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Dr. Mohammed Abdul Basith

CONTACT INFORMATION

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Department of Physics,
Bangladesh University of Engineering and Technology (BUET),
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DATE OF BIRTH 05^{th} March 1975

NATIONALITY Bangladeshi

EDUCATION

- **DOCTOR OF PHILOSOPHY [Sep 2007 - Nov 2011]**
  School of Physics and Astronomy, University of Glasgow,UK

  ***Research Keywords*:** Nanofabrication, Magnetic thin flims, Nanowires, Magnetic domain walls, transmission electron microscopy

  ***Thesis*:** A TEM INVESTIGATION OF PATTERNED FERROMAGNETIC NANOSTRUCTURES BY LITHOGRAPHIC TECHNIQUES

  ***Website*:**`http://theses.gla.ac.uk/2962/`

  ***Supervisors*:** Dr. Stephen McVitie, Prof. John N. Chapman and Dr. Damien McGrouther

- **MASTER OF PHILOSOPHY [Sep 2002 - Jun 2005]**
  Solid State Physics, Bangladesh University of Engineering and Technology (BUET),Dhaka -1000, Bangladesh

  ***Research Keywords*:** Perovskite magnetic materials

  ***Dissertation*:** INVESTIGATION OF THE MAGNETORESISTIVE PROPERTIES IN DOUBLE LAYERED PEROVSKITE MANGANITES

  ***Supervisor*:** Professor Mominul Huq

- **MASTER OF SCIENCE IN PHYSICS [Apr 1999 - Apr 2001]**
  Shah Jalal University of Sciences and Technology, Sylhet-3114, Bangladesh

  ***Research Keywords*:** Material Science

  ***Dissertation*:** A STUDY OF THE SHIELDING EFFECTIVENESS AND DOSE DEPOSITION PROFILES IN VARIOUS MATERIALS USING A COMPUTER SIMULATION PROGRAM

  ***Supervisor*:** Professor M. A. Hye Chowdhury

Recent Activities

Nanotechnology Research Laboratory: Build-up a research laboratory for postgraduate students to conduct research in the field of Nanotechnology. Since its inception in April 2014, facilities for synthesis and investigations of advanced bulk and nanostructured materials are being developed under different research projects from home and abroad.

Invited talk: Presented an invited talk in the International workshop on Energy devices and Nanotechnology, 13-14 March 2014, Yamagata University, Japan.

Session chair: (i) Worked as a session chair in the Hydrogen production session of the International workshop on Energy devices and Nanotechnology, 13-14 March 2014, Yamagata University, Japan. (ii) Worked as a session co-chair in the Magnetic Materials session of the International Conference on Physics for Energy and Environment, 06-08 March 2014, Dhaka Bangladesh

Recent Research Grants

***Title of the Project*:** Multiferroic properties of Li doped $BiFeO_3$ nanoparticles prepared by ultrasonication of their bulk material
***Amount*:** 1,50,000/- Taka
***Funding organization*:** Bangladesh University Grants Commission (UGC), Dhaka, Bangladesh.
Year: 2016

***Title of the Project*:** Solar hydrogen production via water splitting using locally synthesized nanoparticles as a photocatalyst
***Amount*:** 75,00,000/= (Seventy five lacs taka only) /-
***Funding organization*:** The Infrastructure Development Company Limited (IDCOL), Dhaka, Bangladesh
Year: 2015

***Title of the Project*:** Multiferroic properties of Gd and Ti co-doped bismuth ferrite ceramics
***Amount*:** 19,200 US dollar (Nineteen thousand two hundred US Dollar) /-
***Funding organization*:** The World Academy of Science (TWAS), Grant No. : Ref.:14-066 RG/PHYS/AS-I; UNESCO FR: 324028567
Year: 2015

***Title of the Project*:** Synthesis and Investigation of Manganites And Multiferroic Nanoparticles for Energy Applications
***Amount*:** 10,00,000/= (Ten Lac Taka Only) /-
***Funding organization*:** Ministry of Science and Technology, Bangladesh.
Year: 2015

***Title of the Project*:** Structural, dielectric and magnetic properties of Gd doped ABO_3(A = Bi; B =Fe, Mn) multiferroics
***Amount*:** 1,36,000/- Taka
***Funding organization*:** Bangladesh University Grants Commission (UGC), Dhaka, Bangladesh.
Year: 2014

Student's Supervised

Master of Philosophy (M.Phil.) program	: Six students
Master of Science (M.Sc.) program	: Three students

Student's Under Supervision

Doctor of Philosophy (Ph.D.) program	: Two students
Master of Philosophy (M.Phil.) program	: Five students
Master of Science (M.Sc.) program	: Two students
B.Sc. in Electrical and Electronic Engineering program	: Three students
B.Sc. in Mechanical Engineering program	: Three students

Current Research Projects

1. Solar hydrogen production via water splitting.
2. Structural, dielectric, ferroelectric and magnetic properties of rare earth doped multiferroics.
3. Tunable exchange bias effect in rare earth doped multiferroics.
4. Development of top-down preparation technique of multiferroic nanoparticles directly from bulk material.
5. Synthesis and characterization of multiferroic nanopartilces.
6. Synthesis and characterization of manganites nanopartilces
7. Micromagnetic simulations of the influence of edge profiles of ferromagnetic nanowires on the magnetic behavior of domain walls.
8. Understanding and controlling of domain wall behavior in ferromagnetic nanowires by ion irradiated pinning features using micromagnetic simulations.

International Research Collaborators

- **Dr. Bashir Ahammad**
  Graduate School of Science and Engineering,
  Yamagata University,
  4-3-16 Jonan, Yonezawa 992-8510, Japan.
  Email: arima@yz.yamagata-u.ac.jp
  Tel: +81 (0) 238 26 3309

- **Dr. Kristian Mølhave**
  Department of Micro-and Nanotechnology,
  Technical University of Denmark, Kgs. Lyngby 2800,
  Denmark
  Tel.: +45 45 25 57 42
  Email: dngo@nanotech.dtu.dk

Peer Review Experience

REVIEWER OF THE FOLLOWING JOURNALS:

- Applied Physics Letters (American Institute of Physics)
- Physical Review Applied (American Physical Society)
- Journal of Applied Physics (American Institute of Physics)
- Physica B: Condensed Matter Physics (Elsevier)
- Modern Physics Letters B (World Scientific)
- Journal of Magnetism and Magnetic Materials (Elsevier)
- Solid State Science
- Sensor and Actuators A
- Phase Transitions
- Journal of Advanced Dielectrics
- Current Applied Physics

Experience On Experimental Technique And Simulation

- **Multiferroic ceramics (bulk) [Jan 2013 - Present]**
  1.Synthesis and bulk polycrystalline multiferroic ceramics 2.using solid stae reaction technique.
  2.Morphological studies using FESEM
  3.Dielectric measurements using an impedance analysis
  4.Magnetization measurement using VSM and SQUID magnetometers
  5.XPS analysis

- **Multiferroic Nanoparticles [Jan 2013 - Present]**
  1. Synthesis of multiferroic nanoparticles using sonication technique, sol-gel technique and chemical co-precipitation technique
  2. Characterization of the synthesized nanoparticles using different ferroelectric and magnetic measurements techniques

- **Patterned ferromagnetic nanostructures by lithographic technique for applications in spintronics and data storage [Sep 2007 Present]**
  1.Lithography (e-beam and photolithography), focused ion beam;
  2.Thin film deposition: magnetron sputtering, molecular beam epitaxy, thermal evaporation;
  3.TEM sample preparation by FIB milling;
  4.Materials characterization: SEM, TEM/STEM, Lorentz microscopy for magnetic imaging, AFM;
  5.Micromagnetic simulation using OOMMF package;

- **Magnetoresistive properties of perovskite manganites**
  1.Materials preparation by solid state reaction technique
  2.Magnetoresistance measurements by four probe technique

Professional Career

- **ASSOCIATE PROFESSOR [MARCH 2015 - PRESENT]**
  Department of Physics, Bangladesh University of Engineering and Technology (BUET), Dhaka

  -Lecturing courses and conducting laboratory classes in undergraduate level
  -Lecturing courses in postgraduate level (a. Magnetism General; b. Magnetism Advance and c. Solid State Physics
  -Supervising students for their M.Phil and PhD thesis

- **ASSISTANT PROFESSOR [DEC 2011 - MARCH 2015]**
  Department of Physics, Bangladesh University of Engineering and Technology (BUET), Dhaka

  -Lecturing courses and conducting laboratory classes in undergraduate level
  -Lecturing courses in postgraduate level (a. Magnetism General; b. Magnetism Advance and c. Solid State Physics
  -Supervising students for their M.Phil and PhD thesis

- **LECTURER [MAR 2005 - DEC 2011]**
  Department of Physics, Bangladesh University of Engineering and Technology (BUET), Dhaka

  -Lecturing courses and conducting laboratory classes in undergraduate level

- **TEACHING ASSISTANT [SEP 2007 - MAY 2011]**

  School of Physics and Astronomy, University of Glasgow, United Kingdom

  -Demonstrating 3rd year and 4th year laboratory classes
  -Marking tutorial examination papers

  Instructor, Royal Society Edinburg Saturday morning masterclasses
  Instructor, Physics Summer School

- **Lecturer [Oct 2001 - Mar 2005]**
  Department of Physics, Dhaka University of Engineering and Technology (DUET), Gazipur

  -Lecturing courses and conducting laboratory classes in undergraduate level

Scholarships, Awards And Honors

- **UNIVERSITY OF GLASGOW, UK - [SEP 2007 - MAR 2011]**
  Glasgow University funded postgraduate scholarship

- **BRITISH GOVERNMENT - [SEP 2007 - MAR 2011]**
  Overseas Research Student Award Scheme (ORSAS) by British Government

- **BERLIN, GERMANY - [JUL 2007]**
  Financial assistance provided by the organizing committee for joining in the International colloquium on thin magnetic films and surfaces

- **KEIO UNIVERSITY, JAPAN - [APR 2007]**
  Selected for Japanese Government Monbu-Kagakusho Scholarship for PhD programme

- **NATIONAL TAIWAN UNIVERSITY, TAIWAN - [APR 2007** Selected for Taiwan International Graduate Scholarship for PhD programme

- **JNCASR, BANGALORE, INDIA And UNIVERSITY OF CALIFORNIA, SANTA BARBARA, USA - [DEC 2006]**
  Financial assistance for joining in the JNCASR-ICMR Winter School on the Chemistry of Materials, JNCASR, Bangalore, INDIA. The finance was provided by the International Centre for Materials Research, University of California, Santa Barbara, USA.

- **ICTP-NCNST-ICTS, CHAINA - [AUG 2006]**
  Financial assistance from ICTP, Italy for joining in the ICTP-NCNST-ICTS Asian /Pacific Regional College on Science at the Nanoscale, Beijing, CHINA.

- **ICYS-ICMR And UNIVERSITY OF CALIFORNIA, SANTA BARBABA, USA - [JUL 2006]**
  Financial assistance for joining in the ICYS ICMR Summer School 2006 on Nanomaterials, National Institute of Materials Science, Tsukuba, JAPAN. The finance was provided by the International Centre for Materials Research, University of California, Santa Barbara, USA

- **ICTP, ITALY - [JAN 2006]**
  Financial assistance from ICTP, Italy for joining in the Advanced workshop on Recent Developments in Inorganic Materials, The Abdus Salam International Center for Theoretical Physics (ICTP), Trieste, ITALY.

- **EHIME UNIVERSITY, JAPAN - [APR 2005]**
  Selected for Japanese Government Monbu-Kagakusho Scholarship for PhD programme at Ehime University, Japan

- **NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY, NORWAY - [APR 2004]**
  Selected for State Educational Fund for M.Sc programme from Norwegian University of Science and Technology, Norway.

- **MINISTRY OF SCIENCE AND ICT, GOVT. OF BANGLADESH - [AUG 2006]**
  NST fellowship, Ministry of Science and ICT, Government of Bangladesh

Training And School Attendance

- **LONDON, UK - [2010]**
  IOP magnetism group meeting on Current Research in Magnetism, London, UK.
- **BERLILN, GERMANY - [JUL 2009]**
  International colloquium on thin magnetic films and surfaces, Berlin, Germany.
- **LONDON, UK - [DEC 2008]**
  IOP magnetism group meeting on Current Research in Magnetism, London, UK.
- **KRAKOW, POLAND - [APR 2008]**
  Spin Momentum Transfer workshop, Krakow, Poland.
- **UNIVERSITY OF GLASGOW, UK - [OCT 2007]**
  Residential and Frontier Science Course, Millport 10/2006, Scotland held by Faculty of Physical Sciences, University of Glasgow, UK
- **JNCASR-ICMR, INDIA - [DEC 2006]**
  JNCASR-ICMR Winter School on the Chemistry of Materials, JNCASR, Bangalore, INDIA.
- **ICTP-NCNST-ICTS, CHAINA - [AUG 2006]**
  ICTP-NCNST-ICTS Asian /Pacific Regional College on Science at the Nanoscale, Beijing, CHINA.
- **NATIONAL INISTITUTE OF MATERIALS SCIENCE, JAPAN [JUL 2006]**
  ICYS-ICMR Summer School 2006 on Nanomaterials, National Institute of Materials Science, Tsukuba, JAPAN.
- **ICTP, ITALY - [JAN 2006]**
  Advanced workshop on Recent Developments in Inorganic Materials, The Abdus Salam International Center for Theoretical Physics (ICTP), Trieste, ITALY.
- **BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET), BANGLADESH - [FEB 2005]**
  Teachers Appreciation Workshop Bangladesh University of Engineering And Technology (BUET), Dhaka, Bangladesh.

Technical Skills

- **PROGRAMMING:**
  Digital Micrograph Scripting, OOMMF coding, LaTeX
- **OPERATING SYSTEM**
  Windows, Linux(Ubuntu)
- **SOFTWARE**
  Digital Micrograph, Origin, AutoCad, L-Edit

Language Skills

English (Fluent),
German (Simple communications)

References

- **Dr. Stephen McVite PhD Supervisor**
  School of Physics and Astronomy
  University of Glasgow
  Glasgow G12 8QQ
  Tel: +44 (0) 141 330 6895
  Email: stephen.mcvitie@glasgow.ac.uk

- **Prof. John N. Chapman PhD Supervisor**
  School of Physics and Astronomy
  University of Glasgow
  Glasgow G12 8QQ
  Tel: +44 (0) 141 330 6895
  Email: john.chapman@glasgow.ac.uk

- **Dr. Bashir Ahammad**
  Assistant Professor
  Graduate School of Science and Engineering
  Yamagata University
  4-3-16 Jonan, Yonezawa 992-8510, Japan
  Tel: +82 (0) 238 26 3309
  Email: arima@yz.yamagata-u.ac.jp

Publications

- **PUBLISHED PAPER IN PEER-REVIEWED JOURNALS**

1. M. A. Basith, Areef Billah, M. A. Jalil, Nilufar Yesmin, Mashnoon Alam Sakib, Emran Khan Ashik, S.M.Enamul Hoque Yousuf, Sayeed Shafayet Chowdhury, Md. Sarowar Hossain, Md. Sarowar Hossain, Shakhawat H. Firoz, Bashir Ahmmad, The 10% Gd and Ti co-doped $BiFeO_3$: A promising multiferroic material, ***Journal of Alloys and Compounds (Publisher: Elsevier)***, 694, 792-799, 2016.

2. Mehedi Hasan, M. A. Basith, M. A. Zubair, Md. Sarowar Hossain, Rubayyat Mahbub, M. A. Hakim and Md. Fakhrul Islam, Saturation magnetization and band gap tuning in $BiFeO_3$ nanoparticles via co-substitution of Gd and Mn, ***Journal of Alloys and Compounds (Publisher: Elsevier)***, 687, 701-706, 2016.

3. Bashir Ahmmad, Kensaku Kanomata, Kunihiro Koike, Shigeru Kubota, Hiroaki Kato, Fumihiko Hirose, Areef Billah, M. A. Jalil, and M. A. Basith, Large difference between the magnetic properties of Ba and Ti co-doped $BiFeO_3$ bulk materials and their corresponding nanoparticles prepared by ultrasonication, ***Journal of Physics D: Applied Physics (Publisher: IOP Science, UK)***, 49, 265003, 2016.

4. Mehedi Hasan, M. A. Hakim, M. A. Basith, Md. Sarowar Hossain, Bashir Ahmmad, M. A. Zubair, A. Hussain and Md. Fakhrul Islam, Size dependent magnetic and electrical properties of Ba-doped nanocrystalline $BiFeO_3$, ***AIP Advances (Publisher: American Institute of Physics)***, 6, 035314, 2016.

5. Bashir Ahmmad, M. Z. Islam, Areef Billah and M. A. Basith, Anomalous coercivity enhancement with temperature and tunable exchange bias in Gd and Ti co-doped $BiFeO_3$ multiferroics, ***Journal of Physics D: Applied Physics (Publisher: IOP Science, UK)***, 49, 095001, 2016.

6. M. A. Basith, S. McVitie, T. Strache, M. Fritzche, A. Muecklich, J. McCord and J. Fassbender, Lorentz TEM imaging of magnetic hybrid structures embedded in a soft magnetic matrix,

Physical Review Applied, (Publisher: American Physical Society), 4, 034012, 2015.

7. M. A. Basith, F. A. Khan, Bashir Ahammad, Shigeru Kubota, Fumihiko Hirose, D. T. - Ngo, Q.-H. Tran, K. Mølhave, Tunable exchange bias effect in magnetic $Bi_{0.9}Gd_{0.1}Fe_{0.9}Ti_{0.1}O_3$ nanoparticles at temperatures up to 250 K, ***Journal of Applied Physics (Publisher: American Institute of Physics)***, 118, 023901 (2015).

8. M.J. Benitez, M. A. Basith, D. McGrouther, S. McFadzean, D. A. MacLaren, A. Hrabec, R. J. Lamb, C. H. Marrows, S. McVitie, Engineering magnetic domain-wall structure in permalloy nanowires, ***Physical Review Applied, (Publisher: American Physical Society)***, 03, 034008 (2015).

9. M. A. Basith, D.-T. Ngo, A. Quader, M. A. Rahman, B. L. Sinha, Bashir Ahmmad, Fumihiko Hirose, K. Mølhave, Simple top-down preparation of magnetic $Bi_{0.9}Gd_{0.1}Fe_{1-x}Ti_xO_3$ nanoparticles by ultrasonication of multiferroic bulk material, ***Nanoscale (Publisher: Royal Society of Chemistry, UK), 6, 14336,*** 2014.

10. M. A. Basith, O. Kurni, M. S. Alam, B. L. Sinha and Bashir Ahammad, Room temperature dielectric and magnetic properties of Gd and Ti co-doped $BiFeO_3$ ceramics,***Journal of Applied Physics (Publisher: American Institute of Physics), 115, 024102,*** 2014.

11. M. A. Basith, S. McVitie, D. McGrouther and J.N. Chapman, Reproducible domain wall pinning by linear non-topographic features in a ferromagnetic nanowire, ***Applied Physics Letters (Publisher: American Institute of Physics), vol. 100, 232402***, 2012.
This paper has also been published in the June 18, 2012 issue of Virtual Journal of Nanoscale Science And Technology. The Virtual Journal, which is published by the American Institute of Physics and the American Physical Society in cooperation with numerous other societies and publishers, is an edited compilation of links to articles from participating publishers, covering a focused area of frontier research.

12. M. A. Basith, S. McVitie, D. McGrouther, J.N. Chapman and J.M.R. Weaver, Direct comparison of domain wall behavior in Permalloy nanowires patterned by electron beam lithography and focused ion beam milling, ***Journal of Applied Physics (Publisher: American Institute of Physics), vol. 110, 083904,*** 2011.

13. Duc-The Ngo, Hong-Gam Duong, Hoang-Hai Nguyen, Chau Nguyen, Mohammed Basith and Duc-Quang Hoang, The microstructure, high performance magnetic hardness and magnetic after-effect of an - $FeCo/Pr_2Fe_{14}B$ nanocomposite magnet with low Pr concentration, ***Nanotechnology (Publisher: Institute of Physics, UK), Volume 20, Number 16, 165707-165713,*** 2009.

14. M. A. Basith, Sk. Manjura Hoque, Md. Shahparan, M.A Hakim and M Huq, Temperature features of magnetoresistance of layered manganite $La_2Sm_{0.4}Sr_{0.6}Mn_2O_7$,***Physica B: Physics of Condensed Matter (Publisher: Elsevier), Vol. 395, Issues. 1-2, 126-129,*** 2007.

15. M N I Khan, M. A. Basith, M Huq and S Mollah Effect of MnO2 layers on the transport properties of $La_{n-nx}Ca_{1+nx}Mn_{n-y}Cr_yO_{3n+1}$ (n =2, 3; x = 0.3; y = 0.075, 0.15, 0.3), ***Journal of Physics and Chemistry of Solids (Publisher: Elsevier)*** Vol. 68, 2332-2336, 2007.

16. M. A. Basith, Sk. Manjura Hoque, Md. Shahparan, M.A Hakim and M Huq, Observation of high Tc in the bi-layered $La_2Sm_xSr_{1-x}Mn_2O_7$ perovskite,***Modern Physics Letters B (Publisher: World Scientific), Vol. 21, No. 23, 1569-1577,*** 2007.

17. Mohammad Asadul Haque, M. A. Basith, Zahid Hasan Mahmood, Jalalur Rahman and M. Huq , A study on the Carrier Recombination in the Back Surface for the Performance of Cryatalline Si-Solar Cell, ***Dhaka Univ. J. Sci. 56(2): 143-146,*** 2008.

18. M. A. Basith, A Constantin and M Huq, Materials Science Education and Research in Bangladesh: Present Trends and Future Perspective for Industrial Development, ***Journal of Materials Education (USA), vol. 29, Issues 1-2, 17-22,*** 2007.

19. M. A. Basith, A Constantin, M Huq and M Kano, Scientific Literacy And Ecomaterials Research For Global Mankind, ***Journal of Materials Education Vol. 29 (3-4): 187-192,*** 2007.

20. M. A. Basith, T Chanda and M.Huq, Electron transport properties of Fe- doped bi-layered managnites $La_{1.6}Dy_{0.2}Sr_{1.2}Mn_{2-x}Fe_xO_7$, ***Proceedings of the 4th International Conference on Electrical and Computer Engineering, Dhaka, Bangladesh, pages 386-389,*** 19-21 December 2006.

21. M. A. Basith and M.Huq, Magnetoresistive Properties of Gd Doped Lanthanum Strontium Manganites, ***Journal of Ultra Chemistry, Vol. 1, Issue 2, 29-36,*** 2005.

22. M. A. Basith, A Hoque, A.K.M. Akther Hossain and M Huq, Magnetoresistive Properties of $La_{2-x}Ho_xBa_{1-y}Ca_yMn_2O_7$ Manganites, ***Journal of Bangladesh Academy of Sciences, Vol. 29, Issue 2, 245-250,*** 2005.

23. M. A. Basith and M.A. Hye Chowdhury, A study of Shielding effectiveness in various materials using PHOTCOEF, ***Journal of Ultra Scientist of Physical Sciences, Vol. 17, Issue 3, 453-458,*** 2005.

24. M. A. Basith, Y Jahan, M.A Hye Chowdhury, M.A. Islam, Md. Abdul Matn, M.R. Karim, Investigation of the Dose Deposition in Various Materials Using PHOTCOEF, ***Bangladesh Journal of Physics, Vol. 1, Issue 1, 42-45,*** 2004.

25. M. A. Basith and M.Huq, Magnetoresistance in Double Layered Perovskite Manganites, ***Proceedings of the 3rd International Conference on Electrical and Computer Engineering,Dhaka, Page 510-514.*** 28-30 December, 2004.

26. M.R.Karim, M. A. Basith, Z.Ferdous, Md. Abdul Matin, A Study of the Electrical Properties of Silicon Dioxide (SiO_2) Thin Films,***Proceedings of the Second International Conference on Structure, Processing and Properties of Materials,pp 761-766, Dhaka, Bangladesh.*** 25-27 February 2004.

27. M. A.Hye Chowdhury, M. D. Hossain, M. Ahmed, M. H.Ahsan, M. A. Basith, Md. Abdul Matin, Strong Ultraviolet Radiation Effects on German Made CsI (Tl) Crystal,***Bangladesh Journal of physics, 1(1), 126-130,*** 2004.

- **ARTICLES UNDER REVIEW**

27. Basith, Mohammed; Islam, Ashraful; Billah, Areef; Ahmmad, Bashir; Hirose, Fumihiko ; Firoz, Shakhawat ; Molhave, Kristian, A simple route to prepare $Gd_{0.7}Sr_{0.3}MnO3$ nanoparticles: Comparison of their magnetic properties with bulk counterparts, under review in the journal 'Nanotechnology' (Publisher: IOP Science, UK) 2016.

28. Mehedi Hasan, M A Hakim, Mohammed Basith, Sarowar Hossain, Bashir Ahmmad, Mo-

hamed Zubair, Arman Hussain, and Md. Fakhrul Islam, Size dependent magnetic and electrical properties of Ba-doped nanocrystalline $BiFeO_3$, under review in the Journal of Applied Physics (Publisher: American Institute of Physics) 2016.

29. Ahmmad, Bashir; Kanomata, Kensaku; Koike, Kunihiro; Kato, Hiroaki; Kubota, Shigeru; Hirose, Fumihiko; Billah, Areef; Jalil, Md. Abdul; Basith, Mohammed, Large difference between the magnetic properties of Ba and Ti co-doped $BiFeO_3$ bulk materials and their corresponding nanoparticles prepared by ultrasonication, under review in the Journal of Physics D: Applied Physics (Publisher: IOP Science, UK) 2016.

- **ARTICLES UNDER PREPARATION**

30. M. A. Basith and S. McVitie, Direct measurement of the integrated magnetic induction in ion irradiated nanostripes using low angle electron diffraction technique, in preparation for submission to Ultramicroscopy.

- **Invited talk**

31. M. A. Basith and Bashir Ahmmad, Exploring Gd and Ti co-doped $BiFeO_3$ Multiferroics for Spintronic and Energy Applications, Invited talk at International workshop on Energy devices and Nanotechnology, 13-14 March 2014, Yamagata University, Japan.

- **CONFERENCE PROCEEDINGS / PRESENTATION**

32. Mohammed Basith, M. Z. Islam, Areef Billah and Bashir Ahmmad, Enhanced coercivity and tunable exchange bias in Gd and Ti co-doped $BiFeO_3$ multiferroics, 2016 Joint MMM-Intermag Conference, San Diego, California, USA, Jan 11-15, 2016.

33. Fahrin Islam, Nuvia Noorain Rashid, M. A. Basith and A.B.M. Badruzzaman, "Assessment of Effectiveness of Hematite and Bismuth Ferrite Nanoparticles as Adsorbents for Arsenic Removal", IEEE International Women in Engineering Conference on Electrical and Computer Engineering, Dhaka, Bangladesh, 19-20 December, 2015.

34. Areef Billah, Shakhawat H. Firoz, Bashir Ahmmad and M. A. Basith, Multiferroic properties of Li doped $BiFeO_3$ nanoparticles prepared by ultrasonication, 2nd International Bose Conference, Dhaka, Bangladesh, 3-4 December, 2015.

35.Tamanna Mariam,M. A. Basith and Shamima Choudhury, Structural and Morphological Properties of Nd and Co co-doped $BiFeO_3$ Ceramics at Room Temperature, 2nd International Bose Conference, Dhaka, Bangladesh, 3-4 December, 2015.

36. S.Karimunnesa, B. Ahmmad and M. A. Basith Preparation and Investigation of the Structural and Magnetic Properties of Perovskite Manganites $La_{1.8}Sr_{0.2}CoMnO_6$, National Conference on Physics Research and Education in Bangladesh 24-25, April 2015, Dhaka, Bangladesh.

37. A. Quader, M.A. Rahman, M. A. Basith, B.L. Sinha, B. Ahmmad and D.T. Ngo Simple Top-Down Preparation of Magnetic $Bi_{0.9}Gd_{0.1}Fe_{1-x}Ti_xO_3$ Nanoparticles by Ultrasonication of Multiferroic Bulk Material, National Conference on Physics Research and Education in Bangladesh 24-25, April 2015, Dhaka, Bangladesh.

38. M. A. Islam, M. A. Basith and B. Ahammad Comparison of the Magnetic Properties of $Gd_{0.7}Sr_{0.3}MnO3$ Nanoparticles and their Bulk Counterparts, National Conference on Physics Research and Education in Bangladesh 24-25, April 2015, Dhaka, Bangladesh.

39. M. Z. Islam, M. A. Basith and B. Ahammad Temperature Dependent Dielectric and Magnetic Properties of Gd and Ti Co-Doped $BiFeO_3$ Ceramics, National Conference on Physics Research and Education in Bangladesh 24-25, April 2015, Dhaka, Bangladesh.

40. T. Mariam, S.K Choudhury and M. A. Basith Dielectric and Magnetic Properties of Nd and Co Co-Doped $BiFeO_3$ Ceramics at Room Temperature, National Conference on Physics Research and Education in Bangladesh 24-25, April 2015, Dhaka, Bangladesh.

41. M. A. Basith, O. Kurni, M. Z. Islam, B. L. Sinha, Bashir Ahmmad, Exploring exchange bias effect in Gd and Ti co-doped $BiFeO_3$ multiferroics, International Conference on Physics for Energy and Environment, 06-08 March 2014, Dhaka Bangladesh.

42. M. S. Alam, M. A. Rahman, B. L. Sinha, Bashir Ahmmad, M. R. Karim, M. A. Basith, Temperature dependent dielectric and magnetic properties of $Bi_{1-x}Gd_xMnO_3$ ceramics, International Conference on Physics for Energy and Environment, 06-08 March 2014, Dhaka Bangladesh.

43. O. Kurni, M. Taskin, B. L. Sinha, Bashir Ahmmad, M. A. Basith, Structural, dielectric and magnetic properties of Gd and Ti co-doped $BiFeO_3$ multiferroics, International Conference on Physics for Energy and Environment, 06-08 March 2014, Dhaka Bangladesh.

44. S. H. Rahman and M. A. Basith, Micromagnetics simulation of the edge profiles of permalloy ($Ni_{80}Fe_{20}$) nanowires, International Conference on Physics for Energy and Environment, 06-08 March 2014, Dhaka Bangladesh.

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