Dr. Suresh Mamidi
Assistant Professor,
Department of Chemical Engineering,
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Experience

National Institute of Technology Agartala

Working as Assistant Professor in the Department of Chemical Engineering
September 2022 – Onwards

Jeonbuk National University, South Korea

Worked as postdoctoral researcher with Prof. In-Seok Seo in the division of advanced materials engineering.
November 2021 – August 2022

Indian Institute of Technology Hyderabad, India

Worked as Project Scientist in TATA Steel sponsored project led by Prof. Saptarshi Majumdar.
March 2021 – August 2021

Indian Institute of Technology Hyderabad, India

Worked as Institute Postdoctoral Fellow in Creative & Advanced Research Based On Nanomaterials (CARBON) Laboratory led by Dr. Chandra Shekhar Sharma.
June 2020 – December 2020

Education

Doctor of Philosophy in Chemical Engineering (2016-2020)

Indian Institute of Technology Hyderabad
Dissertation Title: Hard Carbon as Anode for Lithium-ion Batteries: Materials and Design Aspects
Supervisor: Dr. Chandra Shekhar Sharma

Master of Technology in Chemical Engineering (2014-2016) -CGPA- 9.08

Indian Institute of Technology Hyderabad
Research Project: Carbon Materials as Anode for Lithium-ion Batteries: Material and Design Aspects
Supervisor: Dr. Chandra Shekhar Sharma

Bachelor of Technology in Chemical Engineering (2010-2014) -83.02%- A (Excellent) grade

Jawaharlal Nehru Technological University Kakinada, Andhra Pradesh, India
Research Project: Removal of Manganese from Aqueous Solution using Limonia Acidissima Hull Powder as Cost Effective Adsorbent

Profession Recognition/Awards/Prize

- Recipient of SRG (Startup Research Grant, SERB, Govt. of India) Ref. No. SRG/2023/000594
- Recipient of N-PDF (National Postdoctoral Fellowship, India) Ref. No. PDF/2021/002821
- INYAS National Award 2020 for Research Excellence: Best PhD Thesis in the Area of Carbon Materials
- Best Thesis Poster Award at 2nd IISER Pune –KPIT International Energy & Mobility Ph.D. Conference held on Jan 30th and 31st 2020
- Best Student Award in CARBON Lab, Department of Chemical Engineering, IIT Hyderabad
- First Prize in International Science Image Competition organized by A. J. Drexel Nanomaterials Institute (DNI) Philadelphia in November 2019
- People's choice award for best image and 3rd Prize in Sci-Art competition organized by Indian National Young Academy of Science (INYAS) and IIT Hyderabad September-2019
- Best Oral Presentation in ChEmference 2018 organized by IIT Bombay held on May 19th & 20th

Professional Memberships

- Member of the Electrochemical Society – **42827**

Scientific Contributions

List of Publications

1. **Suresh Mamidi**, Baeksang Yoon, Dan Na, Roopa Kishore Kampara, Dae Young Lee, Cheul-Ro Lee, and Inseok Seo. "Candle soot-metal-organic framework-based hierarchical electrode as high-performance anode for Li-ion batteries." *Journal of Electroanalytical Chemistry* (**2023**): 117853.

2. Na Dan, Hyeonwoo Jeong, Baeksang Yoon, Roopa Kishore Kampara, **Suresh Mamidi**, Cheul-Ro Lee, Dong Ick Son, and Inseok Seo. $Li_{1.5}Al_{0.3}Si_{0.2}Ti_{1.7}P_{2.8}O_{12}$ inorganic solid electrolyte for high-performance all-solid-state Li-ion batteries. *Materials Today Advances* 19 (**2023**): 100389.

3. Jiyeon Baek, Baeksang Yoon, Hyeonwoo Jeong, Junho Jeong, **Suresh Mamidi**, Hyung-Kee Seo, Cheul-Ro Lee, and Inseok Seo. Dependences of ionic conductivity and activation energy on germanium content in superionic $Li_{1.4}Al_{0.4}Ge_xTi_{(1.6-x)}(PO_4)_3$ solid electrolytes *journal of electroanalytical chemistry* 920, 2 (**2022**): 116631

4. Hyeonwoo Jung, Dan Na, Jiyeon Baek, Sanggil Kim, **Suresh Mamidi**, Cheul-Ro Lee, Hyung-Kee Seo, Inseok Seo. Synthesis of superionic conductive $Li_{1+x+y}Al_xSi_yTi_{2-x}P_{3-y}O_{12}$ solid electrolytes.

Nanomaterials 12, 7 (**2022**): 1158.

5. Gangadharan Ananya, Suresh Kali, **Suresh Mamidi**, Anil D. Pathak, and Chandra S. Sharma. Carbon-MEMS based rectangular channel microarrays embedded pencil trace for high rate and high-performance lithium-ion battery application. *Materials Advances* 2, 23 (**2021**): 7741-7750

6. **Suresh Mamidi**, Darshna Potphode, Anil D. Pathak, and Chandra S. Sharma. 3D Carbon− Metal Oxide Composite Electrodes on Graphite ‐ Coated Stainless-Steel Substrate as a High ‐ Performance Anode for Lithium ‐ Ion Batteries. *Advanced Energy and Sustainability Research* 2, 12 (**2021**): 2100102.

7. **Suresh Mamidi**, Alok K. Pandey, Anil D. Pathak, Tata N. Rao, and Chandra S. Sharma. Pencil Lead Powder as a Cost-Effective and High-Performance Graphite-Silica Composite Anode for High Performance Lithium-ion Batteries. *Journal of Alloys and Compounds* 872 (**2021**) 159719.

8. **Suresh Mamidi**, Ananya Gangadharan, Anil D. Pathak, Tata N. Rao and Chandra S. Sharma. Three-Dimensional Hybrid Carbon-Microelectromechanical System on Graphite-Coated Stainless Steel Substrate as a High-Performance Anode for Lithium-Ion Batteries. *ACS Applied Energy Materials* 4, 1, (**2021**): 545–553

9. Pandey Alok K., **Suresh Mamidi**, and Chandra S. Sharma. Pencil lead based low cost and binder-free anode for lithium-ion batteries: effect of different pencil grades on electrochemical performance. *Proceedings of the Indian National Science Academy* (**2021**): 1-7

10. **Suresh Mamidi**, Anil D. Pathak, Ananya Gangadharan, and Chandra S. Sharma. Multiscale 3D Hybrid Microelectrodes with Candle Soot and reduced GO Nanoparticles: An Approach beyond 3D High Performance Li-ion Batteries. *Journal of Power Sources* 473 (**2020**): 228600

11. Ananya Gangadharan[#], **Suresh Mamidi[#],** Tata N. Rao and Chandra S. Sharma. Urea-modified Candle Soot for Enhanced Anodic Performance for Fast-charging Lithium-ion Battery Application. *Materials Today Communications* 23 (**2020**): 100926. #equal contribution

12. **Suresh Mamidi[#]**, Ananya Gangadharan[#], and Chandra S. Sharma. Graphite coated pyrolyzed filter paper as a low-cost binder-free and freestanding anode for practical lithium-ion battery application. *Electrochimica Acta* 310 (**2019**): 222-229. #equal contribution

13. **Suresh Mamidi**, Manohar Kakunuri, and Chandra S. Sharma. Fabrication of SU-8 Derived Three-Dimensional Carbon Microelectrodes as High Capacity Anodes for Lithium-Ion Batteries. *ECS Transactions* 85, 1 (**2018**): 21-27

14. **Suresh Mamidi**, Manohar Kakunuri, and Chandra S. Sharma. Resorcinol formaldehyde based carbon fibers as anode material for lithium ion batteries. *ECS Transactions* 77, 11 (**2017**): 331-337.

Publications under review

1. **Suresh Mamidi#**, Dan Na#, Baeksang Yoon, Cheul-Ro Lee, and Inseok Seo. *Safe and Stable Li-CO_2 Battery with a Novel Metal-Organic Framework Based Cathode Composite and Solid Electrolyte*. #equal contribution (*In review*)

List of Conferences Presentations

- Poster presentation under the theme Energy and Green Materials in the 28th AGM of MRSI held at IIT Bombay during February 13-15, 2017.
- Oral Presentation at ChEmference 2018 held at IIT Bombay during May 19 and 20, 2018 (Best Oral Presentation Award)
- Contributory oral presentation in the fourth International Carbon-MEMS meeting held at Hyderabad from December 5-7, 2018.
- Oral presentation in the National Conference on Carbon Materials, CCM-2019 held from 20-22 November 2019 at India Habitat Centre, New Delhi
- Poster presentation at 2nd KPIT Shodh Awards – IISER Pune, 30-31st January 2020 (Best Poster Award)
- Oral presentation under the theme of energy storage in the online CMEMS Conference held on July 1st-2nd, 2020 Online Platform.

Patents Filed

- Indian patent filed on "Method of Preparing Synthetic Anode Materials Using Demineralized Coal" Application Ref. No. 202231004700
- Indian patent filed on "Hierarchical Three-Dimensional Hybrid Carbon Microelectrode Arrays as an Anode For Energy Storage Devices" Application Ref. No. 202041023243
- Indian patent filed on "Methods of Production of Pencil Needle Powder Based Graphite-Silica Composite Electrode**"** Application Ref. No. 202141012545.

Research Skills

Analytical Techniques

- X-ray diffraction, X-ray photoelectron spectroscopy, Raman spectroscopy, FTIR spectroscopy, N_2 adsorption/desorption isotherms, scanning as well as high-resolution transmission electron microscopes, thermogravimetric analysis, and optical profiler.

- Cyclic voltammetry, electrochemical impedance spectroscopy, galvanostatic charge-discharge studies.

Experimental Skills

- Fabrication of Carbon Microelectronics and Mechanical systems (CMEMS), electrospinning, synthesis of various carbon materials, flame synthesis, Multiscale Hierarchical structures, carbon-metal oxide composites, ceramic solid electrolytes, and synthesis of metal-organic frameworks (MOFs).
- Electrodes fabrications for battery application, Coin cell/Swagelok cell assembly and Li-CO_2 battery assembly.

Instruments Handling

- Maskless lithography (Intelligent Micro Patterning), UV flood exposure (Bachur-n-Associates), scanning electron microscopy (Phenom ProX), optical Profiler (Nanomap D), optical microscope, electrospinning (E-spin), graphitizing furnace (3000 °C, MRF) and various high-temperature furnaces.
- Glove box, electrochemical workstations (BioLogic Instruments, Auto-Lab, and WonATech), potentiostat and battery cycler.

Research Interests

- Design and fabrication of high-performance 3D hierarchical multiscale electrode materials for micro-batteries and micro-supercapacitors, Synthesis solid electrolytes for Li-CO_2 batteries, critical data analysis of material and electrochemical characterizations.

Extra-Curricular Activities

- Conducted hand on sessions for the Technical Education Quality Improvement Program (TEQIP) workshops on MEMS and NEMS 2018. (Design and Fabrication)
- Won several intramural volleyball tournaments at IIT Hyderabad.
- Led the IIT Hyderabad volleyball team in the 53rd (IIT Guwahati) and 54th (IIT Bhubaneswar) Inter IIT sports meet.

Declaration

I hereby declare that the above-furnished details are true to the best of my conscience.

Date: 09 November 2023

Place: Jirania

Suresh Mamidi