

Department of Physics

E-BULLETIN



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Editorial

Physics is a very interesting subject. The knowledge of physics is based on concept based theory and its proper implication in real situation through experiments. Many students in introductory courses are unable to reason qualitatively about physical processes. Studies in physics education show that our conventional teaching techniques fail to achieve the objectives we desire for our students. Many students achieve good marks in theory papers however but they find many difficulties on applying their theoretical knowledge in solving problems. This may be due to the facts that they use primitive formula centered problem solving techniques which may be based on some wrong pre assumptions or misconceptions.

The physics educational system is a process of transformation that helps students acquiring conceptual knowledge and analytical skills. Expository lectures only, may not help them to acquire conceptual and procedural knowledge. Students must find the subject interesting, easy and its relevance in practical fields through active participating during lectures in constructing proper concepts, removing pre misconceptions, reasoning qualitatively about physical processes and the skills to apply these in solving real problems. Let the spirit of Physics goes for ever.

Monoranjan Kakoti, Editor
Assistanat Professor, Department of Physics
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Departmental Activities (2014 – 2015)

Frontiers in Physics Lecture Series



Dr. Abhijit Hazarika (left and middle) and the students during FIP Lecture I

In this year, the Department of Physics, Jagannath Barooah College started a lecture series named Frontiers in Physics (FIP) in collaboration with the Physics Society of J. B. College. The first talk (FIP Lecture I) on “Nano in a nutshell” was delivered by Dr. Abhijit Hazarika, Senior Research Fellow, Solid State and Structural Chemistry Unit, Indian Institute of Science, Bangalore, India on 29th January, 2014.

Distinguished Lecture Series



Prof R.S. Sirohi (left) and the participants (middle and right) of DLS-II

In this year, the Department of Physics, Jagannath Barooah College The department started another lecture series named Distinguished Lecture Series in collaboration with the Physics Society of J. B. College. The inaugural talk of the series was delivered by Padma Shri Prof. R. S. Sirohi, Bharat Ratna Lokapriya Gopinath Bordoloi Chair Professor, Department of Physics, Tezpur University, Tezpur on “Science and art of Holography” on 8th September, 2014. Prof Sirohi is one of the best scientists in the fields of optics and photonics and has authored more than 200 papers in national and international journals, more than 50 papers in conferences proceedings in addition to number of books including five milestones for SPIE. Notably, Prof. Sirohi participated in numerous international and national conferences, presented over 130 papers and supervised over 20 research projects.

Departmental Activities (2014 – 2015)

Workshop on Introductory Astronomy and Astrophysics



Group photograph of the “Workshop on Introductory Astronomy and Astrophysics”



Prof Ranjeev Misra (left), Dr. Amit Pathak (middle) and the participants in WIAA-2015

During 13 & 14 March, 2015, the Department of Physics, Jagannath Barooah College, Jorhat, Assam organized an IUCAA sponsored “Workshop on Introductory Astronomy and Astrophysics (WIAA-2015)” as a part of the activities of IUCAA Tezpur University Centre, Assam. The workshop was intended for graduate and post-graduate students, research scholars and college/University teachers who are working in the area of astronomy and astrophysics. Notably, the workshop proved to be very useful especially for the final semester graduate (6th Semester, B.Sc. Physics) students of Dibrugarh University as there is an optional paper on astrophysics in their course structure. The number of participants for the workshop was 72 which included students, research scholars and faculty members of nearby Universities (Dibrugarh University and The Assam Kaziranga University). The workshop was coordinated by Prof. Ranjeev Misra (IUCAA) and Dr. Ankur Gogoi (J. B. College, Jorhat, Assam). The workshop covered a number of topics (e.g. Our Universe, Basic Astronomy and Stars, Black Holes in the Universe, Light Scattering by Interstellar Dust, Introduction to Infrared Astronomy, Dusty Universe, Gamma Ray Bursts and Radiative processes in Astrophysics). The expert lectures were delivered by Prof. Ranjeev Misra (IUCAA), Dr. Gazi A. Ahmed (Tezpur University, Assam), Dr. Amit Pathak (Tezpur University, Assam), Dr. Rupjyoti Gogoi (Tezpur University, Assam) and Ms. Priya Bharali (GIMT, Guwahati, Assam).

Departmental Activities (2014 – 2015)

Distinguished Lecture II



Prof. Eyal gave the Distinguished Lecture II



Prof. Eyal inaugurated the Optoelectronics and Photonics laboratory

The Department of Physics, Jagannath Barooah College organized the second talk of the Distinguished Lecture series on 3rd November, 2015 at 11 am in the Conference Hall 1. The lecture was delivered by Prof. Yehuda Eyal, Department of Chemistry, Technion - Israel Institute of Technology, Haifa, Israel on the topic "Self radiation damage and natural recovery in actinide dioxides". The lecture was attended by the faculty members and the students of the Department of Physics, J. B. College, Jorhat as well as Kaziranga University, Jorhat. After the inaugural speech of Principal Dr. Bimal Barah, the head of the department Dr. Ranjit Sarma explained the motivation of the distinguished lecture series and Dr. Pronob Jyoti Saikia gave a brief introduction of Prof. Eyal. The lecture was coordinated by Dr. Ankur Gogoi where the students and the faculty members actively participated in the interaction session. Before the lecture, Prof. Eyal inaugurated the newly built Optoelectronics and Photonics Research Laboratory for the purpose of the minor research project of Dr. Ankur Gogoi approved by the University Grants Commission. After the completion of the distinguished lecture based on nuclear physics and chemistry along with a brief overview of its practical applications, Dr. Ankur Gogoi offered the vote of thanks.

Participation in Refresher/Orientation Course

1. **Mr Akashdiapta Thakur**, Assistant Professor of the department participated in the Special Winter School Programme equivalent to Refresher Course held from 17th Dec 2014 to 8th Jan 2015 at Jamia Millia Islamia, New Delhi.

Results

2015

In the B.Sc. final examination of Dibrugarh University of the year 2015, a total number of 15 students appeared out of which 14 students passed the examination (pass percentage ~ 93%). We congratulate Anupam Sarma and Jaya Dutta for securing 5th and 21st position in the examination, respectively.

2016

In the year 2016 the total number of students appeared in the Dibrugarh University B.Sc. final examination is 31 out of which 25 students passed the examination (pass percentage ~ 80%). We congratulate Siddhartha Protim Bharadwaj, Valentina Rajkumari, Saimoya Kishore Hazarika, Anurag Dihingia, Debanga Borah and Mayuri Phukan for securing 3rd, 8th, 15th, 24th, 28th and 30th position in the examination, respectively.

Anupam Sharma and Abhinav Bora, two 3rd semester students of the department secured 1st position in the event 'Biomimic' organized by IIT-Guwahati as a part of the mega event 'Techniche 2013' during August 29th to September 1st, 2013.

Research Profile of the Department (2014-2016)

Research Publications

Books Published

1. Nirmal Mazumder and **Ankur Gogoi**. Nano-structured silica on diatoms and its optical properties. LAP Lambert Academic Publishing (2015). ISBN: 978-3-659-71371-2.
2. Surojit Konwer and **Ankur Gogoi** (Editors) Material Science and Nanomaterials: Recent Advances and Applications (pp. 221 – 227), Global India Publishing, Visakhapatnam, India, 2015.

Book Chapters

1. **Ranjit Sarma**. Organic Thin Film Transistor. In: Surojit Konwer and Ankur Gogoi (Editors) Material Science and Nanomaterials: Recent Advances and Applications (pp. 75 – 87), Global India Publishing, Visakhapatnam, India, 2015
2. Bidyut Deka, **Ankur Gogoi**, Gazi A Ahmed. Light scattering by particulate matter - a Monte Carlo approach. In: Surojit Konwer and Ankur Gogoi (Editors) Material Science and Nanomaterials: Recent Advances and Applications (pp. 221 – 227), Global India Publishing, Visakhapatnam, India, 2015.

Research Profile of the Department (2014-2016)

Research Publications (continued...)

Journal Papers

1. Dulen Saikia, Pradip K. Gogoi, Pallabi Phukan, Nilave Bhuyan, Sangeeta Borchetia and **Jibon Saikia**, Green synthesis of silver nanoparticles using Asiatic Pennywort and Bryophyllum level extract and their antimicrobial activity, *Adv. Mater. Lett.* 2015, 6(3), 260-264
2. **Ankur Gogoi**, Pritom Rajkhowa, Gunjan Saikia, Gazi A Ahmed and Amarjyoti Choudhury. WEBSCAT: A web application for the analysis of electromagnetic scattering from small particles. *Journal of Quantitative Spectroscopy and Radiative Transfer*, 146, 270–279, 2014.
3. Gazi A. Ahmed and **Ankur Gogoi**. Scattering by interstellar graphite dust analogue. *Journal of Quantitative Spectroscopy and Radiative Transfer*, 146, 106–112, 2014..
4. Saikia, J., Dubey, R.K. and Baruah, G.D., “Squeezed State of Light, Multiple Reflection And Spatial Hole- Burning”, *Journal of Multidisciplinary Engineering Science and Technology*, 2(11), (2015).
5. Saikia, J., Borah, S., Rajkhowa, L. K. and Baruah, G.D., “ Laser Oscillation Model for the Coupling Phenomenon in the Co- existing of Two Population Species”, 4(3), (2016), ISSN. 2321-089.
6. Saikia, J. and Baruah, G.D., “Qualitative estimate of Non classical (squeezed) light in Photobacterial Biophoton Emission”, *Asian Journal of Physics*, 24(1), 2014.
7. Gogoi R, Saikia, J., Dubey, R.K. and Baruah, G.D., “Quantum Zeno effect, Three Level Maser and some non physics contexts”, *Asian Journal Of Physics*, 24(1), 2015..
8. Siakia, D., Gogoi, P.K., Phukan, P., Bhuyan, N, Borchetia, S. and Saikia, J, “Green Synthesis of silver nanoparticles using Asiatic Pennywort and Bryophyllum leaves extract and their antimicrobial activity”, *Advr Mater. Lett*, 6(3), (2015).
9. Saikia, J. and Baruah, G.D., “Analogy between Spectroscopic properties of Laser and the Universe”, *Indian Journal of Research*, 5(4), 138-141, 2016.

Conference proceedings

1. Nirmal Mazumder, **Ankur Gogoi**, Alak K Buragohain, Gazi A Ahmed , Amarjyoti Choudhury. Structural and optical characterization of fresh water diatoms (*Cyclotella* sp.): nature's nanoporous silica manufacturing plant. In: Quantum Dots and Nanostructures: Synthesis, Characterization, and Modeling XI; Editors: Diana L. Huffaker; Frank Szmulowicz; Holger Eisele; Proc. of SPIE Vol. 8996, 89960Y, 2014. DOI: 10.1117/12.2039793.

Research Profile of the Department (2014-2016)

Conference/workshop/seminar presentations

1. **Saikia J**, Training Programme on Competence Building for Faculties, UGC Cell, J B College, Jorhat, Nov 30 to Dec 06, 2016.
2. **Saikia, J.**, "Higher Education", Extended contact programme in PGDHE, IGNOU Regional. center, Jorhat 22nd May to 31st May, 2015, (Regional Workshop attended)
3. **Saikia, J.**, "On the nature of sq. State in bioluminescence ... and photobacteria", *Role of Optics and Philosophy in Env Protection*, 10-11, March, 2015/Womens' College Tinsukia, Assam, National.
4. **Ankur Gogoi**, Lakhi Chetia, Nirmal Mazumder, Gazi A. Ahmed, Amarjyoti Choudhury and Alak K. Buragohain. Optical properties of fresh water diatom frustules. International Workshop on Hybrid Photonics, 24-24 February, 2015, Department of Physics, Tezpur University, India.
5. **Mr Akashdipta Thakur**, Assistant Professor of the department, participated and Presented paper in UGC sponsored National Seminar on "History of Assamese Literature: Writing and Revising" on 23rd and 14thth Jan'2015 at J.B. College.
6. **Saikia, J.**, "Squeezed State of light Multiple reflection and Spatial hole burning", *International Conf on Frontiers in Spectroscopy* BHU, Baranashi, India, Jan 10-12, 2015.
7. **Ankur Gogoi** and Gazi A. Ahmed. Monte Carlo simulation of scattering of electromagnetic radiation by interstellar dust analogues. International Conference on Interstellar Dust, Molecules and Chemistry (IDMC-2014), 15 – 18 December, 2014, Tezpur University, Tezpur, Assam, India.
8. **A. Gogoi**, N. Mazumder, P. P. Nath, G. A. Ahmed and A. K. Buragohain. Characterization of fresh water centric diatom frustules (*Stephanodiscus hantzschii* sp.): a type of biogenic photonic crystals. The annual International Conference on Advanced Laser Technologies (ALT 2014). organized by Laboratoire Lasers, Plasmas et Procédés Photoniques, CNRS – Aix-Marseille University, France, 6 - 10 October, 2014.
9. **A. Gogoi** and G. A. Ahmed. Development of a laser based laboratory light scattering instrument for light scattering studies on small particulate matter. The annual International Conference on Advanced Laser Technologies (ALT 2014), organized by Laboratoire Lasers, Plasmas et Procédés Photoniques, CNRS – Aix-Marseille University, France, 6 - 10 October, 2014.
10. **Ankur Gogoi**, Gazi A Ahmed and Amarjyoti Choudhury. Scattering by ice analogue crystals. National Seminar on Current Trends in Physics Research (NSCTPR-2014), Department of Physics, Darrang College, Tezpur, Assam, 30th January – 1st February, 2014.

Research Profile of the Department (2014-2016)

Conference/workshop/seminar attended

1. **Mr. Monoranjan Kakoti**, Assistant Professor of the department attended the National Thematic Workshop on Advances in Nanostructured Materials: Application and Prospective 2016 organized by The Assam Kaziranga University & UGC-DAE Consortium for Scientific Research, Kolkata Centre during 1st & 2nd June, 2016.
2. **Mr. Monoranjan Kakoti**, Assistant Professor of the department organized and participated IUCAA sponsored workshop on “Astronomical data analysis(WADA-2016)” organized by Department of Physics, J.B.College, Jorhat during 17th to 19th March, 2016.
3. **Mr Akashdipta Thakur**, Assistant Professor of the department, participated in UGC sponsored National Workshop on “Astronomical Data Analysis” on 17th to 19th March’2016 at J.B. College.
4. **Mr. Monoranjan Kakoti**, Assistant Professor of the department participated 31st INUP Hands-on Training Workshop on “Nanofabrication Technologies” conducted at (INUP) Indian Institute of Science, Bangalore from 2- 10 July, 2015.
5. **Mr. Monoranjan Kakoti**, Assistant Professor of the department participate and presented a paper in National seminar on Socio Economic Development in Rural Area organized by Department of Political Science, J.B.College, Jorhat with the support from NITI Aayog, Govt. of India, New Delhi on 29th & 30th April, 2015.
6. **Mr Akashdipta Thakur**, Assistant Professor of the department, participated in the IUCAA sponsored Workshop on “Introductory Astronomy and Astrophysics” on 13th and 14th May’2015 at J.B. College
7. **Mr. Monoranjan Kakoti**, Assistant Professor of the department participated “2 day workshop on familiarization of Nanofabrication Techniques” Organized by (INUP) IIT Bombay & IISc Bangalore at Tezpur University on 25th & 26th April, 2015.
8. **Mr. Monoranjan Kakoti**, Assistant Professor of the department organized and participated two day workshop on “Introductory Astronomy and Astro Physics” at J.B.College in collaboration with IUCAA, PUNE on 13th & 14th March, 2015.

Research Projects

Dr. Jibon Saikia, Assistant professor of the Department was awarded with a University Grants Commission Minor Research Project entitled “*Spectroscopic Investigation of squeezed light in particular reference to Photobacteria*”.

In addition, Dr. Ankur Gogoi, Assistant professor of the Department was awarded with another University Grants Commission Minor Research Project entitled “*Investigation on the scattering and absorption properties of optically thick turbid media by using light scattering goniometry and reflectometry*”.

Popular articles of Mr. Akashdipta Thakur

Title of the Book/Chapter published	Title of the Paper	Year of Published	ISBN/ISSN number of the Proceeding
Aranya-Ninad	A Collection of short stories	2014	ISBN 978-93-82283-75-1
Poem Title 'Sesor Khondar Sadhu'	Published in 'Prantik'	2014	ISSN 0971-5932
Short Story 'Aranya-Ninad'	Published in 'Satsori'	2014	ISSN 2319-8893
Short Story "Ki Rupe Pekhalo"	Published in 'Gariyoshi'	2014	ISSN 2349-53
Mela Chulit Kencha Tej	A Collection of Poems	2015	ISBN 978-93-83230-16-7
Fresh Blood in the Unfolded Hair	Collection of Poems, translated by Nurul Hussain	2015	ISBN 978-93-83230-20-4
Ki Rupe Pekhalo...	A Collection of short stories	2015	ISBN 978-93-83308-60-6
Dr. Bhupen Hazarika Geeti Sahityat Manabiya Pramulyabodhar Dharana : Eti Sankhipta Abalokan	Human Values and its Impact on Society	2015	ISBN 978-93-83308-30-9
Poem Titled 'Bisadar Stabak- Utsa, Path and Adhikar.	Published in 'Prantik'	2015	ISSN 0971-5932
Article Titled "Dr. Bhabendra Nath Saikia Nibachita Kisu Gadyat Sannibista Hoa Keitiman Nari Charitar Manastatwik Bishleshan.	Published in Poem Reviwed Journal 'Srotaswini': Poem-Reviewed Biennial Bilingual Research Journal Vol-II	2015	ISSN 2277-5277
Short Story "Potashaal"	Published in "Gariyoshi"	2015	ISSN 2349-53
Short Story "Avaron"	Published in "Gariyoshi"	2015	ISSN 2349-5324
Short Story "Shaan'	Published in "Gariyoshi"	2015	ISSN 2349-5324
Short Story "Nishanta"	Published in "Gariyoshi"	2015	ISSN 2349-5324
Short Story 'Takshak'	Published in "Gariyoshi"	2015	ISSN 2349-5324
Short Story "Puberun"	Published in "Swarnalipi"	2015	ISSN 2231-0517
Short Story 'Ashukh'	Asomia Sisu-Sahityar Nirbachita Chutigalpa by Sahitya Academy	2016	ISBN 978-81-260-5019-2
Short Story "Mukti"	Published in "Gariyoshi"	2016	ISSN 2349-5324
Short Story "Langar"	Published in "Gariyoshi"	2016	ISSN 2349-5324
Short Story "Bihanga"	Published in "Gariyoshi"	2016	ISSN 2349-5324
Short Story "Mohana"	Published in "Gariyoshi"	2016	ISSN 2349-5324
Short Story "Upapath"	Published in "Swarnalipi"	2016	ISSN 2231-0517
Article Titled "Asomat Sisu-Sahitya Sarchar Prayojaniyata Aru Kramabikash"	Published in "Swarnalipi"	2016	ISSN 2231-0517
Short Story "Aparahna"	Published in "Swarnalipi"	2016	ISSN 2231-0517
The Poem Titled "Dokan"	Published in "Swarnalipi"	2016	ISSN 2231-0517