

Ratan Chandra Gosh

Associate Professor, Department of Physics,

University of Dhaka, Dhaka-1000.



+880-1747047705.

E-mail: ratan@du.ac.bd



■ Civil Status

Date of Birth	December 31, 1977.
Citizenship	Bangladeshi by birth.
Marital Status	Married.

■ Education and Career

July, 2010-Present	Teacher, Department of Physics, University of Dhaka, Bangladesh.
April, 2010-June, 2010	Post-doctoral research in Polymer Physics, Hiroshima University, Japan (Phase transition properties of semi-crystalline polymers, <i>e. g.</i> PET.)
April, 2007-March, 2010	Ph.D in Soft Matter Physics, Hiroshima University, Japan (Interactions between soft materials, for example, Polymers, Colloids.)
October, 2006-March, 2007	Research student in Soft Matter Physics, Hiroshima University, Japan (Light scattering of Polymers, <i>e.g.</i> PEG, in aqueous solutions.)
August, 2003-May, 2005	M.S in Physics with first class second, University of Dhaka, Bangladesh. (Investigation of surface entropy of some liquid less simple metals.)
July, 1996-September, 2003	Bachelor of Physics with first class fifth, University of Dhaka, Bangladesh.
Sept., 1993-October, 1995	Higher Secondary Certificate in science with first division*, Dhaka board.
January, 1991-August, 1993	Secondary School Certificate in science with first division*, Dhaka board.

■ Interests

July, 2010-Present	I am now studying salt effect on phase behavior of PEG and simultaneously developing a theory on surface properties of liquid transition metals.
October, 2006-June, 2010	Experimental: Study of interactions among constituents in aqueous ternary mixture containing macromolecules, PEG, PET, Colloids, and Proteins.
August, 2003-2005	Theoretical: Investigation of surface properties of simple liquid metals.

■ References

M.S. Supervisor	Prof. Dr. Golam Mohammed Bhuiyan, Theoretical Physics Department, University of Dhaka. E-mail: gbhuiyan@univdhaka.edu . +8801911305306
Ph.D Supervisor	Dr. Shinpei Tanaka, Associate Prof. Graduate School of Integrated Arts and Science (GIAS), Hiroshima University, Japan. Email: shinpei@hiroshima-u.ac.jp .
Post-doctoral Supervisor	Prof. Dr. Akihiko Toda, GIAS, Hiroshima University, Japan. Email: atoda@hiroshima-u.ac.jp

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Experiences on Research and Teaching

► RESEARCH

Institution	Position	Summary
Hiroshima University GSIAS, Higashi- Hiroshima, Japan.	Post-doc (April, 2010–June, 2010)	I worked as a researcher in a joint project of a polymer company in Netherlands and Hiroshima University, Japan. The major goal is to observe the melting kinetics and the dynamics of glass transition of polymers using Temperature Modulated Differential Scanning Calorimetry (TM-DSC). As a model I choose atactic polystyrene and PET.
	PhD Student (April, 2007–March, 2010)	I studied phase behaviors of aqueous polymer systems containing various additives extensively. The major objective of this study is to observe the intermolecular forces between polymer and solvent, and how these forces are affected by introduction of additives, such as ionic (NaCl), non-ionic (glycerol) and colloids (polystyrene sphere (100 nm) and quantum dot (10 nm)) during phase transition using a thermal technique, Differential Scanning Calorimetry (DSC) and a fluorescence technique, Fluorescence Correlation Spectroscopy (FCS). A water soluble polymer, poly(ethylene glycol), PEG, is chosen as a model. This study would provide understanding of protein crystallization process.
	Research student (October, 2006–March, 2007)	Crystallization of polymer was studied from its aqueous solutions by Small Angle Light Scattering (SALS) and Optical Microscope.
University of Dhaka Department of Physics Dhaka-1000.	July, 2010–Present	At present, I am doing both theoretical and experimental works simultaneously. Theoretically, we are trying to observe transport and surface properties of liquid transition metals. Experimentally, I am studying viscous properties of polymeric material, PEG.
	Researcher (June, 2005–September, 2006)	We have chosen less simple metals as a model for the calculation of surface entropy. In the calculation, temperature dependence packing fraction was introduced and the expected results were satisfactory.
	MS thesis Student (August, 2003–May, 2005)	Surface entropy of liquid less simple metals was investigated.

► TEACHING

Institution	Position	Summary
University of Dhaka Department of Physics Dhaka-1000.	Associate Professor (July 22, 2013–Present)	Taken courses: Statistical Physics, Electricity and Magnetism, Mechanics and waves, 2 nd year Laboratory. Running MS thesis student : 3 (Three) Supervised MS thesis student : 2 (two)
	Assistant Professor (April 9, 2012–July 21, 2013)	Taken courses: Statistical Physics, Electricity and Magnetism, 2 nd year Laboratory. Supervised MS thesis student : 2 (two)

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	Lecturer (July 1, 2010–April 8, 2012)	Courses taken: Statistical physics and Electricity and Magnetism. Supervised thesis student: 1 (MS). Co-supervised thesis student: 1 (MS).
Hiroshima University GSIAS, Higashi- Hiroshima, Japan.	Teaching Assistant (TA) (April, 2009–February, 2010)	I assisted teachers to prepare samples which would be used for lectures. Simultaneously I taught students how to analyze experimental data obtained from the experiments.
Mastermind School Dhanmondi, Dhaka	A-level Physics Teacher (August, 2005–June, 2006)	I taught mechanics in the class and experiments in the laboratory.

Publications

A. International journals published in web of science (online)

1. Surface Tension of Ag Based Noble Liquid Binary Alloys, S. C. Sen, A. Biswas, M. Kamruzzaman, R. C. Gosh and G. M. Bhuiyan, BJP 20, Accepted, (2017)
2. Surface Entropy of Liquid Transition and Noble Metals, **R. C. Gosh**, Ramprosad Das, Sumon C. Sen, G.M. Bhuiyan, Surface Science 637–638, (2015), 63-68
3. Atomic Transport for Liquid Noble and Transition Metals using Scaling Laws, **R. C. Gosh**, M. R. Amin, and G. M. Bhuiyan, Journal of Molecular Liquids, J Mol Liquid 188, (2013) 148-154.
4. Surface Tension of Liquid Transition and Noble Metals, M. R. Amin, **R. C. Gosh**, and G. M. Bhuiyan, Journal of Non-Crystalline Solids 380, (2013), 42-47. (<http://dx.doi.org/10.1016/j.jnoncrysol.2013.08.025>)
5. A comparative study on Temperature Dependent Diffusion Coefficient of Liquid Fe. **R.C. Gosh**, Ishtiaque M. Syed, Zaharul Amin and G. M. Bhuiyan, Physica-B 426, (2013), 127-131. (doi: 10.1016/j.physb.2013.06.022)
6. Calculation of surface entropy of liquid transition and noble metals. **R.C. Gosh**, M. R. Amin, A. Z. Ziauddin Ahmed, and Ishtiaque M. Syed, G. M. Bhuiyan, Applied Surface Science 258, (2012), 5527-32 (doi:10.1016/j.apsusc.2011.11.118).
7. Microbeam X-ray diffraction of non-banded polymer spherulites of it-polystyrene and it poly(butene-1), H. Kajioka, S. Yoshimoto, **R.C. Gosh**, K.Taguchi, S.Tanaka, and A. Toda., Polymer 51, (2010), 1837-1844 (doi:10.1016/j.polymer.2010.02.025).
8. Application of a deconvolution method to construct aqueous phase diagram. **R.C. Gosh**, S. Tanaka, and A. Toda, Thermochimica Acta 500, (2010), 100-105 (doi:10.1016/j.tca.2010.01.004).
9. The effect of NaCl on the eutectic phase behavior of aqueous poly(ethylene glycol) solutions. **R.C. Gosh**, A. Toda, S. Tanaka, Polymer 50, (2009), 1304–1310 (doi:10.1016/j.polymer.2008.12.044).
10. Investigation of surface entropy for liquid less simple metals. **R.C. Gosh**, A. Z. Ziauddin Ahmed, and G. M. Bhuiyan, Eur. Phys. J. B 56, (2007), 177–181 (DOI: 10.1140/ep_jb/e2007-00104-9).
11. Surface and Atomic Transport Properties of Liquid Simple Metals, Md Salah Uddin, **R. C. Gosh**, and G.M. Bhuiyan, submitted to Journal of Molecular Liquids, November, 2018.

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B. Thesis:

1. Effects of Additives effect on eutectic phase behavior and micro-rheology of poly(ethylene) glycol solutions.
R.C. Gosh, Hiroshima University, **March, 2010**.
2. Calculation of surface entropy of some polyvalent liquid metals.
R.C. Gosh, University of Dhaka, **May, 2005**.

C. Conferences and contributed works/Abstracts

1. Temperature Dependent Diffusion Coefficient of Liquid Transition Metals,
A Khan, **R.C. Gosh** and G. M. Bhuiyan, International Conference on Physics 2016, March 10-12, **2016**, Dhaka.
2. Temperature Dependent Diffusion Viscosity of Liquid Transition Metals using Scaling Laws.
M. Khatun, **R.C. Gosh** and G. M. Bhuiyan, International Conference on Physics 2016, March 10-12, **2016**, Dhaka.
3. Temperature Dependence Diffusion Co-efficient of Liquid Transition Metal,
Zahurul Amin, **R.C. Gosh**, Ishtiaque M. Syed and G. M. Bhuiyan, Bose Conference 2013, February 4, **2013**, Dhaka.
4. Interaction and Hydration Parameters of Aqueous Poly (Ethylene Glycol) Solutions,
R. C. Gosh, and L.K. Saha, International conference on physics of Today, March 15-17, **2012**
5. Application of hard sphere model to investigate surface properties of liquid transition metals,
R. C. Gosh, M. R. Amin, A. Z. Ziauddin Ahmed and G. M. Bhuiyan, National conference on physics for development, February 10-11, **2011**
6. Application of a deconvolution method of DSC to construct aqueous phase diagram.
R. C. Gosh, S. Tanaka, and A. Toda, 21st IUPAC International Conference on Chemical Thermodynamics. August 1–6, **2010**, Tsukuba Science City, Ibaraki, Japan.
7. Salt effects on the eutectic polyethylene glycol-water phase diagram.
R. C. Gosh, A. Toda, and S. Tanaka, 21st IUPAC International Conference on Chemical Thermodynamics. August 1–6, **2010**, Tsukuba Science City, Ibaraki, Japan.
8. NaCl effect on the eutectic phase behavior of aqueous poly(ethylene glycol) solutions.
R. C. Gosh, A. Toda, and S. Tanaka, The 4th Hiroshima Workshop on Sustainable Materials Science. November 13–15, **2009**, Faculty Club, Hiroshima University, Japan.
9. Microrheology of polymer solutions using fluorescence correlation spectroscopy.
R. C. Gosh, and S. Tanaka, 238th national meeting organized by American Chemical Society (ACS). August 16–20, **2009**, Washington D.C, USA.
10. The effect of NaCl on the eutectic phase behavior of aqueous poly(ethylene glycol) solutions.
R. C. Gosh, and S. Tanaka 26 November, **2008**, Hiroshima University, Japan.
11. Crystallization behaviors of PEG solution coexisting with NaCl.
R. C. Gosh, and S. Tanaka, International Symposium on Polymer Crystallization (ISPC07). September 22–24, **2007**, Mishima, Shizuka, Japan.
12. Polymer crystallization from aqueous solutions.
R. C. Gosh, and S. Tanaka, March 15–16, **2007**, University of Tokyo, Japan.
13. Calculation of surface entropy of polyvalent liquid metals.
R. C. Gosh, A. Z. Ziauddin Ahmed and G. M. Bhuiyan, Regional Physics Conference on Physics and Development Synergy, February 11–13, **2006**, Atomic Energy Commission, Dhaka, Bangladesh.

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Awards

1. Japanese government (monbukagakusho: MEXT) scholarship in July, 2006 for research student leading to Ph.D.
2. Successful students award in May, 2006 from the S. N. Bose physics association, Jagannath Hall, University of Dhaka.
3. Graduation scholarship for the best faculty students in 2003 from University of Dhaka.
4. Rouson Innas Ali Best Research Award in Physics, Theoretical Physics, and EEE category for year 2013, University of Dhaka.
5. United Group Paper Award 2016 for paper 'Atomic Transport for Liquid Noble and Transition Metals using Scaling Laws'

Skills

OS: LINUX and Windows-8, Editor: EMACS, MS Office, Graph: GNUPLOT, Programming: FORTRAN and C++.

RATAN CHANDRA GOSH

Date: January 16, 2018.