajshahi University, 1991–.
- Member of the Academic Council, Rajshahi University, 1984 –
- House Tutor, S.M. Hall, Rajshahi University, 1974-76. Acting Provost for a brief period.
- Representing many Committees constituted by the University.
- Member, Board of Governors, RCMPS, Chittagong University.
- Member, Academic Council, Islamic University, Kushtia.
- Member, Academic Council, The National University, Dhaka.
- Member, Selection Boards, Rajshahi, Chittagong, Jahangir Nagar, Sylhet, Kushtia Islamic, National and Agricultural Universities.

IV. Scientific Seminars, workshop, conferences, training programs

(Presented papers in almost all the seminars and conferences)

- Physics Seminars held in London & Rutherford Lab. between 1969-1972.
- Royal Society of London Physics Symposiums held in London in 1973.
- International Bose Symposium held at Dhaka, Bangladesh, 1974.
- Regional Conf. on University Physics Education held in Penang, Malaysia in 1977.
- International Conf. on the Role of Lab. in Physics Education, Jaipur, India in 1983-84.
- Ninth International Nathiagali Summer College, Islamabad, Pakistan, 1984.
- Winter College on Atomic & Molecular Physics, Trieste, Italy in 1985.
- International Meet on Physics & Mathematics, Chittagong University in 1986.
- Advanced Techniques in Computational Physics, Trieste, Italy in 1986.
- Several National Science Conferences held in Bangladesh between 1977-1992.
- Ceramics & Composite Materials Workshop at ICTP, Italy in May 1989.
- Modelling Thermochemical behaviour of Materials at ICTP, Italy (19 May - 1 June, 1989).
- Research Workshop in Condensed Matter Physics at ICTP, Italy (19 June- 4 July,1989).

- Anniversary Adriatico Research Conf. Interface between Quantum Field Theory & Condensed Matter Physics, Trieste (20 - 23 June, 1989).
- Kathmandu Summer School in Physics, May 1991.
- Int. Symp. on 20th Birth Anniv. of Glashow-Salam-Weinberg Theory, Dhaka 19-24 April, 1992.
- Research Workshop in Condensed Matter Physics, Trieste, Italy, Sep - Oct 1992.
- College on Computational Physics, Trieste, Italy, May 17 - June 11, 1993.
- Research Workshop on Condensed Matter Physics, Italy, May 4 - July 15, 1993.
- 7th Chinese Int. Summer School/Beijing Int. Workshop on Modern Crystallography, Aug.13-19, 1993.
- 19th IUPAP International STATPHYS Conf. at Xiamen, China, 31 July - 4 August, 1995.
- Statphys 20: Proceedings of the 20th IUPAP International Conference on Statistical Physics Held in the UNESCO Conference Center and in the Grand Amphitheatre of Sorbonne University, Paris, France, 20-24 July 1998

  Physica A, ISSN 0378-4371, *Volume 263, Issues 1-4 of Physica: A, Statistical mechanics and its applications*
- **Organized two workshops:**
  (a) **International Workshop Condensed Matter Physics** (Rajshahi 28 Oct-1 Nov, 1996) – Scientists from UK, Japan, India, Pakistan & a good number of local scientists participated.
  (b) **International Workshop on High-T_c Superconductors** (Rajshahi 2-6 Nov., 1998) - where 17 countries participated including USA, UK, Germany, Sweden, Japan, China, Singapore, India, Pakistan, Egypt, Iraq, Iran etc - Further two invitee Nobel Laureates collaborated in different ways and finally sent their greetings and wished success for not being able to be present.
- IV National Conf. on High Pressure Sci. & Tech., (Sept. 11-13, 1997), IGCAR, Madras, India.
- 20th IUPAP International STATPHYS Conf. at Paris, France, 20-24 July, 1998.
- Conference on Electrostatics in Cambridge, U.K. (28-31 March 1999).
- Conf. on Magnetic & Superconducting Materials (MSM-99), Teheran, Iran (20-24 Sept, 1999).
- Conf. on Magnetic & Superconducting Materials (MSM-01), Yarmouk, Jordan (9-13, Sept, 2001).
- Several BPS conferences in Dhaka & Chittagong between 2002 and 2007.
- Several International Meets on Physics & Mathematics, Chittagong University **in 2003, 2004, 2005, 2006, 2007, 2009.**
- Bangalore Conf. on Electronic structure etc., Bangalore (13-17 July 2006).
- The Asian University Presidents Forum (AUFP) - The Future of Asian Universities: Visions and Strategies for Cooperation, Bangkok, Thailand (Nov 16-18 2006).
- Invited speaker at ICSM-2008 (Side, Anatalya, Turkey).
- ICMAM10 (March 2010) held at Dhaka, Bangladesh.
- Invited Lecture on "Knowledge-based Development in Muslim Countries – Status and Prospects" at the 5th IIUC Conf on Education (15 September, 2011) held at IDB BHaban, Dhaka.
- ICMAM10 (March 2012) held at BUET, Dhaka, Bangladesh.
- Intern Workshop on Ranking of Universities (111-13 June 2013, Khartoum, Sudan).
- Invited Presentation at the Vice-Chancellors Forum 2013, Universities in the Islamic World: Challenges of Internationalization (September 23-24, 2013, Islamabad, Pakistan).
- 7th Intern. Conf. on Development of Social Enterprise and Social Business for Eradication of Extreme Poverty and Street Begging (19-20 December 2014) at Chittagong, Bangladesh.
- Keynote speech: "Innovation and Entrepreneurship: Reflections of a Physicist" at ICOBIEE (6-8 December 2013, Penang, Malaysia).
- Intern. Conf. on Advances in Physics ICAP held on April 18-19, 2015 at Rajshahi University in Collaboration with Bangladesh Physical Society – Invited Talk on MAX Phases (Plenary Session).
- Intern. Conf on Physics for sustainable Development & Technology (ICPSD-2015) held on August 19-20 at CUET; Invited Talk – Transformation of Exciting 3-D MAX Phases to 2-D New Wonder Materials.
- Keynote speech - "Socioeconomic Development: Econophysics, Econoshariah as Secular & Divine Resources", iECONS2015 (29-30 September 2015, Krabi Front Bay Resort, Thailand) – organized by the University Sains Islam Malaysia in association with IDB, Thailand, Malaysia and IIUC.
- "How to be a Good Researcher" – Lecture given at the Research Colloquium organized by Center for Research and Publication at International Islamic University Chittagong (25-30 November 2015).
- "How to be a Good Researcher"– Lecture given at the Research Colloquium organized by Center for Research and Publication at International Islamic University Chittagong (25-30 November 2015).
- Keynote Speech (Plenary Session) – "Exciting 3D MAX Phases and the Derived 2D New Wonder Materials" at the International Conference on Innovations in Science, Engineering and

Technology (ICISET 2016) (October 28 - 29, 2016) at International Islamic University Chittagong with Intern. Partner University Science Islam Malaysia (Technical Cosponsor IEEE).

- Special Guest Lecture at the Ist Bangladesh Society of Human Resources Management (BSRM) Chittagong HRM Summit (24 February 2017)– HR Value Proposition for Business.
- Ethics in Research & Publication– Talk delivered at the Research Ethics-PhD Colloquium- IIUC (2-3 May 2017).
- "IQAC and Quality of Higher Education" - Lecture given at the workshop arranged by Physics Department of Chittagong University (Dec 2017)
- Invited Lecture "Scientific Signs in Holy Qur'an- Practical Perspective of Human Life" at the Talent Development Workshop-2017 at IIUC during Nov 8-9, 2017.
- Keynote Speech (Plenary Session) – "Justice, Peace and Security – Universal Aspirations and Islamic Worldview" at the International Conference on World Peace and Security – Role of Islam (ICWPSRI 2017) (Dec. 30-31, 2017) at International Islamic University Chittagong attended by participants from 30 countries.
- Lecture on 'Physics Research: Motivation, Methodology, Publication & Scientific Integrity' at Dhaka University- Physics Department, Dhaka (28 December 2017).
- Invited Talk "Remarkable 3D MAX Phases and 2D Wonder Materials MXenes" at the Int. Conf on Physics-2018 (8-10 March 2018) at MHKB Bhaban DU on 8 March 2018.

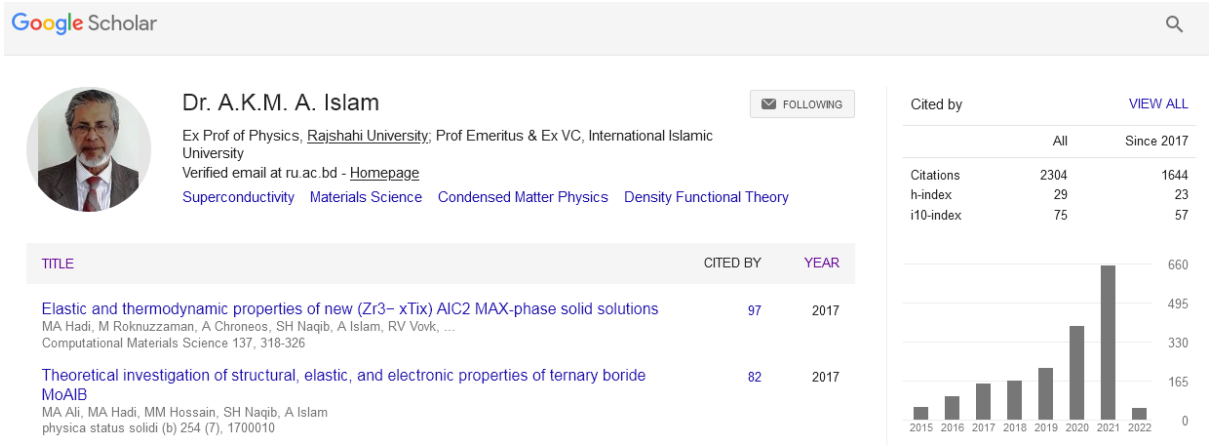
+ Dozen other national conferences and seminars.

3. List of Research Publication in International Journals in (2000-2021 Dec)

[Total Research Publication: 1969-2021 Dec = 272]

Please visit: visit: https://www.researchgate.net/profile/A-K-M-Islam

Visit Google Scholar: https://scholar.google.com/citations?hl=en&user=yO2PTYQAAAAJ



2021

1. Optical response, lithiation and charge transfer in Sn-based 211 MAX phases with electron localization function
   Hadi, M. ; Kelaidis, N. ; Filippatos, P.; Christopoulos, S.; Chroneos, Alexander; Naqib, S.; Islam, A.K.M.
   Scientific Reports (Jan 2022)

2. Newly Synthesized Three-Dimensional Boron-Rich Chalcogenides $B_{12}X$ (X = S and Se): Theoretical Characterization of the Physical Properties for Optoelectronic …
   MM Hossain, MA Ali, MM Uddin, SH Naqib, AKMA Islam
   ACS Omega 2021, 6, 49, 33899–33913, Publication Date:December 3, 2021
   https://doi.org/10.1021/acsomega.1c05172

3. Understanding the improvement of thermo-mechanical and optical properties of 212 MAX phase borides Zr_2AB_2 (A = In, Tl): an *ab-initio* understanding
   Journal of Materials Research & Technology 2021; 15:2227-2241
   https://doi.org/10.1016/j.jmrt.2021.09.042

4. A density functional theory approach to the effects of C and N substitution at the B-site of the first boride MAX phase Nb_2SB

M.A.Hadi[a]MdZahanggir Alam[b]IstiakAhmed[a]A.M.M.Tanveer Karim[c]S.H.Naqib[a]A.Chroneos[de]A.K.M.A.Islam[af]
J. Materials Today Communication, 29 (2021) 102910
https://doi.org/10.1016/j.mtcomm.2021.102910

5. DFT insights into the electronic structure, mechanical behaviour, lattice dynamics and defect processes in the first Sc-based MAX phase Sc_2SnC
M.A. Hadi[1], S.-R.G. Christopoulos[2], A. Chroneos[3,4], S.H. Naqib[1], A.K.M.A. Islam[1,5]
J. Alloys Comp. Volume 29, December 2021, 102910

6. Enhanced thermo-mechanical properties of 212 MAX phase borides Zr2AB2 (A= In, Tl): an ab-initio understanding
M. A. Ali, M. M. Hossain, M. M. Uddin, A. K. M. A. Islam, S. H. Naqib
arXiv preprint arXiv:2103.11358

7. Origin of high hardness and optoelectronic and thermo-physical properties of boron-rich compounds B6X (X= S, Se): A comprehensive study via DFT approach
MM Hossain, MA Ali, MM Uddin, A Islam, SH Naqib
Journal of Applied Physics 129, 175109 (2021); https://doi.org/10.1063/5.0047139

8. Remarkable class of materials: Band structures and optical properties of non-superconducting and superconducting MAX phases
A K M A Islam 2021 J. Phys.: Conf. Ser. Vol. 1718 (1**)** 012002 International Conference on Advances in Physics 2015 18–19 April 2015 https://doi.org/10.1088/1742-6596/1718/1/012002

9. Structural, Elastic and Electronic Properties of Nitride Ti2CdN Phase in Comparison with the Carbide Ti2CdC Phase from First-principles Study
M. Roknuzzaman, M.A. Hadi, M.T. Nasir, S.H. Naqib, A.K.M.A. Islam
Journal of Physics: Conference Series 1718 (1), 012019 (2021)
International Conference on Advances in Physics 2015 18–19 April 2015
https://doi.org/10.1088/1742-6596/1718/1/012019

10. Effects of Al substitution by Si in Ti 3 AlC 2 nanolaminate
MA. Hadi, M Roknuzzaman, MT Nasir, U Monira, SH Naqib, Alex Chroneos, A K M A Islam, Jose Alarco, Kostya Ostrikov
Scientific Reports, 09 Feb 2021, **11,** 3410 (2021). DOI: 10.1038/s41598-021-81346-w

11. A first-principles study of a new ternary silicide superconductor Li2IrSi3
M.A. Hadi, M.A. Alam, M. Roknuzzaman, M.T. Nasir, A.K.M.A..Islam, S.H. Naqib
Journal of Physics: Conference Series 1718 (1), 012018 (2021)
International Conference on Advances in Physics 2015 18–19 April 2015
https://doi.org/10.1088/1742-6596/1718/1/012018

12. Physical properties of new MAX phase borides M_2SB (M = Zr, Hf, and Nb) in comparison with conventional MAX phase carbides M_2SC (M = Zr, Hf and Nb): Comprehensive insights
M. A. Ali, M. M. Hossain, M. M. Uddin, M. A. Hossain, A. K. M. A. Islam, S. H. Naqib
J. Mat. Res & Technology, Volume 11, March–April 2021, Pages 1000-101
DOI: 10.1016/j.jmrt.2021.01.068

13. Mechanical, optoelectronic and thermoelectric properties of half-Heusler p-type semiconductor BaAgP: A DFT investigation
F. Parvin, M. A. Hossain, M. I. Ahmed, K. Akter and A.K.M.A. Islam
Results in Physics, *Volume 23, April 2021, 104068*

14. Effect of boron incorporation into the carbon-site in Nb_2SC MAX phase: Insights from DFT
S. K. Mitro, M. A. Hadi, F. Parvin, R. Majumder, S. H. Naqib and A. K. M. A. Islam
J. Mat. Res & Technology, Volume 11, March–April 2021, Pages 1969-1981
https://doi.org/10.1016/j.jmrt.2021.02.031

15. Comparative study of predicted MAX phase Hf_2AlN with recently synthesized Hf_2AlC: a first principle calculations
M.M. Uddin, M.A. Ali, M.M. Hossain, A.K.M.A. Islam, S.H. Naqib
Ind. J. Phys., Published: 18 March 2021 https://doi.org/10.1007/s12648-021-02050-z

16. $NaInX_2$ (X = S, Se) layered materials for energy harvesting applications: First-principles insights into optoelectronic and thermoelectric properties
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
J Mater Sci: Mater Electron (2021). Accepted 16 Dec 2020 - Pub 9 Jan 2021
DOI: https://doi.org/10.1007/s10854-020-05131-7

17. Thermodynamic and optoelectronic properties of half-Heusler cubic YPdBi
S.K. Mitro, **, M.A. Hossain, **, A.K.M. A. Islam

Journal of Materials Science: Materials in Electronics (JMSE) - **Submitted 5 Jan 2021**

18. Dynamical stability and physical properties of perovskite AVO_3 (A = Mg, Ba, Sr, Ca): A comparative first-principles study
Mirza Rubel, Khandaker Hossain, M. M Rahaman, Anjuman A Khatun, Md. I Hossain, M. M Hossain, M Ali, Jaker Hossain, A. K. M. A Islam, Seiji Kojima
To be submitted – with Mijan & Mirza

2020 including some available online in 2020 but published early in 2021

19. Novel layered semiconductor $Bi_3O_2S_2Cl$: A promising material for optoelectronic applications
M. A. Hadi, S. K. Mitro, Mirza Rubel, S. H. Naqib, A. K. M. A. Islam
Physical Chemistry Chemical Physics (the Royal Society of Chemistry).
MS ID: CP-ART-05-2020-002864 **27May-2020/Revision being made with revised calc.**

20. DFT insights into new B-containing 212 MAX phases: Hf_2AB_2 (A = In, Sn)
M. A. Ali, M. M. Hossain, M. M. Uddin, A. K. M. A. Islam, D. Jana, S. H. Naqib
Journal of Alloys and Compounds Available online 20 Dec 2020, Volume 860, 15 April 2021, 158408
https://doi.org/10.1016/j.jallcom.2020.158408

21. Ternary boride Hf_3PB_4: Insights into the physical properties of the hardest possible boride MAX phase
M. A. Ali, M. M. Hossain, A. K. M. A. Islam, S. H. Naqib
J. Alloys and Compounds Volume 857, (2020) 158264 (Online): 15 March 2021, 158264
https://doi.org/10.1016/j.jallcom.2020.158264

22. Chemically stable new MAX phase V_2SnC: A damage and radiation tolerant TBC material
M. A. Hadi, M. Dahlqvist, S.-R. G. Christopoulos, S. H. Naqib, A. Chroneos, A. K. M. A. Islam
RSC Adv., 2020,10, 43783-43798 © The Royal Society of Chemistry 2020
https://doi.org/10.1039/D0RA07730E

23. Elastic behaviour and radiation tolerance in Nb-based 211 MAX phases
M.A.Hadi, S.-R.G.Christopoulos, A.Chroneos, S.H.Naqib, A.K.M.A.Islam
Materials Today Communications 25, Dec 2020, 101499 10.1016/j.mtcomm.2020.101499

24. Physical properties of a novel boron-based ternary compound Ti_2InB_2
M. Mozahar Ali, M.A. Hadi, Istiak Ahmed, A.F.M.Y. Haider, A.K.M.AIslam
Materials Today Communications, 25 (Dec 2020) 101600
https://doi.org/10.1016/j.mtcomm.2020.101600

25. Insights into the physical properties of a new 211 MAX phase Nb_2CuC
N.Kelaidis, S.H.Naqib, A.K.M.A.Islam, A.Chroneos, R.V.Vovk,
Journal of Physics and Chemistry of Solids, Available online 20 October 2020, Vol. 149, 109759 (2021)
https://doi.org/10.1016/j.jpcs.2020.109759

26. Dynamical stability, Vibrational and optical properties of anti-perovskite A_3BX (Ti_3TlN, Ni_3SnN and Co_3AlC) phases: a first principles study
K. Das, M. A. Ali, M. M. Hossain, S. H. Naqib, A. K. M. A. Islam, M. M. Uddin
AIP Advances 10, 095226 (2020); https://doi.org/10.1063/5.0022376

27. Insights into the predicted Hf_2SN in comparison with the synthesized MAX phase Hf_2SC: A comprehensive study
K. Akter, F. Parvin, M.A. Hadi, A.K.M. A. Islam
Computational Condensed Matter, Volume 24, September 2020, e00485
https://doi.org/10.1016/j.cocom.2020.e00485

28. Newly synthesized A-site ordered cubic-perovskite superconductor (Ba0. 54K0. 46) 4Bi4O12: A DFT investigation
M.H.K.Rubel, S.K.Mitro, B.K.Mondal, M.M.Rahaman, Md Saiduzzaman, J.Hossain, A.K.M.A.Islam, N.Kumada
Physica C: Superconductivity and its Applications, Volume 574, 15 July 2020, 1353669
https://doi.org/10.1016/j.physc.2020.1353669

29. Zirconium trigallide polymorphs with tetragonal and cubic structures: optical and thermodynamic properties
MA Rahman, SK Mitro, F Parvin, A Islam
Indian Journal of Physics, 95(4), 587-594 (2021) Published online 19 March (2020)
https://doi.org/10.1007/s12648-020-01716-4

30. Comprehensive first-principles calculations on physical properties of ScV_2Ga_4 and ZrV_2Ga_4 in comparison with superconducting HfV_2Ga_4
Mirza H.K.Rubel, K.M.Hossain, S.K.Mitro, M.M.Rahaman, M.A.Hadi, A.K.M.A.Islam
Materials Today Communications Volume 24, September 2020, 100935
https://doi.org/10.1016/j.mtcomm.2020.100935

2019

31. Structural, elastic, thermal and lattice dynamic properties of new 321 MAX phases
M.A. Hadi, M.A. Rayhan, S.H. Naqib, A. Chroneos, A.K.M. A. Islam
Computational Materials Science 170, December 2019, 109144
https://doi.org/10.1016/j.commatsci.2019.109144

32. Electronic structures, bonding natures and defect processes in Sn-based 211 MAX phases
M.A. Hadi, N. Kelaidis, S.H. Naqib, A. Chroneos, A.K.M.A. Islam
Computational Materials Science 168, 203-212 (October 2019)
https://doi.org/10.1016/j.commatsci.2019.06.008

33. Phase stability and physical properties of (Zr1-xNbx) 2AlC MAX phases
M.A. Hadi, U. Monira, A. Chroneos, S.H. Naqib, A.K.M.A. Islam, N. Kelaidis, R.V. Vovk
Journal of Physics and Chemistry of Solids 132, 38-47 (Sept 2019)
https://doi.org/10.1016/j.jpcs.2019.04.010

34. Mechanical, electronic, optical, and thermodynamic properties of orthorhonmbic LiCuBiO4 crystal: a first–priciples study
Md. Mijanur Rahaman, Mirza H.K.Rube, Md. Abdur Rashid, M. Ashraful Alam, Khandaker Monower Hossain, Md. Imran Hossain, Anjuman Ara Khatun, Md. Mukter Hossain, A.K.M. Azharul Islam, Seiji Kojima, Nobuhiro Kumada
Journal of Materials Research and Technology 8 (5), 3783-3794 (Sept-Oct 2019)
https://doi.org/10.1016/j.jmrt.2019.06.039

35. First−principles study: Structural, mechanical, electronic and thermodynamic properties of simple−cubic−perovskite (Ba0. 62K0. 38)(Bi0. 92Mg0. 08) O3
Mirza H.K. Rubel, M. Mozahar, Ali, M.S. Ali, R. Parvin, M.M. Rahaman, K.M. Hossain, M.I. Hossain, A.K.M.A. Islam, N. Kumada,
Solid State Communications 288, 22-27 (Feb 2019)
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Abstract, Article, PDF(672K) **Impact Factor: 11.69 (2020) – Journal's Intern Edition**
Discovery of a Perovskite-type oxide superconductor with a new ordered structure

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A.S. Sikder, A.K.M.A. Islam, M. Nuruzzaman, F.N. Islam
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F.N. Islam, A.K.M.A. Islam
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A.M. Shamsuzzaman and A.K.M.A. Islam, Magnetic and Superconducting Materials : Volume 1,
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Conf. & Archive Papers

131. A comparative theoretical study on physical properties of synthesized AVO3 (A= Ba, Sr, Ca, Pb) perovskites
Khandaker Monower Hossain, Mirza HK Rubel, MM Rahaman, MM Hossain, Md Imran Hossain, Anjuman Ara Khatun, J Hossain, AKMA Islam arXiv:1905.01437v1 [cond-mat.mtrl-sci]

132. Structural, Elastic, Electronic and Optical Properties of Quaternary Chalcogenides BaLa2In2S7: First Principle Study
P. Barua · M.M. Hossain · M.A. Ali · [...] · A.K.M.A. Islam, [Show abstract] Conference Paper · Jan 2017

133. Phase stability and physical properties of hypothetical V_4SiC_3
F. Parvin, M.M. Hossain, A.K.M.A. Islam, Arxiv preprint, arXiv:1110.4452v2

134. Structural, elastic, electronic and optical properties of a newly predicted layered-ternary Ti_4SiN_3: A First-principles study
M. M. Hossain, M. S. Ali, A. K. M. A. Islam (2011) arXiv preprint, arXiv:1108.0553v1

A.K.M.A. Islam: Publication List from 135 to 272: click the Link below
https://www.researchgate.net/profile/A_K_M_Islam3/publications

https://www.researchgate.net/profile/A_K_M_Islam3/publications

➔ List of remaining publications (135* – 272)

Please visit: https://www.researchgate.net/profile/A_K_M_Islam3/publications

4. Experience in Research Supervision and Achievements

Total research students = 111 (Masters, M.Phil & Ph.D theses)

List enclosed-Appendix 2

5. Teaching Experience in Physics Department (Rajshahi University)

As Professor = 1984 – 2012

Total teaching period at RU = January 1968 – June 2012 + 1 yr LPR

6. Experience as Supervisor in the Last 18 years (2002 – 2020)

Ph.D. = 1 M.E. Haque (session 1982-1983; Actual 1987-90)

Ph.D = 2+1 2002: F.N. Islam (August)

2008: F. Parvin

2016: M. A. Hadi

5 More Registered for PhD – Did not continue after 1-2 years

M.Phil = 1 M Khademul Islam (1981-1982)

M.Phil = 2 2012: M. Anwar Hossain

2014: M. Abdul Hadi

M.Phil = 1 2018: Miss Umama Monira

Masters = 103 List of students, including full list of 95 of research students –

Pl. see Appendix 2

7. Articles on Physics Education etc:

1. Physics and society in developing countries
   Phys. Educ. (U.K), 13, 357 (1978). https://doi.org/10.1088/0031-9120/13/6/310
2. Physics teaching in developing countries
   Physics Bulletin 28(8):352-352 (1977) DOI: 10.1088/0031-9112/28/8/010
3. Effective development of new physics curricula.
   Regional Conf. on University Physics Education, Penang, Malaysia, May 1977.
4. The role of the teaching laboratory in physics education.
   Regional Conf. on Univ. Physics Education, Penang, Malaysia, May 1977.
5. Postgraduate education of physicists.
   Regional Conf. on University Physics Education, Penang, Malaysia, May 1977.
6. Physics and curricula at Rajshahi University.
   Regional Conf. on University Physics Education, Penang, Malaysia, May 1977.
7. Problems and policy of physics education in developing countries.
   Proc. International Conf. on Role of Lab. in Physics Education, Jaipur (India, 1985) p-289.
8. Some peculiarities of the problems in communicating physics to students in developing countries. Intern. Conf. on Physics Education held at Duisburg University, Germany (1985).
9. Science & Technology in Muslim Countries – Present Status, Prospects and Strategies for Development, VAST Conference, Kuala Lumpur (Malaysia, 1997) – published.
10. The Education Policy & the Curricula of Schools in Bangladesh.
    Muslim Education Quarterly, 19(1), 71 (2001).

8. ICTP (Italy) Publication

1. Dipole moment functions and radiative lifetimes of alkali halide molecules.
   ICTP Reprint (1985).
2. Ion model and dipole polarizabilities in energy calculations. ICTP Report IC/85/21.
3. Equilibrium geometry and energy of unmixed lithium halide dimers.
   Proc. of the LAMP Conf. at ICTP, Italy (March 1985).
4. Superconductivity in silver diboride, Presented at the Bangalore Intern. Conf (13-15 July, 2006).
5. Superconducting Materials Research: An Overview – International Conference on Electronics, Computer and Communication (Rajshahi, June 2008).

9. Conference Proceedings Edited

1. Condensed Matter Physics: Vol I, Proceedings of the 1996 International Workshop (Rajshahi 28 Oct- 1 Nov, 1996), Edited by **A.K.M.A. Islam**. ISBN 984-30-0269-5 (pp 264). *Catalogued by US Library of Congress, ICTP Library.*

2. *High-T_c Superconductors: Proceedings of the 1998 International Workshop (12th Anniversary Workshop, Rajshahi, Bangladesh, 2-6 November, 1998)*
A.K.M. A. Islam; Rajshahi University
ISBN 10: **9843103939,** ISBN 13: **9789843103932,** Publisher: **Condensed Matter Physics Group, Dept. of Physics, Rajshahi University,** Publication Date: **1998**
LCCN permalink: http://lccn.loc.gov/99938837 , CALL NUMBER: QC611.98.H54 H5 1998
Jefferson or Adams Building Reading Rooms
US Library of Congress Cataloguing-in-Publication Data available from Website: http://www.oclc.org; http://lcweb.loc.gov/catalog/; Also catalogued by ICTP Library, and several UK, USA, Japan, China, Singapore, India & Pakistan University Libraries.
Proceedings of the International Workshop on High-Tc Superconductors
https://books.google.com.bd/books?isbn=9843103939
A. K. M. A. Islam, Rājāśāhī Bīśvabidyālaya. Condensed Matter Physics Group - 1998 - Snippet view
A K M A Islam Department of *Physics* Rajshahi University Rajshahi-6205, BANGLADESH

10. Books Authored and Published

1. **A.K.M. A. Islam, F. Parvin**, Superconducting Noble Metal Diboride, Chapter 3 in: *Supeconductivity Research Developments*); **ISBN-13:978-1-60021-848-4 (hardcover); ISBN-10:1-60021-848-2 (hardcover)**, Editor: James R Tobin, pp 63-92 © 2008 Nova Science Publications, Inc (New York).
https://www.novapublishers.com/catalog/product_info.php?products_id=5883
e-Book: *Supeconductivity Research Developments,* **Pub. Date:** 2008,
ISBN: 978-1-60692-762-5,
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2.	Electricity, Magnetism and Modern Physics *(Text Book)* **A.K.M.A. Islam, M.N. Islam, M.S. Islam**	Ist Ed., July 1985 2nd Ed., April 1988 3rd Ed., Sept. 1997 4th Ed. Agreement	Bangla Academy, Dhaka Bangla Academy, Dhaka Books Pavillion, Rajshahi Quality Publication, Dhaka
3.	On Solid State of Matter *(Popular book)* **A.K.M.A. Islam**	First Ed., April 1989 2nd Ed., 2000	Bangla Academy, Dhaka Bangla Academy, Dhaka
4.	Nuclear Physics *(Text Book)* **A.K.M.A. Islam, M.A. Islam**	First Ed., April 1989 2nd Ed., 2000 3rd Ed. Agreement	University Grants Commission University Grants Commission Time Science Publicat., Dhaka
5.	Electrodynamics *(Text Book)* **A.K.M.A. Islam, S.N. Islam**	First Ed. Dec, 1993 2nd Ed. Agreement	Text Book Publ. Board, R.U. Time Science Publicat., Dhaka
6.	Chotoder Biswakosh# (Children's Encyclopaedia) – Vol. II **A.K.M.A. Islam**	First Ed., 2002	Bangladesh Islamic Foundation, Dhaka
7.	Chotoder Biswakosh# (Children's Encyclopaedia) – Vol. I **A.K.M.A. Islam**	First Ed., 2003	Bangladesh Islamic Foundation, Dhaka
8.	Theory of Evolution – An Analysis *(Translated & edited)* **A.K.M.A. Islam, S.M.H. Rahman**	First Ed., July 2000 ISBN 984-31-0921-4	Tanwi Publishers, Rajshahi
9.	Education Policy of Bangladesh (School and Madrasah Education) Bāṃlādeśe skula o madrāsā śikshanīti o paṭhyakrama : Makkā ghoshaṇāra ālōke mulyāyana	First Ed. 2003 ISBN 984-32-0760-2	Ahsan Publication, Dhaka **Catalogued: US Library of Congress.** **ACCESS: Asian Reading Room (Jefferson, LJ150) CALL**

	A.K.M.A. Islam, S.M.H. Rahman		**NUMBER:LC904 .I855 2003 Ben**
10.	স্মৃতি অম্লান Smriti amlana US Lib Congress (Smriti amlana) Isalāma, E. Ke. Ema. Ājahārula **A.K.M.A. Islam**	First Edition 2006 (282+xv) ISBN 9843228693 http://lccn.loc	Kavico Associates, Chittagong **Catalogued: US Library of Congress.** **QD22.L35 S67 2006 FT MEADE** **Asian Reading Room (Jefferson LJ150) - STORED OFFSITE**
11.	Bedevilled World **A.K.M.A. Islam**	324+viii (March 2008) ISBN: 81-88869-26-0	Global Media Publications, New Delhi, India
12.	নিন্দিত বিশ্ব নন্দিত গন্তব্য (Nindito Bishwa Nandito Gantabbo) **A.K.M.A. Islam**	352+xvi (July 2007) ISBN 984-300-000158-0	Allama Fazlullah Foundation, Chittagong
13.	عالم الغابة والهدف المنشود Arabic version of **'Bedevilled World'** **A.K.M.A. Islam**	2011	Beirut, Lebanon (Prof. Hendawi)
14.	**আমরা কোন পথে – দায়দায়িত্ব ও জবাবদিহিতা**	353+xii (July 2009)	Porilekh, Rajshahi
15.	**Salat for the Beginners**	2019	Rajshahi
16.	**রকমারি রচনা সমগ্র**	527+xiv (Sept 2020	Porilekh, Rajshahi
17.	**মিডিয়া বাকস্বাধীনতা ও ইসলামোফোবিয়া**	358+x (Jan 2022)	IDC, Rajshahi

 # Contributor of a chapter.

General Articles: Published in Periodicals, National Dailies & Conf. Proceedings (147):

- Challenges and Opportunities of Globalization: ICT, Media & Cultural Issues in Bangladesh Perspective - presented at the 37th Convention of the Institution of Engineers of Bangladesh (5-7 January 2003) – published in the proceedings.
- **Jakarta ICIS II**: Muslims Nations To Stand Up and Be Counted.
- Reawakening of the dissipated potentials of Muslim Youths (**8th global conf in Kuwait**),
- Appearance of First Man Adam
- Image of Islam & Jakarta Declaration
- Tathya Projugti O Muslim Biswa" in Bengali, June 2003
- Away from the wild wild world (New Age, 19 Aug 2004)
- Private Universities – problems and prospects (Naya Diganta)
- Information Technology and the Muslim World, Malaysia
- Cartoons versus pretext of freedom of expression, New Age (20**)
- জঙ্গিতত্ত্ব, শালীনতা ও নারীর পোশাক, সম্ভ্রদকীয় - Amar Desh 30 July 2009
- সহিংসতা ও সন্ত্রাস : ভিন্নমাত্রা, সম্ভ্রদকীয় - Amar Desh 29 Jan 2008
- জাতীয় শিক্ষা সংস্কার ভাবনা - সম্ভ্রদকীয় - Amar Desh June 2009
- আদর্শবাদিতা বনাম স্বনির্ভরতা ও সামাজিক পুনর্বাসন
- বেপরোয়া বিশ্ব – বিশ্বব্যাপী অবিচার - Naya Diganta , August 2007
- বর্তমান শিক্ষা ব্যবস্থার ত্রুটি - Nirjhar Article – June/July 2009
- Faster-Than-Light Particle or Is it? - Physics Seminar Lecture on Neutrino at RU – 10 Oct 2010
- সংবিধান, বহুদলীয় গণতন্ত্র ও ধর্মীয় রাজনীতি - Naya Diganta, 2010 July-August
- সাম্রাজ্যবাদ ও পাশ্চাত্যের গণমাধ্যম কৌশল - Press Club Article (published)
- Freedom of Speech and Obscene Movie – Innocence of Muslim" – September 2012
- BanglaJOl and the JSR Experiences with the online journal system, 2009 - INASP News Letter (UK) http://www.inasp.info/uploads/filer_public/2013/04/08/banglajol_and_the_jsr_1.pdf
- Enhancing Reputation of the Muslim World Universities – Trends in Bangladesh (Framework for classification and ranking of the universities of the Muslim world), 11-13 June 2013 – Khartoum, Sudan (32 slides Power Point Presentation)
- Future Of University and University of the Future, VC Forum 2013, Islamabad, Pakistan (23-24 September) - Panel Discussion, 21 slides presentation

  The COMSATS Institute of Information Technology, Pakistan in collaboration with the Islamic Educational, Scientific and Cultural Organization (ISESCO); Higher Education Commission, Pakistan (HEC); Ministry of Science and Technology, Government of Pakistan (MoST); and the Federation of the Universities of the Islamic World (FUIW) is organizing a 2 - Day Vice Chancellors' Forum on 'Universities in the Islamic World: Challenges of Internationalization'. The Forum is scheduled to be held on September 23 - 24, 2013. Venue of the Forum is Serena Hotel, Islamabad, Pakistan.
- Knowledge-based Development in Muslim Countries – Status and Prospects – IIUC Conf at Dhaka (2010) and Turkey Lect (June 2014)

- Innovation and Entrepreneurship: Reflections of a Physicist, ICOBIEE (Penang, Malaysia, 6-8 December 2013)
- Socioeconomic Development: Econophysics, Econoshariah as Secular & Divine Resources, iEcons15 (Thailand, 29-30 September 2015) - Keynote Speech
- Exciting 3D MAX Phases and The Derived 2d new Wonder Materials - IIUC Intern Conference: ICISET-2016 28-29 October 2016
- Workshop on University-Industry Collaboration arranged jointly by IEEE-B'desh Chapter & IIUC (Chittagong-2016).
  HRM Issues at BSHRM Chitagong Summit 2017
- Keynote Speech (Plenary Session) – "Justice, Peace and Security – Universal Aspirations and Islamic Worldview" at the International Conference on World Peace and Security – Role of Islam (ICWPSRI 2017) (Dec. 30-31, 2017) at International Islamic University Chittagong attended by participants from 30 countries.

+ Many more

Other Works:

1. $K^{+}d$ Scan Statistics and efficiency. Imperial College Report KD-09/1970.
2. H.P.D ionization measurements and automatic selection of GRIND hypotheses. Imperial College Report KD-10/03/1971.
3. Further results on the quality of ionization information. Imperial College Report KD-11/06/1971.
4. "Production of Hypernuclei", Rajshahi University, M.Sc. Thesis (1967).
5. Superfluid ^{3}He. The Physicist, 17 (2) 16 (1997).

Award List in Chronological Order

1961: Haji Mohd. Mohsin Prize and Bogra Textile Mill Prize for result at Matriculation in the East Pakistan Secondary Education Board, Dhaka

1964: Governor's First Prize, Air Travel and Certificate for National level Essay Competition in the then East Pakistan

1966: Habib Bank Gold Medal and Book prize for B.Sc. Hons result

1967: Habib Bank Gold Medal and Book prize for B.Sc. Hons result

1968: Presentation of Insignia of the then Pakistan Civil and Military Award as well as President's Medal for Pride of Performance (Gold Medal, US$ 1000 Prize Money and National Tour)

1968: Government Merit Scholarship for PhD at Imperial College of Sci. & Tech, London

1969: Gold Medals at Rajshahi University Convocation (in absentia) for achieving Faculty First Positions at Both B.Sc. Hons and M.Sc Examinations

1991: Prime Minister Begum Khaleda Zia honoures in a Ceremony at Dhaka – as Supervisor of UGC PhD Research Fellows

1997: UGC Resaerch Award in Physics– Education Minister of Bangladesh
2001: ISESCO International Science Award for Meritorious Research Achievements in the field of Physics (US$ 5000, Certificates + Tour & others)

2006: Bangladesh Academy of Sciences Gold Medal Award 2006 (Awarded by Hon'ble President of Bangladesh

2010: International CSE Award (2010) as an Editor of Science Journal of the Third World on the occasion of 52nd Annual Conference of the Council of Science Editors (Atlanta, 14-18 May 2010)

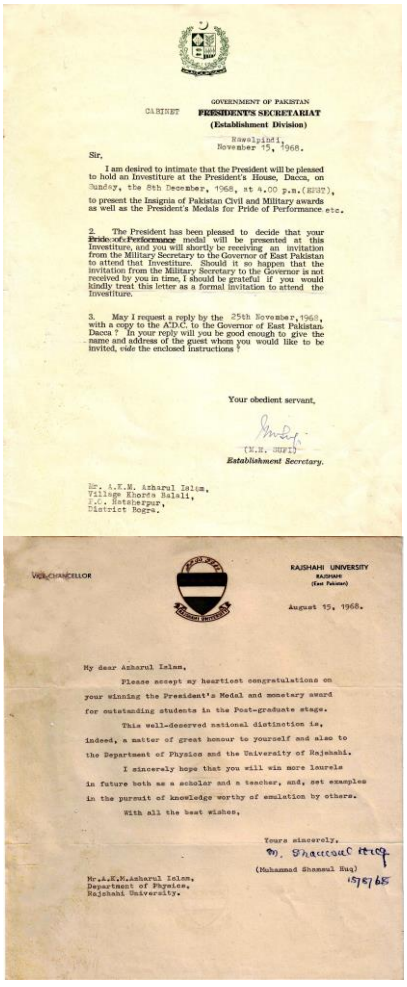
2016: United Group Outstanding Research Award 2016 – (Awarded by the Education Minister at Dhaka, 22 April 2016)

2016: UGC Reception for author of University Text book (Crest & Certificate by the Education Minister,Government of Bangladesh)

2017: United Group Outstanding Research Award 2017 – (To be awarded)

+ Several other awards and receptions by cultural & Educational Organizations including Rajshahi University

Certificates & Photos of Some Awards



CABINET GOVERNMENT OF PAKISTAN
PRESIDENT'S SECRETARIAT
(Establishment Division)

Rawalpindi,
November 15, 1968.

Sir,

I am desired to intimate that the President will be pleased to hold an Investiture at the President's House, Dacca, on Sunday, the 8th December, 1968, at 4.00 p.m.(HOUR), to present the Insignia of Pakistan Civil and Military awards as well as the President's Medals for Pride of Performance etc.

2. The President has been pleased to decide that your ~~Pride of Performance~~ medal will be presented at this Investiture, and you will shortly be receiving an invitation from the Military Secretary to the Governor of East Pakistan to attend that Investiture. Should it so happen that the invitation from the Military Secretary to the Governor is not received by you in time, I should be grateful if you would kindly treat this letter as a formal invitation to attend the Investiture.

3. May I request a reply by the 25th November, 1968, with a copy to the A.D.C. to the Governor of East Pakistan, Dacca ? In your reply will you be good enough to give the name and address of the guest whom you would like to be invited, vide the enclosed instructions ?

Your obedient servant,

(M.M. Sufi)
Establishment Secretary.

Mr. A.K.M. Azharul Islam,
Village Khorda Balali,
P.O. Hatsherpur,
District Bogra.

VICE-CHANCELLOR

RAJSHAHI UNIVERSITY
RAJSHAHI
(East Pakistan)

August 15, 1968.

My dear Azharul Islam,

Please accept my heartiest congratulations on your winning the President's Medal and monetary award for outstanding students in the Post-graduate stage.

This well-deserved national distinction is, indeed, a matter of great honour to yourself and also to the Department of Physics and the University of Rajshahi.

I sincerely hope that you will win more laurels in future both as a scholar and a teacher, and, set examples in the pursuit of knowledge worthy of emulation by others.

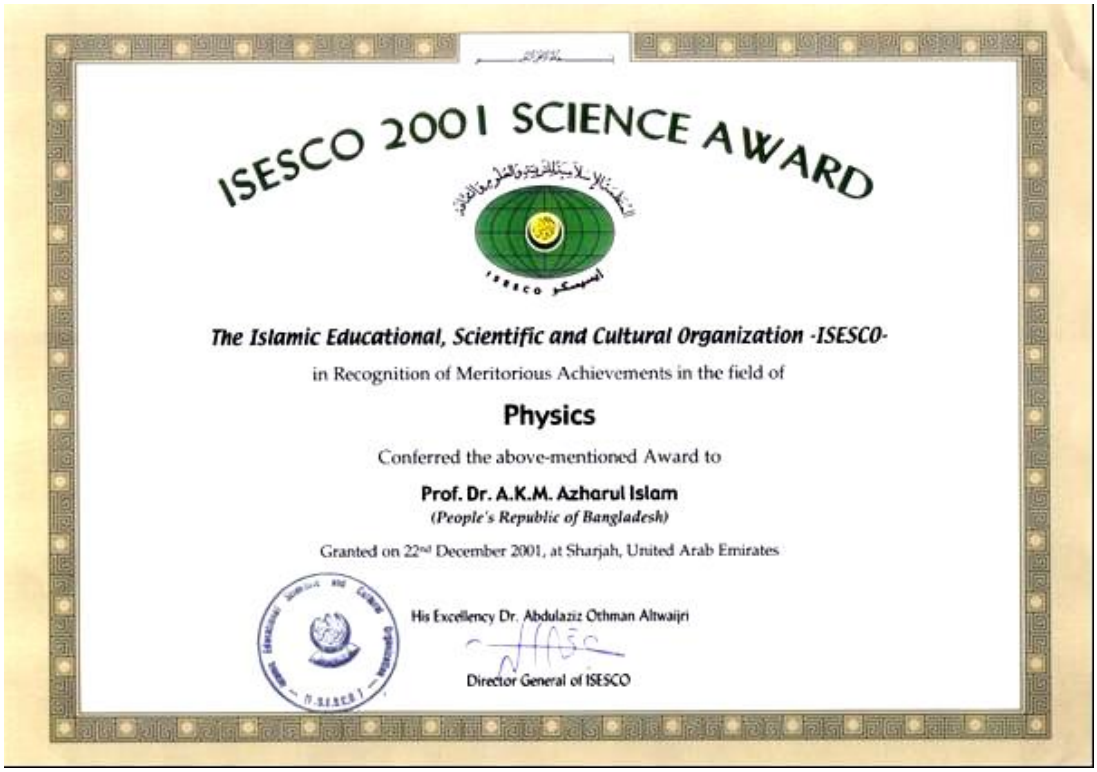
With all the best wishes,

Yours sincerely,
(Muhammad Shamsul Huq)

Mr.A.K.M.Azharul Islam,
Department of Physics,
Rajshahi University.

15/7/65

Dr. A.K.M. Azharul Islam is receiving President's Medal for Pride of Performance at the President's House on 8 Dec 1968 awarded to only one student in the then East Pakistan at the PG stage. The award includes Prize money $ 1000 and Tour of whole of the then West Pakistan.



ISESCO 2001 SCIENCE AWARD

The Islamic Educational, Scientific and Cultural Organization -ISESCO-

in Recognition of Meritorious Achievements in the field of

Physics

Conferred the above-mentioned Award to

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

(People's Republic of Bangladesh)

Granted on 22nd December 2001, at Sharjah, United Arab Emirates

His Excellency Dr. Abdulaziz Othman Altwaijri

Director General of ISESCO

International ISESCO Science Award 2001 (Meritorious achievements in the field of Physics), US$ 5000+others).

ISESCO Science Award

Bangladesh National Commission for UNESCO
Ministry of Education
Government of the People's Republic of Bangladesh

Letter of Appreciation

Bangladesh National Commission for UNESCO (BNCU), Ministry of Education congratulates Mr. A.K.M. Azharul Islam on his winning of "ISESCO Prize in Science and Technology 2001", organized by Islamic Educational Scientific and Cultural Organization (ISESCO).

We wish him every success in life.

Mohammad Shahidul Alam
Secretary General, BNCU
&
Secretary
Ministry of Education

University Grants Commission of Bangladesh
Agargaon, Sher-e-Bangla Nagar, Dhaka-1207.

This is to certify that the University Grants Commission Award is hereby conferred on Prof. Dr. A.K.M. Azharul Islam for the year 1997 in recognition of his original research work in the field of Science & Agriculture.

Director 02-4-2003
Research and Publication
University Grants Commission of Bangladesh

Chairman 02.04.2003
University Grants Commission of Bangladesh

University Grants Commission of Bangladesh Science Award (Original Research Work in the Field of Science and Agriculture) –1997.

BANGLADESH ACADEMY OF SCIENCES

The Bangladesh Academy of Sciences Gold Medal
in Physical Sciences (Senior Group) for the year 2006

IS AWARDED TO

Professor Dr. A. K. M. Azharul Islam

in recognition of his significant contributions in the field of Condensed Matter Physics.

Prof. Dr. Naiyyum Choudhury
Secretary

Prof. Dr. M. Shamsher Ali
President

Bangladesh Academy of Science Gold Medal in recognition of significant contributions in the field of Condensed Matter Physics (2006).

Prof A K M Azharul Islam (Vice Chancellor, International Islamic University Chittagong) Is in a Group Photo with other recipients in the UG Research Award 2016 Ceremony with Education Minister Mr. Nurul Islam Nahid on 22 April 2016.

Prof A K M Azharul Islam (Vice Chancellor, International Islamic University Chittagong) Is receiving the UG Research Award 2016 from the Education Minister Mr. Nurul Islam Nahid on 22 April 2016.

Prof A K M Azharul Islam (Vice Chancellor, International Islamic University Chittagong) received 2nd consecutive UG Outstanding Research Award in 2017.

Bangladesh Academy of Science Gold Medal Award

(Senior Group - Physical Sciences)
Dr. A K M Azharul Islam
Department of Physics, University of Rajshahi, Rajshahi

BAS Gold Medal Award 2006 (Awarded by Hon'ble President of Bangladesh)

⇨ Discovery of a Perovskite-type oxide superconductor with a new ordered structure

Visit Spring.8 Press Release:
http://www.spring8.or.jp/en/news_publications/press_release/2014/140303/

Visit Tokyo Tech News: http://www.titech.ac.jp/english/news/2014/028837.html

SPring-8
The World's largest third-generation Synchroton radiation facility

PRESS RELEASE

Release Date: 03 Mar, 2014

Superconducting double perovskite bismuth oxide (Na0.25K0.45)(Ba1.00)3(Bi1.00)4O12 prepared by a low-temperature hydrothermal reaction (Press Release)

University of Yamanashi
Hiroshima University
Tokyo Institute of Technology

Topic

● A new superconducting double perovskite bismuth oxide, $(Na_{0.25}K_{0.45})(Ba_{1.00})_3(Bi_{1.00})_4O_{12}$, was discovered.

● This is the first example of an A-site ordered double perovskite structure with superconductive properties.

● This discovery provides a guiding principle for the exploration of new high-temperature superconductors, and an increased understanding of the mechanisms of superconductivity.

Research groups lead by Profs. Kumada and Tanaka (University of Yamanashi), Prof. Kuroiwa (Hiroshima University), Prof. Azuma (Tokyo Institute of Technology), and Prof. A.K.M.A. Islam (Rajshahi University, Bangladesh) discovered a new superconductive bismuth oxide, $(Na_{0.25}K_{0.45})(Ba_{1.00})_3(Bi_{1.00})_4O_{12}$.

The structure of this material is an A-site ordered double perovskite(1), in which barium, sodium, and potassium occupy sites in an ordered way. This finding provides a guiding principle for exploring new high-temperature superconductors and understanding the mechanisms of superconductivity.

The achievements of this research were published online in the German scientific journal *Angewandte Chemie International Edition* on 26 February 2014.

Publication:

"Superconducting double perovskite bismuth oxide $(Na_{0.25}K_{0.45})(Ba_{1.00})_3(Bi_{1.00})_4O_{12}$ prepared by a low-temperature hydrothermal reaction"

Mirza H. K. Rubel, Akira Miura, Takahiro Takei, Nobuhiro Kumada, **M. Mozahar Ali**, Masanori Nagao, Satoshi Watauchi, Isao Tanaka, Kengo Oka, Masaki Azuma, Eisuke Magome, Chikako Moriyoshi, Yoshihiro Kuroiwa, **A. K. M. Azharul Islam**

Angewandte Chemie International Edition, Published Online 26 February 2014.

Although the superconductor(2) is an important functional material for maglev propulsion systems and MRI techniques, it requires a considerable amount of energy for cooling, which is essential for the occurrence of the superconductivity phenomenon. Many types of superconductive materials have been developed to overcome the cooling requirement, including Cu-based, Bi-based, and Fe-based superconductors. Moreover, the superconductive mechanism in high-temperature superconductive materials is an important but unsolved scientific problem.

This new bismuth oxide material was synthesized via a hydrothermal method(3), which has been used for the syntheses of quartz, nanoparticles, and ceramics. The material formed a perovskite-type structure consisting of sodium, potassium, barium, bismuth, and oxygen, and its

superconducting transition was confirmed at 27 K. Zero resistivity[4] was confirmed in the pressed pellet form. Electron diffraction and synchrotron X-ray diffraction[5] analyses revealed that the material did not have a commonly reported simple perovskite structure, but it exhibited an A-site ordered double perovskite structure with a longer range ordering. In this structure, the A site in ABO_3 perovskite oxide splits into two A sites, which K/Na and Ba respectively occupy. Recently, A-site ordered double perovskite structures have attracted much attention for their potential applications as various functional materials for magnetoresistance[6] and negative thermal expansion[7], and our research represents the first example of a double perovskite oxide with superconductive properties. The other advantages of this material are that the material can be synthesized at lower temperatures, and it consists of less toxic elements.

Although the superconducting transition temperature of this material is still relatively low, we expect that adjustments in the structure and composition will result in an increase in the transition temperature. This finding also allows us to further explore the relationship between superconductivity and long-range ordering, and provides a new guideline for exploring high-temperature superconductors.

<<Figures>>

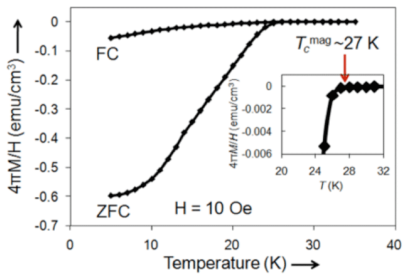


Fig. 1 Magnetization curve of the new double perovskite bismuth Oxide superconductor having a transition temperature of 27 K.

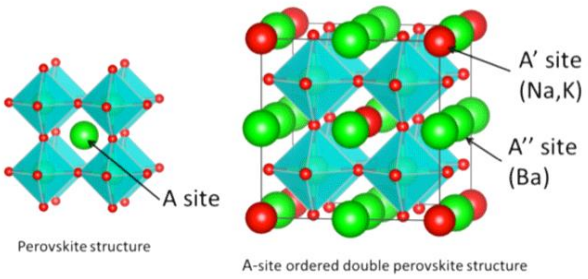


Fig. 2 Crystallographic scheme of simple perovskite and A-site ordered double perovskite structures.

While simple perovskite structures have one type of A site in the ABO_3 structure, an A-site ordered double perovskite structure has two types of A sites (A' and A''), which provide twice the ordering range. In the newly synthesized superconductor, Na/K and Ba occupy the A' and A'' sites, respectively.

<<Glossary>>

1 Perovskite Structure
A common crystallographic structure of oxides, formulated as ABO_3. An A-site ordered structure, as discovered in this research, has two kinds of A sites and is formulated as $A'A''_3B_4O_{12}$.

2 Superconductivity
Zero resistivity below a critical temperature, T_c. Extensive research has been performed not only to investigate the basic science, but also to develop many applications of superconductivity.

3 Hydrothermal synthesis
A synthesis method under high-pressure water, which has been used for the synthesis of quartz crystals, nanoparticles, and ceramic powders.

⇨ **For Additional Information on CV in detail, please see**

Appendix 1 **Pages 26 – 41** **(Remaining publication List etc.)**

Appendix 2 **Pages 42 – 44** **(List of 111 Research students)**