

## Scanning Probe Microscopy /Molecular Electronics/Graphene

### Affiliation:

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### General Information:

**Born:** Faridpur, Bangladesh.  
**Marital Status:** Married with one child  
**Wife:** Dr. Farzana Aktar Chowdhury  
**Religion:** Muslim  
**Citizenship:** Bangladesh

### Academic Qualifications:

- ❖ Ph.D. (Nanoscience), Department of Physics, University of Erlangen-Nuremberg, Germany (2006).
- ❖ M.Sc. with thesis in Experimental Physics, University of, Bangladesh (1996).
- ❖ B.Sc. with honours in Physics, University of Dhaka, Bangladesh (1995).

### Teaching Experience:

<b>Institutes</b>	<b>Position</b>
University of Dhaka, Dhaka, Bangladesh (2011 to this date, on lien leave)	Associate Professor, Department of Physics
Sultan Qaboos University, Muscat, Oman (September, 2013- January, 2014)	Visiting Faculty, Department of Physics
University of Dhaka, Dhaka, Bangladesh (2010 to 2011)	Assistant Professor, Department of Physics
University of Dhaka, Bangladesh (2001 to 2006)	Lecturer, Department of Physics
American International University- Bangladesh (AIUB), Dhaka, Bangladesh (1999-2001)	Lecturer, Department of Physics

**Worked as Postdoctoral & Visiting Researcher:**

Cardiff University, UK; University of Erlangen-Nuremberg, Germany; National Institute of Materials Science (NIMS), Tsukuba, Japan; Micro-Device Center, Nihon University, Japan; University of California, Irvine; European Synchrotron Radiation Facility (ESRF), Grenoble, France; Julich Research Center, Julich, Germany; Reactor Institute Delft, Delft University, The Netherlands; International Center for Theoretical Physics (ICTP), Trieste, Italy.

**Memberships:**

- ❖ Bangladesh Physical Society (BPS).
- ❖ German Physical Society (DPG).
- ❖ American Physical Society (APS).

**Courses Taught at the Undergraduate & Graduate Level:**

Electricity & Magnetism, Mechanics, Classical Mechanics, Quantum Mechanics, Mathematical Physics. Atomic & Molecular Physics, Solid State Physics, Condensed Matter Physics, Materials Science, Nanophysics & Nanotechnology, Basic Electronics, Electronic Devices, Semiconductor Theory and Devices, Electrical Circuits Theory, Linear Algebra, Differential and Integral Calculus, Precalculus.

**Language Skills:**

<b>Language</b>	<b>Speaking</b>	<b>Listening</b>	<b>Writing</b>
Bengali (native)	Excellent	Excellent	Excellent
English	Very Good	Excellent	Excellent
German	Average	Average	Excellent
Hindi	Average	Average	Poor

**Research Interests:**

Scanning Probe Microscopy/Molecular Electronics/Surface Physics/Nanophysics and Nanotechnology/Graphene/Photodetector/Graphene OPV & DSSC.

**Experience with Equipments:**

DI-SPM, VEECO SPM, NT-MDT SPM, RHK SPM Technology, Omicron Nanotechnology, Nanosurf AFM, SEM, Optical Lithography Machine, Vacuum Evaporator, Vacuum Annealing Machine, Furnace, Oven, Ultrasonic Bath, Spin Coater. I am capable to build a low-drift STM head.

**Projects:**

**Completed: 4**

**Funds Received: US\$ 12000 K**

German Research Foundation (DFG, Germany), The World Academy of Sciences (TWAS, Italy), International Science Program (ISP, Sweden).

**Selected Publications (submitted 2): total citations 534 as date of 05.02.2015**

[https://scholar.google.com/citations?hl=en&user=Q47b\\_I8AAAAAJ&view\\_op=list\\_works](https://scholar.google.com/citations?hl=en&user=Q47b_I8AAAAAJ&view_op=list_works)

SN	Publication/Author/Title/Year/Volume/Pages	Impact Factor
28	<b><u>M. S. Alam</u></b> , J. Otsuki, Chemically Converted Graphene (CCG) Thin Films for Optoelectronic Applications Processed by Cost-effective Route, Handbook of Graphene Science, Chapter 35, Francis & Taylor, USA, <b>in press, 2014</b> .	
27	F. Chowdhury, T. Mochida, J. Otsuki, <b><u>M. S. Alam</u></b> , Thermally reduced solution-processed graphene oxide thin film: An efficient infrared photodetector, Chemical Physics Letters, <b>2014</b> , 593, 198-203.	2.15
26	F. Chowdhury, T. Morisaki, J. Otsuki, <b><u>M. S. Alam</u></b> , "Annealing Effect on the Optoelectronic Properties of Graphene Oxide Thin Films", Applied Nanoscience, <b>2013</b> , 3,477-483.	
25	F. Chowdhury, T. Morisaki, J. Otsuki, <b><u>M. S. Alam</u></b> , Optoelectronic Properties of Graphene Oxide Thin Film Processed by Cost Effective-Route, Applied Surface Science, <b>2012</b> , 259, 460-464.	2.12
24	A. M. Ako, <b><u>M. S. Alam</u></b> , M. Rahman, J. P. Hill, N. M. Sanchez-Ballester, K. Ariga, G. Buth, C. E. Anson, A. K. Powell, "Self-assembly of a mononuclear [Fe(III)(L)(EtOH) <sub>2</sub> ] complex bearing an n-dodecyl chain on solid HOPG	5.84

	surfaces” Chemistry A European Journal, <b>2012</b> , 18, 16419-16425.	
23	A. M. Ako, <b>M. S. Alam</b> , S. Mameri, Y. Lan, M. Hibert, M. Stocker, P. Müller, C. E. Anson <sup>a</sup> and A. K. Powell, “Adsorption of [Mn <sub>19</sub> ] Aggregates with $S = 83/2$ onto HOPG Graphite Surfaces”, Eur. J. Inorg. Chem. <b>2012</b> , 4131-4140.	3.12
22	M. U. Anwar, L. N. Dawe, <b>M. S. Alam</b> , L. K. Thompson “ $\mu$ -O Bridged Mn <sub>10</sub> Assemblies with Open O <sub>6</sub> Sites for Binding Extra Guests - Structural, Magnetic and Surface Studies” Inorganic Chemistry, Inorganic Chemistry, <b>2012</b> , 51, 11241-11250.	4.60
21	<b>M. S. Alam</b> , F. Chowdhury, A. Postnikov, R. W. Saalfrank, P. Mueller, “STM spectroscopy of Ferric-Star Type Single Molecular Magnet”, Dhaka Univ. J. Sci., <b>2012</b> , 60: 87-91.	
20	A. Scheurer, K. Gieb, <b>M. S. Alam</b> , R. W. Saalfrank, P. Müller, "Synthesis, Magnetic Properties, and STM Spectroscopy of an Unprecedented Octanuclear Chloro-bridged Nickel(II) Double Cubane" Dalton Transaction, <b>2012</b> , 41,3553-3561.	3.81
19	F. Chowdhury, S. M. Firoz Hasan, <b>M. S. Alam</b> , “Morphological and Optical Properties of Vacuum Evaporated ZnO Thin Films”, Turk. J. Phys., <b>2012</b> , 36, 1-7.	
18	N. V. Fischer, <b>M. S. Alam</b> , Nicolai Burzlaff, and P. Müller, “Trans-1,2-Bis (N-methylimidazol-2-yl)ethylene: Towards Building Blocks for 2D Fabrics and MML-Type 1D Molecular Strands”, Chem. A Eur. J. <b>2011</b> , 17, 9293 – 9297.	5.84
17	<b>M. S. Alam</b> , M. Stocker, K. Gieb, P. Müller, M. Haryono, K. Student, A. Grohman, “Spin State Patterns in Surface-Grafted Beads of Iron (II) Complexes”, Angew. Chem. Int. Ed., <b>2010</b> , 49, 1159-1163.	13.74
16	F. Chowdhury S. M. F. Hasan, <b>M. S. Alam</b> , “Effects of Annealing on the Optical Properties of AgIn <sub>0.8</sub> Ga <sub>0.2</sub> Se <sub>2</sub> Thin Films”, Optoelectronics and Advanced Materials-Rapid Communication, <b>2010</b> , 4, 2039 – 2043.	0.52
15	K. Petukhov, <b>M. S. Alam</b> , H. Rupp, P. Müller, L. K. Thompson., M. Ruben, R. W. Saalfrank, J.-M. Lehn, “STM Spectroscopy of Magnetic Molecules”, Coordination Chemistry Reviews, <b>2009</b> , 253, 2387–2398.	12.26
14	<b>M. S. Alam</b> , A. Scheurer, R. W. Saalfrank, P. Müller, STM Analysis of a Chiral Helical One-dimensional Nickel(II) Coordination Polymer, Z. Naturforsch., <b>2008</b> , 63b, 1443 – 1446.	0.90

13	S. K. Dey, T. S. M. Abedin, L. N. Dawe, Santokh S. Tandon, J. L. Collins, L. K. Thompson, A. V. Postnikov, <b>M. S. Alam</b> , P. Müller, "Supramolecular Self-Assembled Polynuclear Complexes from Tritopic, Tetratopic, and Pentatopic Ligands: Structural, Magnetic and Surface Studies" Inorganic Chemistry, <b>2007</b> , 46, 7767-7781.	4.60
12	I. Lazareva, Y. Koval, <b>M. S. Alam</b> , P. Mueller "Graphitization of Polymer Surfaces by Low-Energy Ion Radiation", Applied Physics Letter, <b>2007</b> , 90, 262108-262111.	3.80
11	<b>M. S. Alam</b> , "Addressing the Metal Centers in Supramolecular Nanoarchitectures", PhD thesis, University of Erlangen-Nuremberg, <b>2006</b> .	
10	<b>M. S. Alam</b> , V. Dremov, P. Müller, A. V. Postnikov, S. S. Mal, F. Hussain, U. Kortz, "STM/STS Observation of Polyoxoanions on HOPG Surfaces: the Wheel-Shaped $[\text{Cu}_{20}\text{Cl}(\text{OH})_{24}(\text{H}_2\text{O})_{12}(\text{P}_8\text{W}_{48}\text{O}_{184})]^{25-}$ and the Ball-Shaped $[\{\text{Sn}(\text{CH}_3)_2(\text{H}_2\text{O})\}_{24}\{\text{Sn}(\text{CH}_3)_2\}_{12}(\text{A-PW}_9\text{O}_{34})_{12}]^{36-}$ ", Inorganic Chemistry, <b>2006</b> , 45, 2866-2872.	4.60
9	V. A. Milway, S. M. T. Abedin, V. Niel, T. L. Kelly, L. N. Dawe, S. K. Dey, D. W. Thompson, D. O. Miller, <b>M. S. Alam</b> , P. Müller, L. K. Thompson, "Supramolecular 'flat' $\text{Mn}_9$ Grid Complexes-Towards Functional Molecular Platforms", Dalton Transaction, <b>2006</b> , 2835-2851.	3.81
8	R. W. Saalfrank, A. Scheurer, I. Bernt, F. W. Heinemann, A. V. Postnikov, V. Schünemann, A. X. Trautwein, <b>M. S. Alam</b> , H. Rupp, P. Müller, "The $\{\text{Fe}^{\text{III}}[\text{Fe}^{\text{III}}(\text{L}^1)_2]_3\}$ Star-Type Single-Molecule Magnet", Dalton Transaction, <b>2006</b> , 2865-2874.	3.81
7	N. Lin, S. Stepanow, F. Vidal, K. Kern, <b>M. S. Alam</b> , S. Strömsdörfer, V. Dremov, P. Müller, A. Landa, M. Ruben, "Surface-assisted coordination chemistry and self-assembly", Dalton Transaction, <b>2006</b> , 2794-2800.	3.81
6	<b>M. S. Alam</b> , S. Strömsdörfer, V. Dremov, P. Müller, J. Kortus, M. Ruben, J.-M. Lehn, "Addressing the Metal Centers of $[2 \times 2]$ $\text{Co}_4(\text{II})$ Grid-Type Complexes by STM/STS", Angew. Chem. Int. Ed., <b>2005</b> , 44, 7896-7800 (with cover page).	13.74
5	S. Novokmet, <b>M. S. Alam</b> , V. Dremov, F. W. Heinemann, P. Müller, R. Alsfasser, "The Deposition of Metallopeptide-Based Coordination Polymers on Graphite substrates: Effects of Side-Chain Functional Groups and Local Surface Structure", Angew. Chem. Int. Ed., <b>2005</b> , 44, 803-806.	13.74
4	A. M. Ako, H. Maid, S. Sperner, S. H. H. Zaidi, R. W. Saalfrank, <b>M. S.</b>	1.55

	<b>Alam</b> , P. Müller, F.W. Heinemann, "Metal-Organic Coordination Networks of Ferric Wheels, their Surface-Supported Supramolecular Architectures and STM/STS Imaging", <i>Supramolecular Chemistry</i> , <b>2005</b> , 17, 315-321 (with cover page).	
3	S. Roy, <b>M. S. Alam</b> , M. Begum, B. Alam, "Radiation Protection Dosimetry, Radioactivity in building materials used in and around Dhaka city", <i>Radiation Protection Dosimetry</i> , <b>2005</b> , 114, 527-532.	0.91
2	S. Roy, <b>M. S. Alam</b> , F. K. Miah, B. Alam, "Concentrations of naturally occurring radionuclides and fission products in brick samples fabricated and used in and around greater Dhaka city" <i>Radiation Protection Dosimetry</i> , <b>2000</b> , 88, 250-260.	0.91
1	<b>M. S. Alam</b> , "An Experimental Study of the Concentrations of the Naturally Occurring Radionuclides and Fission Product in Brick Samples Fabricated and Used in and Around Greater Dhaka City", MSc thesis, University of Dhaka, <b>1999</b> .	

### Review articles on perspective my research:

2. J. A. Thomas, Functional Molecular Assemblies, *Angew. Chem. Int. Ed.* **2006**, 4396-4398.
1. M. Ruben, J.-M. Lehn, P. Müller, Addressing Metal Centers in Supramolecular Assemblies, *Chemical Society Review*, **2006**, 35, 1056-1067.

### International Talks:

12. Supramolecular Nanoarchitectures-Functional Novel Materials for Molecular Electronics, Muscat, Oman, **2014**.
11. Chemically converted graphene (CCG) for optoelectronic applications, ISP reference group meeting, Bulawayo, Zimbabwe, **2013**.
10. One-dimensional coordination polymers for nanowires, Chuo University, Tokyo, Japan, **2012**.
9. Chemically converted graphene for optoelectronics applications, Nanotechnology Excellence, Nihon University, Tokyo, Japan, **2012**.

9. One-dimensional coordination polymers: towards molecular wires, DPG March Meeting **2011**, Dresden, Germany.
  8. Mapping the spin states of surface deposited Fe(II) SCO Compounds by STM, American Physical Society March Meeting", Oregon,USA, **2010**.
  7. Visualizing the spin states of surface deposited Fe(II) spin crossover compounds, German Physical Society March Meeting, Regensburg, Germany, **2010**.
  6. Porphyrin Single Molecule Wire, Molecular Electronics Conference, Liverpool, UK, **2007**.
  5. Addressing Individual Metal Ion Centers in Supramolecules by STS, American Physical Society March Meeting, Baltimore, USA, **2006**.
  4. Visualizing the Metal Centers in Metallocomplexes by Scanning Tunneling Spectroscopy, German Physical Society March Meeting, Dresden, Germany, **2006**.
  3. Addressing Individual Metal Ion Centers in Supramolecules by STS, American Physical Society March Meeting, Los Angeles, USA, 2005.
  2. Addressing Metal Centers in Complex Supramolecules by STS, German Physical Society March Meeting, Berlin, Germany, 2005.
  1. Introduction to Scanning Tunneling Microscopy, SPM International Mini-symposium, Erlangen, Germany, **2003**.
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