

National Institute of Technology
Ceramic Engineering
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Appointments

- 2023 – till date Associate Professor, Ceramic Engineering, National Institute of Technology, Rourkela, INDIA
- 2014 – 2023 Assistant Professor, Ceramic Engineering, National Institute of Technology, Rourkela, INDIA
- 2010-2014 Postdoctoral Associate, Swanson School of Engineering, Bioengineering, University of Pittsburgh, USA (Mentor: Prof. Prashant N. Kumta)

Education

- 2010 Ph.D. The University of Alabama, Tuscaloosa, Alabama, USA
Metallurgical Engineering (Advisor: Prof. Srinath Viswanathan)
- 2004 M.Tech. Institute of Technology, Banaras Hindu University, INDIA
Ceramic Engineering (Mentors: Dr. Anil Kumar, Dr. Devendra Kumar)
- 2002 B.Tech. College of Ceramic Technology, University of Calcutta, INDIA
Ceramic Technology

Sponsored Research Grants

Completed:

Project Title: Corrosion behavior of novel Mg- 4wt. % Y- 4wt. % Zn – 0.2wt. % Ca- 0.5 wt. % Zr alloys in NaCl and Na₂SO₄ aqueous solution developed by permanent mold gravity casting, P. Saha (PI), sponsored by SERB-DST, amount INR 52.89 lacs (10/2016-03/2020)

Project Title: Development of nanostructured Si-void-C yolk/shell architecture-high-performance Li-ion Battery Anode, P. Saha (PI), sponsored by DST Nanomission, amount INR 87.04 lacs (03/2019-03/2022)

Ongoing:

Project Title: Development of polypyrrole coated Mg alloys for degradable fracture fixation devices, P. Saha (Co-PI), sponsored by DST Core research Grant, amount INR 5.5 lacs (01/2021-07/2024)

Project Title: Development of Phenolic Resin-derived Porous Carbon Spheres Modified Superhydrophobic Melamine Sponge for Toxic Dye Removal and Oil Spill Remediation, P. Saha (PI), sponsored by DST Core research Grant, amount INR 28 lacs (12/2021-12/2024)

Teaching

Autumn	Industrial Ceramic Processing (CR601), NIT, Rourkela, India
Autumn	Industrial Ceramic Processing Laboratory (CR673), NIT, Rourkela, India
Autumn	Heat Transfer & Fluid Flow (CR3105), NIT, Rourkela, India
Spring	Heat Transfer & Fluid Flow (CR312), NIT, Rourkela, India
Spring	Advanced Processing of Ceramics (CR6104), NIT, Rourkela, India
Spring	Advanced Processing of Ceramics (CR6104), NIT, Rourkela, India
Spring	Advanced Ceramic Processing Laboratory (CR6172), NIT, Rourkela, India
Spring	Metallurgical Processes (CR320), NIT, Rourkela, India
Spring	Finite Element Analysis in Ceramics Laboratory (CR672), NIT, Rourkela, India

Awards and Recognition

- 1st, 2nd, and 3rd prize in the student poster presentation section at National Conference on present scenario and future trend in ceramics and allied industries-Mrittika 2.0, April 06-08, 2023 held at NIT Rourkela, India
- 1st prize and best presentation in the symposium at International Conference on Energy Conversion and Storage (IECS-2023), January 18-20, 2023 at IIT Madras, India
- 1st prize and best presentation in Engineering category at RSW 2023 at NIT Rourkela, India
- Best paper in the symposium Young Student & Scientist Form award at CORCON 2022
- Second Place - Electron Microscopy – All Materials, International Metallographic Contest, sponsored by the International Metallographic Society and ASM international, 2022
- Early Career Research Award by SERB-DST ‘2016
- Best poster award, AFS/FEF Student Technology Competition at CastExpo ‘2008
- Third Place - Transmission Electron Microscopy, International Metallographic Contest, sponsored by the International Metallographic Society and ASM international, 2008
- Magnesium alloy micrograph selected for the cover of the 2010 winter issue of the International Journal of Metalcasting

Professional Membership

• The Minerals, Metals and Materials Society (TMS)	2008 - Present
• The American Foundry Society (AFS)	2008 - Present
• Foundry Educational Foundation (FEF)	2008 - Present
• Sigma Xi, The Scientific Research Society	2013 – Present
• Materials Research Society of India (Life member/LMB3421)	2021- Present
• Indian Ceramic Society (Life member/EL-773)	2021- Present

Reviewers

Electrochimica Acta, Thin Solid Films, Metallurgical and Materials Transaction A, Surface & Coating Technology, Applied Surface Science, Materials Science & Engineering: B, Energy & Fuels, Materials Letter, Materials & Design, Materials Chemistry & Physics, Chemical Engineering Science, Research on Chemical Intermediates, ACS Sustainable Chemistry & Engineering, Industrial Crops and Products, Cellulose, Emergent Materials, New Journal of Chemistry, Powder Technology, Journal of Alloys and Compounds, Surface and Interfaces, Journal of Physics and Chemistry of Solids, Materials Chemistry and Physics, Environmental Technology & Innovation, Process Safety and Environmental Protection, Journal

of Electroanalytical Chemistry, Journal of Nanoparticle Research, Advanced Materials: Interface, Journal of Cleaner Production, International Journal of Industrial Chemistry, Journal of Industrial and Engineering Chemistry, Journal of Cluster Science, Journal of Saudi Chemical Society, Journal of Materials Research, Environmental Nanotechnology, Monitoring & Management, Surface & Purification Technology, Spectrochimica Acta Part A, ChemistrySelect, Chemical Engineering Journal, The Journal of Physical Chemistry C, ACS Applied Nano Materials, Langmuir, DST-SERB proposals (India)

Refereed Publications

1. Y. Mahton, M. A. Kamde, and **P. Saha**, "Influence of Cu addition on the microstructure, and corrosion behavior of electroless Ni-Cu-P coating on squeeze-cast Al-Cu-Mg alloy" *Surface & Coatings Technology*, (2024), p 131544
2. M. A. Kamde, Y. Mahton, and **P. Saha**, "Influence of poly(methyl methacrylate) and ceria-based organic-inorganic hybrid coating mitigating saltwater corrosion of WZ44 alloys" *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, Vol 704, September 27, (2025), 135426
3. Y. Mahton, M. A. Kamde, A. Chavan, and **P. Saha**, "Influence of step-by-step cerium-based conversion and polydopamine duplex coating on stir cast Al-Cu-Mg alloys mitigating saltwater corrosion" *Surface & Coatings Technology*, Vol 489, Issue 8, (2024), p 131041
4. M. A. Kamde, Y. Mahton, Y. Singh, S.K. Sahoo, S. Ganguly, N.S. Prakash, M. Roy, V. Mishra, S. Sarkar, A, and **P. Saha**, "Correlation of Microstructure and Corrosion Behavior of squeeze-cast Mg-4.0 Y-4.0 Zn-0.5 Zr-0.2 Ca (wt. %) Alloys Constituting W and LPSO Secondary Phases" *Metals and Materials International*, 30th May, (2024), p 1-23
5. K.A. Kumar Raju, A. Biswas, A.K. Singh, Y. Mahton, and **P. Saha**, "Enhanced corrosion resistance of 58S bioglass integrated TiO₂ nanotubular arrays" *Next Nanotechnology*, Vol 6, (2024), p 100070
6. M. A. Kamde, Y. Mahton, A. Kushwaha, A. Basu, and **P. Saha**, "Effect of ultrasonic shot peening and intermediate cerium salt conversion bath treatment controlling corrosion of Mg-Y-Zn-based alloy in salt water" *Applied Surface Science*, Vol 648, Issue 10, (2024), p 159094
7. M. A. Kamde, Y. Mahton, A. Kumar, N.S. Prakash, M. Roy, A. Basu, and **P. Saha**, "Effect of phosphate post-treatment on corrosion behavior of cerium-based conversion coated Mg-4.0Y-4.0Zn-0.5Zr-0.2Ca (wt.%) alloys" *Materials Chemistry and Physics*, Vol 314, (2024), p 128843
8. Y. Mahton, V. Jha, and **P. Saha**, "Effect of heat-treatment on microstructure, mechanical, and corrosion properties of squeeze cast Al 319.0 alloy" *International Journal of Metalcasting*, Vol 18, (2024), p 512-529
9. Y. Mahton, M. Pandiripalli, and **P. Saha**, "Effect of Vanadium Micro-alloying on the Microstructure and Mechanical Properties of Stir Cast Al 354.0 Alloy" *Metallography, Microstructure, and Analysis*, Vol 12, (2023), p 849-862
10. A. Sahu, A. Kumar, A. Kumar, L. Dashairya, **P. Saha**, S.K. Bhuyan, S. Sen, S.C. Mishra "Performance of wasteland biomass *Calotropis gigantea* derived activated carbon as Lithium-ion battery anode" *Diamond and Related Materials*, Vol 136, (2023), 110053
11. L. Dashairya, V. Chatuvedi, A. Kumar, T.R. Mohanta, M. Shelke, and **P. Saha**, "A benign strategy toward mesoporous carbon coated Sb nanoparticles: A high-performance Li-ion/Na-ion batteries anode" *Solid State Ionics*, Vol 396, (2023), 116243
12. A. Verma, H. Singh, Y. Mahton, **P. Saha**, C.S. Tiwary, J. Bhattacharya "Use of waste to wealth process derived sustainable silica-rich graphene analogues to provide enhanced corrosion resistance properties for coating on carbon steel, exposed to marine environments" *Surface & Coatings Technology*, Vol 464, Issue 7, (2023), 129420
13. M. A. Kamde, Y. Mahton, and **P. Saha**, "A stearic acid/polypyrrole-based superhydrophobic coating on squeeze-cast Mg-Sr-Y-Ca-Zn alloys for improved salt-water corrosion" *Surface & Coatings Technology*, Vol 448, Issue 10, (2022), p 128890

14. L. Dashairya, P.S. Kispotta, Y. Mahton, E. Kumari, A. Kumar, and **P. Saha**, "Zirconium diboride assisted superhydrophobic/superoleophilic surface modification of polyurethane sponge for continuous oil-water separation and emulsion purification" *Journal of the Taiwan Institute of Chemical Engineers*, Vol 136, Issue 07, (2022), p 104398
15. L. Dashairya, S. Sharma, A. Rathi, **P. Saha**, and S. Basu, "Solar-light-driven photocatalysis by Sb_2S_3 /carbon based composites towards degradation of noxious organic pollutants" *Materials Chemistry and Physics*, Vol 273, Issue 11, (2021), p 125120
16. M. A. Kamde, Y. Mahton, J. Ohodnicki, M. Roy, **P. Saha**, and P.N. Kumta, "Effect of cerium-based conversion coating on corrosion behavior of squeeze cast Mg-4 wt. % Y alloy in 0.1 M NaCl solution" *Surface & Coatings Technology*, Vol 421, Issue 9, (2021), p 127451
17. L. Dashairya, D. Das, and **P. Saha**, "Elucidating the role of graphene and porous carbon coating on nanostructured Sb_2S_3 for superior lithium and sodium storage" *Journal of Alloys and Compounds*, Vol 883, Issue 11, (2021), p 160906
18. L. Dashairya, D. Das, S. Jena, A. Mitra, and **P. Saha**, "Controlled scalable synthesis of yolk-shell antimony with porous carbon anode for superior Na-ion storage" *Nano Select*, Vol 2, November 30, (2020), 373-388
19. L. Dashairya, D. Das, and **P. Saha**, "Binder-free electrophoretic deposition of Sb/rGO on Cu foil for superior electrochemical performance in Li-ion and Na-ion batteries" *Electrochimica Acta*, Vol 358, October 20, (2020), 136948
20. L. Dashairya, D. Das, and **P. Saha**, "Electrophoretic deposition of antimony/reduced graphite oxide hybrid nanostructure: A stable anode for lithium-ion batteries" *Materials Today Communications*, Vol 24, (2020), 101189
21. L. Dashairya, Gopinath M. and **P. Saha**, "Synergistic effect of Zr/Cl dual-ions mediated pyrrole polymerization and development of superhydrophobic melamine sponges for oil/water separation" *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, Vol 599, August 20, (2020), 124877
22. L. Dashairya, and **P. Saha**, "Antimony Sulphide Nanorods Decorated onto Reduced Graphene Oxide Based Anodes for Sodium-Ion Battery" *Materials Today: Proceedings*, Vol 21, Issue 4, (2020), p 1899-1904
23. L. Dashairya, A. Mehta, **P. Saha**, and S. Basu, "Visible-light-induced enhanced photocatalytic degradation of Rhodamine-B dye using $\text{Bi}_x\text{Sb}_{2-x}\text{S}_3$ solid-solution photocatalysts" *Journal of Colloid and Interface Science*, Vol 561, Issue 3, (2020), p 71-82
24. J. Wu, B. Lee, **P. Saha**, and P. N. Kumta "A feasibility study of biodegradable magnesium-aluminum-zinc-calcium-manganese (AZXM) alloys for tracheal stent application" *Journal of Biomaterials Application*, Vol 33, Issue 6, (2019), p 1080-1093
25. L. Dashairya, A. Sahu, and **P. Saha**, "Stearic acid treated polypyrrole-encapsulated melamine formaldehyde superhydrophobic sponge for oil recovery" *Advanced Composites and Hybrid Materials*, Vol 2, Issue 1, (2019), p 70-82
26. L. Dashairya, D.D. Barik, and **P. Saha**, "Methyltrichlorosilane functionalized silica nanoparticles treated superhydrophobic cotton for oil-water separation" *Journal of Coating Technology and Research*, Vol 16, Issue 4, (2019), p 1021-1032
27. L. Dashairya, M. Sharma, S. Basu, and **P. Saha**, " SnS_2 /RGO based nanocomposite for efficient photocatalytic degradation of toxic industrial dyes under visible-light irradiation" *Journal of Alloys and Compounds*, Vol 774, Issue 2, (2019), p 625-636
28. **P. Saha**, and L. Dashairya, "Reduced graphene oxide modified melamine formaldehyde (rGO@MF) superhydrophobic sponge for efficient oil-water separation" *Journal of Porous Materials*, Vol 25, Issue 5, (2018), p 1475-1488
29. L. Dashairya, M. Rout, and **P. Saha**, "Reduced graphene oxide-coated cotton as an efficient absorbent in oil-water separation" *Advanced Composites and Hybrid Materials*, Vol 1, Issue 1, (2018), p 135-148

30. L. Dashairya, M. Sharma, S. Basu, and **P. Saha**, "Enhanced dye degradation using hydrothermally synthesized nanostructured $\text{Sb}_2\text{S}_3/\text{rGO}$ under visible light irradiation" *Journal of Alloys and Compounds*, Vol 735, Issue 2, (2018), p 234-245
31. **P. Saha**, P. H Jampani, M. K. Datta, D. Hong, B. Gattu, P. Patel, K. Kadakia, A. Manivannan, and P. N. Kumta, "A Rapid Solid-State Approach to Electrochemically Active Chevrel Phases (Mo_6T_8 ; T = S, Se) for Rechargeable Magnesium Batteries" *Nano Research*, Vol 10, Issue 12, (2017), p 4415-4435
32. B.K. Barkey, S.S. Das, A. Meher, **P. Saha**, "Preparation and Microstructural Characterization of Niobium Pentaoxide Doped Barium Strontium Titanate Glass and Glass-Ceramics" *Transaction of Indian Ceramic Society*, Vol. 76, No 1, (2017), p 21-30
33. M. Selvam, K. Saminathan, P. Siva, **P. Saha**, V. Rajendran, "Corrosion behavior of Mg/graphene composite in aqueous electrolyte" *Materials Chemistry and Physics*, Vol. 172, (2016), p 129-136
34. **P. Saha**, P. H Jampani, D. Hong, B. Gattu, J.A. Poston, A. Manivannan, M. K. Datta, , and P. N. Kumta, "Synthesis and electrochemical study of $\text{Mg}_{1.5}\text{MnO}_3$: A defect spinel cathode for rechargeable magnesium battery" *Materials Science & Engineering: B*, Vol. 202, (2015), p 8-14
35. **P. Saha**, M. Roy, M. K. Datta, B. Lee, and P. N. Kumta, "Effects of Grain Refinement on the Biocorrosion and In Vitro Bioactivity of Magnesium" *Materials Science & Engineering: C*, Vol. 57, (2015), p 294-303
36. **P. Saha**, P. H Jampani, M. K. Datta, D. Hong, C.U Okoli, A. Manivannan, P. N. Kumta, "Electrochemical Performance of Chemically and Solid State Derived Chevrel Phase Mo_6T_8 (T= S, Se) Positive Electrodes for Sodium-ion Batteries" *Journal of Physical Chemistry C* Vol. 119, (2015), p 5771-5782
37. M.K. Datta, M. Ramanathan, P.H Jampani, **P. Saha**, R. Epur, K. Kadakia, S.J. Chung, P. Patel, B.Gattu, A. Manivannan, and P.N Kumta, "High energy mechano-chemical milling: Convenient approach to synthesis of $\text{LiMn}_{1.5}\text{Ni}_{0.5}\text{O}_4$ high voltage cathode for lithium ion batteries" *Materials Science & Engineering: B*, Vol. 190, (2014), p 119-125
38. **P. Saha**, M.K. Datta, O.I. Velikokhatnyi, A Manivannan, D. Alman, and P. N. Kumta, "Rechargeable Magnesium Battery: Current Status and Key Challenges for the Future" *Progress in Materials Science*, Vol. 66, (2014), p 1-86
39. M.K. Datta, R. Kuruba, P.H Jampani, S.J Chung, **P. Saha**, R. Epur, K. Kadakia, P. Patel, B.Gattu, A. Manivannan, and P.N Kumta, "Electrochemical properties of a new nanocrystalline NaMn_2O_4 cathode for rechargeable sodium ion batteries" *Materials Science & Engineering: B*, Vol. 188, (2014), p 1-7
40. **P. Saha**, P.H. Jampani, M.K. Datta, C.U. Okoli, A Manivannan, and P. N. Kumta, "A Convenient Approach to Mo_6S_8 Chevrel Phase Cathode for Rechargeable Magnesium Battery" *J. Electrochem. Soc.*, 161,(4), (2014), p-A593-A598
41. D. Lv, T. Xu, **P. Saha**, M.K. Datta, M. Gordin, A Manivannan, P. N. Kumta, and D. Wang, "A scientific study of current collectors for Mg batteries in $\text{Mg}(\text{AlCl}_2\text{EtAu})_2/\text{THF}$ electrolyte" *J. Electrochem. Soc.*, 160,(2), (2013), p-A351-A355
42. M.K. Datta, R. Epur, **P. Saha**, K. Kadakia, S. K. Park, and P. N. Kumta, "Tin and graphite based nanocomposites: Potential anode for sodium ion batteries" *J. of Power Sources*, 225, (2013), p-316-322
43. K. Kadakia, M.K. Datta, O. I. Velikokhatnyi, P. Jampani, S.K. Park, **P. Saha**, J. A. Poston, A. Manivannan, and P. N. Kumta, "Novel (Ir,Sn,Nb) O_2 anode electrocatalysts with reduced noble metal content for PEM based water electrolysis", *Int. J. Hydrogen Energy*, 37, (4), (2012), p-3001-12
44. D. Hong, **P. Saha**, D.C. Chou, B. Lee, B. Collins, Z. Tan, Z. Dong, and P.N. Kumta, "In vitro degradation and cytotoxicity response of Mg-4%Zn-0.5%Zr (ZK40) alloy as a potential biodegradable material", *Acta Biomaterialia*, Vol. 9, (10), (2013), p 8518-33
45. D.C. Chou, D. Hong, **P. Saha**, J. Ferrero, B. Lee, Z. Tan, Z. Dong, and P.N. Kumta, "In vitro and in vivo corrosion, cytocompatibility, and mechanical properties of Mg-Y-Ca-Zr alloys", *Acta Biomaterialia*, Vol. 9, (10), (2013), p 8534-47

46. M.K. Datta, D.C. Chou, D. Hong, **P. Saha**, S.J. Chung, B. Lee, A. Sirinterlikcic, M. Ramanathan, A. Roy, and P.N. Kumta, "Structure and thermal stability of biodegradable Mg–Zn–Ca based amorphous alloys synthesized by mechanical alloying", *Materials Science and Engineering: B*, Vol. 176, (20), (2011), p 1637-43

Refereed Conference Proceedings

1. **P. Saha**, and S. Viswanathan, "An Analysis of the Grain Refinement of Magnesium By Zirconium", *Magnesium Technology 2011*, The Minerals, Metals & Materials Society, San Diego, CA, (2011), p 175-180
2. S. Viswanathan, **P. Saha**, D. Foley, and K.T. Hartwig, "Engineering a More Efficient Zirconium Grain Refiner For Magnesium", *Magnesium Technology 2011*, The Minerals, Metals & Materials Society, San Diego, CA, (2011), p 559-564
3. **P. Saha**, and S. Viswanathan, "Grain Refinement of Magnesium by Zirconium: Characterization and Analysis", *Proceedings of the American Foundry Society*, American Foundry Society, Schaumburg, IL, (2011), p 469-80
4. S. Viswanathan, **P. Saha**, D. Foley, and K.T. Hartwig, "Developing an Improved Zirconium Grain Refiner for Magnesium", *Proceedings of the American Foundry Society*, American Foundry Society, Schaumburg, IL, (2011), p 453-60
5. **P. Saha**, K. Lolies, S. Viswanathan, A. Gokhale, R. Batson "A Systematic Study of the Grain Refinement of Magnesium by Zirconium", *Magnesium Technology 2010*, The Minerals, Metals & Materials Society, Seattle, WA, (2010), p 425-430
6. **P. Saha**, and S. Viswanathan "Engineering an Efficient Zirconium-Based Grain Refiner for Magnesium Alloys", *International Journal of Metalcasting*, Vol. 4, Issue 1, (2010), p -70-71
7. **P. Saha**, and S. Viswanathan "Microstructural Characterization of Magnesium-Zirconium Alloys", *International Journal of Metalcasting*, Vol. 2, Issue 4, (2008), p 91-92

Conference Presentation

1. Oral presentation "Nickel-rich and cobalt-free layered oxide cathodes for lithium ion batteries: A perspective solution for future" International Conference on Exploring the Emerging World of Ceramics and Glass (ICEECG 2023), 87th Annual Session of the Indian Ceramic Society, held at CSIR Central Glass and Ceramic Research Institute (CSIR-CGCRI), Kolkata, December 19-21, 2023
2. Oral presentation "Synergistic role of PMMA and ceria-based organic-inorganic hybrid coating mitigating saltwater corrosion of Mg-Y-Zn-Zr alloy" 34th AGM of MRSI and 5th Indian Materials Conclave, 12 -15 December, 2023, organized by the School of Materials Science and Technology, Indian Institute of Technology (BHU), Varanasi.
3. Poster presentation by A. Kumar, Md. F. Ahmed, S. Jena, S. Datta and P. Saha "Development of nickel-rich and cobalt-free layered oxide cathode - a prospective solution to the battery industry's cobalt problem" 2nd International meeting on Energy storage devices (IMESD) & Industry Academia Conclave, December 07-10, 2023 at IIT Roorkee, Uttarakhand, India
4. Poster presentation by T. R. Mohanta, and P. Saha "A convenient approach towards synthesis of hollow silicon nanorods for lithium-ion batteries anode" 2nd International meeting on Energy storage devices (IMESD) & Industry Academia Conclave, December 07-10, 2023 at IIT Roorkee, Uttarakhand, India
5. Oral presentation by A. Dash, and P. Saha "Melamine formaldehyde-base suitable porous sorbents for toxic industrial dye removal and ultra-fast oil spill recovery" 6th International Oil & Gas Chemistry, Chemicals and Additives Conference & Exhibition (IOGCA 2023), September 12-13, 2023 at PDEU Gandhinagar, India.

6. Poster presentation "*Enhanced corrosion resistance performance of superhydrophobic stearic acid/polypyrrole coating on squeeze cast Mg alloy in salt water environment*" A National Conference on present scenario and future trend in ceramics and allied industries-Mrittika 2.0, April 06-08, 2023 at NIT Rourkela, India
7. Poster presentation "*Exploring the effect of layer-by-layer superhydrophobic coating towards improved salt water corrosion of Al-Si-Mg cast alloys*" A National Conference on present scenario and future trend in ceramics and allied industries-Mrittika 2.0, April 06-08, 2023 at NIT Rourkela, India
8. Poster presentation "*Understanding $\text{Li}^+/\text{Ni}^{2+}$ cation mixing and structural changes of Ni rich layered oxide cathode in lithium-ion batteries*" A National Conference on present scenario and future trend in ceramics and allied industries-Mrittika 2.0, April 06-08, 2023 at NIT Rourkela, India.
9. Poster presentation "*PAA grafted CMC binder by thermally induced nano architecturing for silicon nanoparticles in lithium-ion batteries*" International Conference on Energy Conversion and Storage (IECS-2023), January 18-20, 2023 at IIT Madras, India.
10. Poster presentation by "*PAA grafted CMC binder by thermally induced nano architecturing for silicon nanoparticles in lithium-ion batteries*" A National Conference on present scenario and future trend in ceramics and allied industries-Mrittika 2.0, April 06-08, 2023 at NIT Rourkela, India.
11. Oral presentation "*Investigation of Kinetics and anomalous diffusion behaviour of NASICON type NVP cathode for Na-ion batteries*" International Conference on Energy Conversion and Storage (IECS-2023), January 18-20, 2023 at IIT Madras, India
12. Poster presentation "*Understanding the two stage (de)sodiation mechanisms of co-doped $\text{Na}_3\text{V}_2(\text{PO}_4)_3/\text{C}$ cathodes in Na-ion batteries using synchrotron based in-situ X-Ray absorption*" MRITTIKA 2.0- A National Conference on Present Scenario and Future Trends in Ceramics and Allied Industries, April 06-08, 2023 at NIT Rourkela, India. (2nd prize)
13. Poster presentation by "*Development of surface modified melamine Formaldehyde sponge for toxic dye removal and oil spill remediation*" A National Conference on present scenario and future trend in ceramics and allied industries-Mrittika 2.0, April 06-08, 2023 at NIT Rourkela, India
14. Poster presentation "*Prussian blue analog cathodes for sodium ion batteries*" A National Conference on present scenario and future trend in ceramics and allied industries-Mrittika 2.0, April 06-08, 2023 at NIT Rourkela, India
15. Poster presentation "*Development of cobalt-free layered oxide cathode for lithium-ion batteries*" at International Union of Materials Research Society: International Conference in Asia-2022, December 19-23, 2022, at Indian Institute of Technology Jodhpur, India
16. Poster presentation "*Influence of ceria-assisted polydopamine coating on squeeze cast Al-Cu-Mg alloys for enhanced salt water corrosion*" at International Conference on Corrosion and Coatings (i3c), December 07-08, 2022 at Jamshedpur, Jharkhand, India.
17. Oral presentation "*Effect of shot peening on salt-water corrosion of Mg-Y-Zn alloy*" at International Conference on Corrosion and Coatings (i3c), December 07-08, 2022, at Jamshedpur, Jharkhand, India.
18. Poster presentation "*A polypyrrole based superhydrophobic surface treatment on squeeze cast Al-Si-Mg alloy for improved corrosion resistance in 0.1 M NaCl solution*" IIM-ATM, November 13-16, 2022 at Hyderabad, Telangana, India.
19. Oral Presentation "*Exploring the effect of varying Cu content in electroless Ni-Cu-P coating for improved salt water corrosion of squeeze-cast Al-Cu-Mg alloy*" CORCON 2022, AMPP Chapter and NACE International, India Section, September 19-22, 2022, Udaipur, Rajasthan, India.

20. Oral Presentation “*Improved salt-water corrosion of polypyrrole-based superhydrophobic coating on squeeze-cast Mg-Sr-Y alloy*” CORCON 2022, AMPP Chapter and NACE International, India Section, September 19-22, 2022, Udaipur, Rajasthan, India.
21. Oral presentation “*Development of polydopamine assisted polypyrrole-based superhydrophobic coating on Al alloy for improved salt-water corrosion*” at conference on Processing and Characterization of Materials (CPCM 2020), November 18-20, 2020, Metallurgical Engineering, National Institute of Technology Rourkela, Odisha, India
22. Oral Presentation “*A stearic acid/polypyrrole based superhydrophobic coating on a macroporous sponge for oil-spill remediation and improved salt-water corrosion of Mg alloys*” 82nd Indian Materials Conclave and 31st AGM of Materials Research Society of India, Kolkata & Kharagpur Chapter, February 11-14, 2020, Central Glass and Ceramic Research Institute, Kolkata, India.
23. Poster Presentation “*Benign Sol-Gel Route towards Porous Carbon Coated Sb Nanoparticles: A High-Performance Li-Ion Batteries Anode*” 236th ECS Meeting, Atlanta, Georgia, USA, October 2019.
24. Poster Presentation “*Exploring the Effect of Varying Reduced Graphene Oxide Content on the Stable Electrochemical Performance of Sb Nanoparticles Anode for Na-Ion Batteries*” 236th ECS Meeting, Atlanta, Georgia, USA, October 2019.
25. Poster presentation on “*Effect of vanadium micro-alloying on the microstructure and mechanical properties of Al 354.0 alloy at room temperature*”, Fourth International Conference on Nanotechnology for Better Living (Technological Advancements of Polymer Composites), April 06-07, 2019 at Indian Institute of Technology Kanpur, India.
26. Poster presentation on “*Methyltrichlorosilane based superhydrophobic coating on AA6061 alloy for improved salt-water corrosion*”, Fourth International Conference on Nanotechnology for Better Living (Technological Advancements of Polymer Composites), April 06-07, 2019 at Indian Institute of Technology Kanpur, India.
27. Poster presentation on “*Exploring the effect of varying reduced graphene oxide content on the cycling stability of Sb nanoparticles for Lithium-ion batteries anode*”, Fourth International Conference on Nanotechnology for Better Living (Technological Advancements of Polymer Composites), April 06-07, 2019 at Indian Institute of Technology Kanpur, India.
28. Oral presentation on “*Polymer-derived porous carbon spheres coated Sb nanoparticles: a high performance anode for Li-ion batteries*”, International Conference and 82nd Annual Session of Indian Ceramic Society, Jan 09-10, 2019 at The Wave International, Jamshedpur.
29. Poster presentation on “*Antimony sulfide nanorods decorated onto reduced graphene oxide (Sb_2S_3/rGO) for photocatalytic dye degradation under visible light irradiation*”, National conference on Advanced Materials for Energy and Environmental Application (AMEEA-2018), Dec 12-14, 2018 at National Institute of Technology, Rourkela.
30. Oral Presentation on ‘*A ceria based conversion coating on squeeze cast Mg- 4wt. %Y alloy for improved corrosion resistance in 0.1 M NaCl solution*’, Materials Science and Technology (MS&T18): October 14-18, 2018, Columbus, OH, USA
31. Oral Presentation on ‘*simple fabrication of stearic acid functionalized polypyrrole encapsulated melamine formaldehyde (SA/PPy/MF) superhydrophobic/superoleophilic macroporous sponge for oil-water separation*’, Materials Science and Technology (MS&T18): October 14-18, 2018, Columbus, OH, USA
32. Poster Presentation on ‘*Microstructural evolution and corrosion assessment in saline water of 2xx.0 aluminum alloys developed by squeeze casting technique*’, Materials Science and Technology (MS&T18): October 14-18, 2018, Columbus, OH, USA

33. Poster Presentation on '*Polymer-derived porous carbon spheres modified superhydrophobic melamine formaldehyde sponge (PCS@MF) for oil spill remediation*', Materials Science and Technology (MS&T18): October 14-18, 2018, Columbus, OH, USA
34. Oral Presentation on '*Antimony sulfide nanorods decorated onto reduced graphene oxide based anodes for sodium-ion battery*', International Symposium on Functional Materials (ISFM-2018): Energy and Biomedical Applications, April 13-15, 2018, Chandigarh, India
35. Oral presentation on "*Reduced graphene oxide decorated Sb nanoparticles: a high performance anode for sodium-ion batteries*", National Conference on Electrochemical Energy Storage and Conversion System (Battery-2017), Dec 15-16, 2017 at Kongunadu Arts and Science College, Coimbatore.
36. Poster presentation on "*Flower-like SnS₂ for photocatalytic dye degradation under visible light*", International Conference on Nanotechnology: Ideas, innovation and initiatives (ICN:3I-2017), Dec 06-08, 2017 at Indian Institute of Technology, Roorkee
37. Poster Presentation on '*Novel cost effective electrical energy storage device strategies for hybrid electric vehicles and grid storage*', 2nd Energy & Innovation, Canonsburg, PA, November 28-29, 2012, USA
38. Poster Presentation, 221st ECS Meeting, Seattle, WA, May 6-10, 2012, USA
39. Oral Presentation, 26th Annual Meeting on Fossil Energy Materials April 17-19, 2012, Pittsburgh, PA, USA
40. Paper Presentation, Magnesium Technology 2010 Symposium: The Minerals, Metals & Materials Society (TMS), Annual Meeting, Seattle, WA, 2010, USA
41. Poster Presentation, Magnesium Technology Session: The Minerals, Metals & Materials Society (TMS), Annual Meeting, San Francisco, CA, 2009, USA
42. Poster Presentation, Graduate Students Poster Contest: The Minerals, Metals & Materials Society (TMS), Annual Meeting, New Orleans, LA, 2008, USA
43. Oral and Poster Presentation, Annual Graduate Students Association Research Conference: The University of Alabama, Tuscaloosa, AL, 2008, 2009, USA
44. Poster Presentation, International Metallographic Society (IMS) Contest, 2008, 2009
45. Poster Presentation, AFS/FEF Student Technology Competition at CastExpo '2008

Book and Book Chapters

1. Book chapter by **Partha Saha** and Debasish Sarkar titled *Whiteware and Glazes* in '*Ceramic Processing Industrial Practices*', ISBN-10: 1138504084, ISBN-13: 978-1138504080, Publisher: CRC Press; 1st edition (3 July 2019).
2. Book chapter by **Partha Saha** and Debasish Sarkar titled *Miniaturization of Complex Ceramics* in '*Ceramic Processing Industrial Practices*', ISBN-10: 1138504084, ISBN-13: 978-1138504080, Publisher: CRC Press; 1st edition (3 July 2019).
3. Book chapter by **Partha Saha**, Tandra Rani Mohanta, and Abhishek Kumar titled *SEI layer and impact on Si anodes for Li-ion batteries* in '*Silicon Anode Systems for Lithium-Ion Batteries*', Publisher: Elsevier BV; 1st edition (2022) <https://doi.org/10.1016/B978-0-12-819660-1.00001-3>
4. Book chapter by Love Dashairya and **Partha Saha** titled *Recent Progress in Superhydrophobic Macroporous Sorbents for Oil Spill Remediation* in '*Functional Materials for the Oil and Gas Industry*', Publisher: CRC Press; 1st edition (6 September 2023) <https://doi.org/10.1201/9781003242550>

Patents and Disclosures

1. 'BIODEGRADABLE METAL ALLOYS' US Patent (9,510,932, 2016), Innovators: Prashant N. Kumta (University of Pittsburgh); Da-Tren Chou (University of Pittsburgh); Dae Ho Hong (University of Pittsburgh); **Partha Saha** (University of Pittsburgh) granted on 6th December 2016.
2. 'CATHODES AND ELECTROLYTES FOR RECHARGEABLE MAGNESIUM BATTERIES AND METHODS OF MANUFACTURE' (9,947,962, 2018), Innovators: Prashant N. Kumta (University of Pittsburgh); **Partha Saha** (University of Pittsburgh); Ayyakkannu Manivanna (DOE-NETL); and Monikanchan Datta (University of Pittsburgh), granted on 17th April 2018.
3. 'BIODEGRADABLE IRON-CONTAINING COMPOSITIONS, METHODS OF PREPARING AND APPLICATIONS THEREFOR' (11,376,349, 2022), Innovators: Prashant N. Kumta (University of Pittsburgh); Sung Jae Chung (University of Pittsburgh), **Partha Saha** (University of Pittsburgh), Oleg Velikokhatnyi (University of Pittsburgh), Monikanchan Datta (University of Pittsburgh); Dae Ho Hong (University of Pittsburgh); Da-Tren Chou (University of Pittsburgh) granted on 5th July 2022.
4. 'BIODEGRADABLE METAL ALLOYS', Japanese Patent (6431957, 2018), Innovators: Prashant N. Kumta (University of Pittsburgh); Da-Tren Chou (University of Pittsburgh); Dae Ho Hong (University of Pittsburgh); **Partha Saha** (University of Pittsburgh) granted on 9th November 2018.
5. 'BIODEGRADABLE METAL ALLOYS', European Patent (EP2764130B1, 2018), Innovators: Prashant N. Kumta (University of Pittsburgh); Da-Tren Chou (University of Pittsburgh); Dae Ho Hong (University of Pittsburgh); **Partha Saha** (University of Pittsburgh) granted on 6th March 2019.
6. 'SUPERHYDROPHOBIC AND SUPEROLEOPHILIC MACROPOROUS SUBSTRATE FOR OIL SPILL CLEANUP AND PROCESS FOR PROTECTING A METAL SURFACE FROM CORROSION' Indian Patent (412532, 2022), Innovators: Gopinath M (NIT Rourkela); Love Dashairya (NIT Rourkela), Yogendra Mahton (NIT Rourkela), Meeta Kambde (NIT Rourkela); **Partha Saha** (NIT Rourkela) granted on 25th November 2022.
7. "CATIONS CO-DOPING STRATEGIES FOR CYCLE STABLE NICKEL-RICH LAYERED OXIDE CATHODES IN LITHIUM-ION BATTERIES (554096, 2024)" Innovators: Abhishek Kumar (NIT Rourkela), Ranabrata Mazumder (NIT Rourkela), **Partha Saha** (NIT Rourkela), granted on November 11, 2024
8. "COBALT-FREE AND NICKEL-RICH OXIDE CATHODES: AN INITIATIVE TO SOLVE COBALT'S PROBLEMS IN LITHIUM BATTERY INDUSTRIES (554274, 2024)" Innovators: Abhishek Kumar (NIT Rourkela), **Partha Saha** (NIT Rourkela), Soumyasree Jena (NIT Rourkela), Sanjoy Datta (NIT Rourkela), granted on November 13, 2024
9. "PROCESS OF SYNTHESIZING CARBON COATED HOLLOW SILICON NANOTUBES AND THE SILICON NANOTUBES SO OBTAINED (554682, 2024) Innovators: Tandra Rani Mohanta (NIT Rourkela), **Partha Saha** (NIT Rourkela), granted on November 21, 2024

Faculty development/training activities

1. Conducted 3-day national webinar on "*Lithium-ion batteries and beyond-a perspective for future energy storage need*" during 23rd to 25th June 2022, at Department of Ceramic Engineering, NIT Rourkela

2. Attended 3-day national conference and MRITTIKA 2.0 (the 2nd Session of the Chapter) on "*Present Scenario and Future Trend in Ceramics and Allied Industries*" from 6th April to 8th April 2023, at Department of Ceramic Engineering, NIT Rourkela
3. Conducted IP Awareness/Training program under National intellectual property awareness mission conducted by Intellectual Property office and MoE's Innovation cell, India, National Institute of Technology, Rourkela, Odisha on February 8, 2023
4. Conducted 5-day Workshop on Unlocking Innovation: IPR Awareness, Strategies, and Challenges organized by Intellectual Property Innovation Centre (IPIC), NIT Rourkela, 8th -12th April 2024

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