

PERSONAL PROFILE



1. Name of the Teacher : JAYANTA K SARMAH
2. Department : CHEMISTRY
3. Designation : ASSOCIATE PROFESSOR
4. Email id : jayantasarmah@rtuassam.ac.in
5. Contact no. : 8876224033
6. Teaching Experience : 14 Y (up to 31st December, 2023)

Class	Teaching Experience (years)	Topics
UG	14	Solid State, Chemical Thermodynamics, Chemical equilibrium, Reaction Kinetics and Catalysis, Electrochemistry, Phase Rule, Adsorption, Macromolecules, Colloids, Chemical Bonding, Analytical Methods in Chemistry.
PG	14	Equilibrium Thermodynamics, Statistical Thermodynamics, Non-equilibrium thermodynamics, Macromolecules, Chemical Dynamics and Electrochemistry, Catalysis, Surface Phenomena, Chemistry of Materials, Quantum Chemistry, Chemical Biology, Analytical Methods in Chemistry
PhD Course work	6	Analytical Chemistry, Ethics in Research, Research Methodology.

7. Research area of interest : Physical Chemistry, Nano Science, Energy and Environment, Machine Learning, Polymer Composites, Hydrogels, Drug Delivery
8. Google Scholar ID : 8UTzTOUAAAAJ
9. Vidwan ID :
10. Academic activities :
 - a. *Seminar/Conference attended:*
 - National Conference on North-East Sustainable and Inclusive Development (NESID); 10-11 April, **2023** organised by AKU and IFSA Bangalore.
 - Facile synthesis of a pH-responsive and injectable hydrogel with improved mechanical properties. ESTEC'2020, CSIR-NEIST, Jorhat (**BEST POSTER**).
 - Development of polyvinyl alcohol based hybrid hydrogel for biomedical applications, National conference on progress in material science research (PMSR), February 4th To 6th, 2020, Dibrugarh University.
 - Alginate-gelatin based hybrid hydrogel beads as a biocompatible and efficient adsorbent for dye removal from aqueous solutions, National conference on green, sustainable and evolving sciences (GSES- 2019), **28-29th June'2019**, Cotton University.
 - Development of okra based hydrogels for sustainable applications, National conference on green, sustainable and evolving sciences (GSES- 2019), **28-29th June'2019**, Cotton University
 - Adsorption study of methylene blue (MB) onto rice husk ash (RHA) synthesized from rice husk of jorhat district, Assam, National conference on green, sustainable and evolving sciences (GSES- 2019), **28-29th June'2019**, Cotton University
 - Stability study of alginate based w/o emulsion system with aqueous extract of okra (bhindi) as stabilizer: A sustainable approach for emulsion preparation, Paper presented in ASTEC DST Govt of Assam sponsored National Conference on 'Bioresources for sustaining life and livelihoods in North East India, **4-5th October'2018**, Nowgong College, Assam.
 - Nano Curcumin: Its synthesis, characterisation and applications, poster presented in Organix, An International Conference in Chemistry held on **20-21st Dec'2018** at Tezpur University.
 - Preparation and characterization of calcium alginate nanoparticles using emulsifier blends of span80 and tween80, ICMR, NIT Nagaland, **2018**.
 - Nanofibrillar cellulose composite as a sustainable antifouling coating material, ICMR, NIT Nagaland, **2018**.

- Determination of surface charge of oxide dispersions in aqueous solution by a simple pH-metric method, ICMR, NIT Nagaland, **2018**.
- Adsorption capacity enhancement of natural fiber based carbon materials for phenolic dye adsorption, ICMR, NIT Nagaland, **2018**.
- International conference on drug design, organized by Schrodinger LLC. USA at JNU, New Delhi, **2017**.
- Hevea Brasillensis (Rubber Plant): A promising feedstock for sustainable production of biodiesel in Assam, NIT Meghalaya, **2017**.
- Cost effective preparation of paclitaxel loaded crosslinked sodium alginate nanoparticles. sLisamoni, ANMAP, ISBN 978-93-82931-81-2, **2016**.
- PEGylated guar gum based nanocarrier as a controlled delivery system, paper presented in 61st Annual Technical Session of Assam Science Society, **2016**
- Effect of Blend of Span 80 and Tween 80 on size of paclitaxel loaded nanoparticles, Poster presented in MRSI North East Symposium on Advanced Materials for Sustainable Applications, **2016**
- 21st National Conference of Indian College forum(ICF) organized jointly by SEED, ICF, ACPC and Kaziranga University, **23-25 April' 2015**.
- Direct observation of 2D crystallization at Air/Water Interface by Brewster Angle Microscope; Materials Today Virtual Conference: Frontiers of Microscopy, UK **2013**.
- Development of biodegradable polymer based tamoxifen citrate loaded nanoparticles and effect of some process parameters on them: a physicochemical evaluation, Recent Aspects Chemistry Education and Research, GU, **2012**.
- "Effect of glutaraldehyde cross-linking on in-vitro release characteristics of biodegradable guar gum nanoparticles, International Conference on Perspective and Challenges in Chemical and Biological Sciences: Innovation crossroads, IASST, **2012**.
- In-vitro effects of chemically cross-linked guar gum nanoparticles on proliferation of human T-cell leukemia cell line, Jurkat cells, 57th Annual Technical Session of Assam Science Society, nn Gauhati University, 16-18th March, **2012**
- Development of biodegradable polymer based tamoxifen citrate loaded nanoparticles and effect of some process parameters on them: a physicochemical evaluation, Recent Aspects Chemistry Education and Research, Dept. of Chemical Science, Gauhati University, Guwahati, **2011**
- International Seminar on Bioresources and Human Sustenance, Zoological Society of Assam, **2011**.
- Guar gum: A natural polysaccharide for preparation of nanoparticulate anticancer drug delivery system and for controlled release of the drug, National Seminar on Recent Trends in Phytochemical & Phytopharmaceutical Research and Future Prospects, Dept. of Chemistry, Gauhati University, Guwahati, March 26-27, **2010**.
- Seminar-Cum-Workshop on GCMS system, Forensic Science Laboratory, Govt. of Assam, Guwahati, **2009**.
- Bioinformatics for Research Scholars and Teachers Involved in Undergraduate Teaching in Life Science and Biotechnology, Bioinformatics Infrastructure Facility Centre, Cotton College, Guwahati, **2009**.
- Preparation and characterisation of guar gum based nanoparticles for controlled drug delivery, Indian Journal of Clinical Biochemistry, **2007**
- National Workshop cum Seminar on Bio Diesel for the North Eastern Region (Dr. A.P.J. Kalam, the Hon. President of India, inaugurated the seminar.), NEDFI, Guwahati, Assam, **2006**
- National Seminar on Energy Technologies-Strategies for Optimal Utilization of Natural Resources, 22nd National Convention of Mechanical Engineers on Resources, The Institution of Engineers (India), **2006**.

b. *Workshops attended:*

- North-East Climate Consortium (NECC) organised by IFSA Bangalore on 31st January, **2023** at Guwahati.
- North-East Climate Consortium (NECC) organised by IFSA Bangalore on 12th April, **2023** at Guwahati.
- *National workshop on upskilling academicians in teaching pedagogy and research writing organised by AKU and NEMA on 26h March'22.*
- *'IP, Academia and SMEs: Taking your ideas to market' conducted by DPIIT IPR Chair, Andhra University on 26th April'21.*
- "OPEN SOURCE TOOL FOR CHEMO INFORMATICS AND DRUG DESIGN" organised by AKU and Centre for Systems Biology and Bioinformatics, Punjab University, Chandigarh June '2021
- "Opportunities in Innovation and Entrepreneurship" organised by BioNest NIPER-G incubation centre on 5th June'2021

c. Total publications in **UGC recognized/Peer reviewed/Indexed journals**: 36+

Top Ten Publications

- "Cellulose acetate- based gel electrolytes grafted with surface-functionalized SiO₂ nanofiber for green energy storing applications, Colloids and Surfaces A, **2024**, 133268, IF: 5.2 [10.1016/j.colsurfa.2024.133268](https://doi.org/10.1016/j.colsurfa.2024.133268)
- Aligning TiO₂ nanofiber for high ionic conductivity in cellulose acetate gel electrolytes, Materials Chemistry and Physics, Volume 314, **2024**, 12884, IF: 4.6 [10.1016/j.matchemphys.2023.128841](https://doi.org/10.1016/j.matchemphys.2023.128841).
- An okra polysaccharide (Abelmoschus esculentus) reinforced green hydrogel based on guar gum and poly-vinyl alcohol double network for controlled release of nanocurcumin, International journal of biological macromolecules 234, 123618, **2023**. IF: 8.2 [10.1016/j.ijbiomac.2023.123618](https://doi.org/10.1016/j.ijbiomac.2023.123618).
- Development of Highly Efficient Heterogeneous Fe₃O₄-Biochar Nanocomposite as Fenton-like Catalysts for Degradation of Fast Green, Chemistry Select, 8:41, e202302553, **2023**. IF 2.307, [10.1002/slct.202302553](https://doi.org/10.1002/slct.202302553)
- High ionic conductivity upon low electrolyte uptake in TiO₂ nanofiber-filled guar gum gel electrolytes, Materials Chemistry and Physics, 307, 128239, **2023**, IF: 4.6 [10.1016/j.matchemphys.2023.128239](https://doi.org/10.1016/j.matchemphys.2023.128239)
- Smart hydrogel with rapid self-healing and controlled release attributes for biomedical applications, Smart Materials and Structures, 31(9), 095039, **2022**, IF: 4.1 [10.1088/1361-665X/ac845d](https://doi.org/10.1088/1361-665X/ac845d)
- Hybrid La₂O₃-cPVP Dielectric for Organic Thin Film Transistor Applications, ECS Journal of Solid State Science and Technology , 11 013007, **2022**, IF: 2.2 [10.1149/2162-8777/ac4a7e](https://doi.org/10.1149/2162-8777/ac4a7e)
- Highly stable silver nanoparticles containing guar gum modified dual network hydrogel for catalytic and biomedical applications', Carbohydrate Polymers, 248, 116786, **2020**, IF: 11.2, [10.1016/j.carbpol.2020.116786](https://doi.org/10.1016/j.carbpol.2020.116786) .
- In situ synthesis of a microbial fouling resistant, nanofibrillar cellulose-hyperbranched epoxy composite for advanced coating applications, 124, 224-231, **2018**, IF 6.6 [10.1016/j.porgcoat.2018.04.025](https://doi.org/10.1016/j.porgcoat.2018.04.025).
- Controlled release of tamoxifen citrate encapsulated in cross-linked guar gum nanoparticles, International journal of biological macromolecules 49 (3), 390-396, **2011**. IF: 8.2. [10.1016/j.ijbiomac.2011.05.020](https://doi.org/10.1016/j.ijbiomac.2011.05.020)
- Preparation of cross-linked guar gum nanospheres containing tamoxifen citrate by single step emulsion in situ polymer cross-linking method, Journal of Inclusion Phenomena and Macrocyclic Chemistry, 65, 329-334, **2009**. IF: 2.3 [10.1007/s10847-009-9589-7](https://doi.org/10.1007/s10847-009-9589-7)

e. Publication of Book (s) and Chapter(s) in Books:

- **Book: Bimetals: Formation, Properties and Applications**, ISBN: 979-8-89113-496-6 [10.52305/CYXG2831](https://doi.org/10.52305/CYXG2831).
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- Functionalized Carbon Nanostructures for Smart Packaging, Handbook of Functionalized Carbon Nanostructures, **2023**, ISBN 978-3-031-14955-9. [10.1007/978-3-031-14955-9_69-1](https://doi.org/10.1007/978-3-031-14955-9_69-1)
- Different methods for nanomaterial-based immobilization of enzymes, 113-131, Antimicrobial Dressings, Academic Press, **2023**, <https://doi.org/10.1016/B978-0-323-95074-9.00008-7>
- Postharvest applications of carbon dots in agriculture: food safety, ISBN 978-0-323-90260-1, **2023**, [10.1016/B978-0-323-90260-1.00006-1](https://doi.org/10.1016/B978-0-323-90260-1.00006-1)
- Guar gum based nanoparticles: A new paradigm in biomedical applications, Elsevier Publications, **2022**, ISBN: 978-0-12-822351-2. Book: Polysaccharide Nanoparticles: Preparation and Biomedical Applications (A volume in Micro and Nano Technologies). [10.1016/B978-0-12-822351-2.00003-6](https://doi.org/10.1016/B978-0-12-822351-2.00003-6)
- Guar gum based hydrogel and hydrogel nanocomposites for biomedical applications, Elsevier Publications, **2022**, ISBN: 978-0-323-90986-0, Book: Micro- and Nanoengineered Gum-Based Biomaterials for Drug Delivery and Biomedical Applications (A volume in Micro and Nano Technologies). [10.1016/B978-0-323-90986-0.00002-9](https://doi.org/10.1016/B978-0-323-90986-0.00002-9)
- Self-assembled polymer nanocomposites in biomedical applications, Elsevier Publications, **2022**, ISBN: 9780323885249, Book: Advances in Biomedical Polymers and Composites, [10.1016/B978-0-323-88524-9.00003-6](https://doi.org/10.1016/B978-0-323-88524-9.00003-6)
- Postharvest applications of carbon dots in agriculture: food safety, Elsevier Publications, **2022**, ISBN: 978-0-323-90260-1 Book: Carbon dots in agricultural systems. [10.1016/B978-0-323-90260-1.00006-1](https://doi.org/10.1016/B978-0-323-90260-1.00006-1)
- Development of polyvinyl alcohol based hybrid hydrogel for biomedical applications, ISBN: 978-93-5473-472-4, Progress in material science research (PMSR), **2020**.

- Stability study of alginate based w/o emulsion system with aqueous extract of okra (bhindi) as stabilizer: A sustainable approach for emulsion preparation, Gigabytes press and publication, Nagaon, Assam, ISBN 978-93-85310-48-5, **2018**.
 - Nanotechnology in Medicine; Frontiers in Life Sciences (Reference Book), ISBN: 978-93-5067-394-2, **2013**. Awarded Best Article in Life Sciences.
 - Modification of Pressurized Kerosene Stove into Steam Injected Stove, Advances in energy research, **2007**, Macmilan Publishers ISBN: 9780230634329.
- f. *Patents* : 'Areca Nut Wine', **2018**, Application No. 201731027636.
- g. *Research Projects*:
- i. Extraction of peroxidase from indigenous weed plants of Assam: Characterization and Applications, AKU, Seed Grant, Completed.
 - ii. Development of lignin based composites for food packaging applications, ASTEC, Completed
 - iii. Development of a low cost wound dressing material of curcumin-silver nanoparticles embedded in naturally occurring polymer, ASTEC, Completed.
 - iv. Synthesis of nanophase semiconductor using microemulsion as nanoreactor for industrial applications, AKU, Seed Grant, Completed.
- h. *Awards/Fellowship/Recognition at State/National/International level from Government/Recognized bodies* :
- Empanelled Expert of the selection committee meeting for selection of candidates as Project Fellow in NEIST, Jorhat.
 - Empanelled Referee for examining PhD thesis and viva-voce for the Savitri Bai Phule Pune University, India.
 - Book Chapter entitled 'Nanotechnology in Medicine', awarded best article in life sciences: ISBN: 978-93-5067-394-2.
 - Best Poster in ACS Publications (in ICETC 2023 at ADBU Guwahati), 2023.
 - Best Poster in ESTEC'2020 in CSIR NEIST Jorhat.2020.
 - Research and monitoring committee member, Union Christian College, Meghalaya
 - Key Resource person, Assam Higher Secondary Educational Council (AHSEC), Guwahati, Assam.
 - Participated as a resource person in the workshop on 'Bioinformatics and Techniques of Molecular Biology', organized by Zoological Society of Assam, Dept. of Zoology, Cotton College, Guwahati.
- i. *Outreach/Extension Activities*:
- **Science Popularization**: Took active participation in popularizing Science among 1000+ school childrens so far through the KV-CSIR-Jigyassa program, RSC-Salters Chemistry Camp, Prudentia and similar activities.
 - Organised joint National thematic workshop with UGC-DAE CSR, Kolkata.
 - Organised joint workshops with the Institutional Biotech Hub, Cotton College, Jorhat
 - Organised joint workshops with the Institutional Biotech Hub, J B College, Jorhat
 - Organised joint workshop with the Bioinformatics Centre, Punjab University.
 - Visit to IACS Kolkata for student/faculty exchange programs
 - Visit to SINP, Kolkata for student/faculty exchange programs
 - Visit to Assumption University, Bangkok for student/faculty exchange programs
- i. *Any other achievements*:
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| • Invited Lectures | : 12 |
| • Short-term course organized | : 02 |
| • FDP organized | : 02 |
| • Conference/Seminar/Workshop etc. Organized | : 18 |
| • New Program developed | : 06 |
| • Courses Designed | : 15 |
