BONGU CHANDRA SEKHAR
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POST-DOCTORAL EXPERIENCE

1St Post-doc	17th July 2017 to 16th July 2018 Title of the work: **Solid Electrolyte Interphase Formation on Anode Electrodes by Radiolysis** Supervisor: **Dr. Sophie LE CAER** NIMBE/LIONS, CNRS-CEA-Saclay, France.
2St Post-doc	1st September 2018 to 30th November 2019 Title of the work: **Biredox Ionic liquids for Supercapacitor applications** Supervisor: **Dr. Olivier Fontaine** ICGM-AIME, University of Montpellier, France.
3rd Post-doc	25th January 2021 to 9th December 2021 Title of the work: **Scientific Understanding and Technical Development of Metal-CO2 Battery with CO2 as an Energy Carrier for India's Mars Mission"** Supervisor: **Dr. Chandra Sekhar Sharma** Carbon Lab, IIT Hyderabad, India.
4th Post-doc	10th December 2021 to Till date Title of the work: **Lithium Sulfur Battery for High Temperature Applications.** Supervisor: **Dr. Edreese Alsharaeh** College of Science and General Studies, Alfaisal University, Saudi Arabia.

ACADEMIC RECORD

Ph.D. (Chemical Science) Dec'11- June' 17
Title of the Thesis: **Alternative Electrodes and Electrolytes for Lithium Battery**
Supervisor: Dr. N. Kalaiselvi,
Director General of CSIR, India

M. Sc. (Chemistry) 2006- 2008
Andhra University, Andhra Pradesh, India

B. Sc. (Chemistry) 2003-2006
Andhra University, Andhra Pradesh, India

B. Ed. 2010- 2011
Acharya Nagarjuna University, Andhra Pradesh.

PUBLICATIONS

1. Nanoflake driven Mn_2O_3 microcubes modified with cooked rice derived carbon for improved electrochemical behaviour. **Bongu Chandra Sekhar**, Ganguli Babu and N. Kalaiselvi, ***RSC Advances***, 2015, 5, 4568**. (IF: 4.03)**
2. Pristine Hollow Microspheres of Mn_2O_3 as Potential Anode for Lithium-Ion Batteries. **Bongu Chandra Sekhar** and N. Kalaiselvi, ***Crys.Eng.Comm.,*** 2015, 17, 5038. **(IF: 3.75)**
3. Validation of Green Composite Containing Nanocrystalline Mn_2O_3 and Biocarbon Derived from Human Hair as a Potential Anode for Lithium-ion Batteries, **Bongu Chandra Sekhar**, KR. Saravanan and N. Kalaiselvi, ***J. Mater. Chem. A***, 2015, 3, 23981. **(IF: 12.73)**
4. Exploration of $MnFeO_3$/Multiwalled Carbon Nanotubes Composite as Potential Anode for Lithium-Ion Batteries, **Bongu Chandra Sekhar**, R. Jeevani and N. Kalaiselvi ***(ACS Inorganic Chemistry, 2016, 55, 11644)*** **(IF: 5.43)**
5. Synergistic Effect of Flakes Containing Interconnected Nanoparticles and Conducting Graphene Additive to Qualify $ZnMn_2O_4$ as Potential Lithium Battery Anode, **Bongu Chandra Sekhar**, P. Packiyalakshmi and N. Kalaiselvi ***(ChemElectoChem, 2017, 4, 1154)*** **(IF: 4.78)**
6. Green Solid Ionic liquid crystalline electrolyte membranes with anisotropic channels for efficient Li-ion batteries, Renjith Sasi, **Bongu Chandra Sekhar**, Nallathamby Kalaiselvi and Sudha J Devaki ***(Adv. Sustainable Syst. 2017, 1600031)*** **(IF: 6.73)**
7. Easy synthesis of microporous/mesoporous cobalt organic framework as binder less lithium-ion battery electrode, MP Prakash Sengodu, **Bongu Chandra Sekhar**, Muthuraja Perumal, ***(J. Alloys and Compd., 2017, 714, 603)*** **(IF: 6.37)**
8. Custom designed $ZnMn_2O_4$/nitrogen doped graphene composite anode validated for sodium ion battery application. **Bongu Chandra Sekhar**, P. Packiyalakshmi and Nallathamby Kalaiselvi ***(RSC Adv., 2017, 7, 20057)*** **(IF: 4.03)**
9. Ex situ solid electrolyte interphase synthesis via radiolysis of Li-ion battery anode–electrolyte system for improved coulombic efficiency. Fanny Varenne, John P. Alper, Frederic Miserque, **Bongu Chandra Sekhar**, Adrien Boulineau, Jean-Frederic Martin, Vincent Dauvois, Alexandre Demarque, Mickael Bouhier, Florent Boismain, Sylvain Franger, Nathalie Herlin-Boime and Sophie Le Caer* ***(Sustainable Energy & Fuels, 2018, 2, 2100)*** **(IF : 8.26)**

10. Domestic Food Waste Derived Porous Carbon for Energy Storage Applications, P. Packiyalakshmi, **Bongu Chandra Sekhar** and N. Kalaiselvi* ***(ChemistrySelect, 2019, 4, 8007)*** **(IF: 2.30)**
11. Artificial Solid Electrolyte Interphase Formation on Si Nanoparticles through Radiolysis: Importance of the Presence of an Additive, **Bongu Chandra Sekhar**, Suzy Surblé, John P. Alper, Adrien Boulineau, Jean-Frédéric Martin, Alexandre Demarque, Pierre-Eugène Coulon, Michel Rosso, François Ozanam, Sylvain Franger, Nathalie Herlin-Boime and Sophie Le Caër *(***J. Phys. Chem. C, 2019, 47, 28550)*** **(IF: 4.17)**
12. Evaluation of the Properties of an Electrolyte Based on Formamide and LiTFSI for Electrochemical Capacitors, **Bongu Chandra Sekhar**, Charlotte Bodin, Steven le Vot1, Frédéric Favier and Olivier Fontaine* (***J. Electrochem. Soc, 2020, 167, 110508)*** **(IF: 3.721)**
13. Competitive salt precipitation/dissolution during free-water reduction in water-in-salt electrolyte, Roza Bouchal, * Zhujie Li, **Chandra Sekhar Bongu**, Steven Le Vot, Romain Berthelot, Benjamin Rotenberg, Frederic Favier, Stefan A. Freunberger, Mathieu Salanne and Olivier Fontaine ***(Angewandte Chemie, 2020, 132, 16047*) (IF: 16.82)**
14. Shuttle effect quantification for redox ionic liquid electrolyte correlated to the coulombic efficiency of supercapacitors, Charlotte Bodin, **Chandra Sekhar Bongu**, Mathieu Deschanel, Sylvain Catrouillet, Steven Le Vot, Frédéric Favier and Olivier Fontaine* **(*Batteries & supercaps*, *2020, 3, 1193*.) (IF: 6.04)**
15. Reduced graphene oxide/hexagonal boron nitride-based composite as a positive electrode in asymmetric supercapacitors, Nada Althubaiti, Yasmin Mussa, **Bongu Chandra Sekhar**, Zahra Bayhan, Muhammad Arsalan, Abdulrahman Soliman, Edreese Alsharaeh, **(*J. Mater. Sci*., *2022, 57, 14371*.) (IF: 4.68)**
16. Candle Soot Nanoparticles vs. Multiwalled Carbon Nanotubes as a High-Performance Cathode Catalyst for a Li-CO_2 Mars Battery for Mars Exploration, Chourasia, Ankit Kumar, Shavez Mohd, Naik Keerti, **Bongu Chandra Sekhar**, Sharma Chandra, **(*ACS Appl. Energy Mater*. 2023, 6, 1, 378–386) (IF: 6.95)**
17. In Situ/Operando Characterization Techniques: The Guiding Tool for the Development of Li–CO_2 Battery, Chourasia, Ankit Kumar, AD Pathak, **Bongu**

Chandra Sekhar, K Manikandan, S Praneeth, Keerti M Naik, Sharma Chandra, **(*Small Methods*., 2022, 6, 2200930). (IF: 15.36)**

18. Flexible and Freestanding MoS_2/Graphene Composite for High-Performance Supercapacitors, **Bongu Chandra Sekhar,** Yasmin Mussa, Sara Aleid, Muhammad Arsalan, and Edreese H. Alsharaeh, **(*ACS Omega* 2023, 8, 40, 36789–36800) (IF: 4.1).**

19. High Performance and Long-cycling Bi-functional Carbon Electrodes Derived from Amla for Potassium ion Batteries and Supercapacitors, **Bongu Chandra Sekhar**, Arthi Gopalakrishnan, and Chandra Shekhar Sharma, **(*New J. Chem.,* 2024, 48, 1130-1140) (IF: 3.3).**

20. Ginger-Derived and Hierarchical Porous Carbon as an Anode Material for Potassium-Ion Batteries, **Bongu Chandra Sekhar** and Chandra Shekhar Sharma, **(*Mater. Adv.,* 2024, 5, 632-641) (IF: 5.0).**

21. Blackberry Seeds Derived Carbon as Stable Anode for Lithium-Ion Batteries, **Bongu Chandra Sekhar,** Abeer Khan, Muhammad Arsalan, and Edreese H. Alsharaeh, **(*ACS Omega* 2024, 9, 14, 16725–16733) (IF: 4.1).**

22. 2D Hybrid Nanocomposites Materials (h-BN/G/MoS2) as a High-Performance Supercapacitor Electrode, **Bongu Chandra Sekhar,** Muhammad Arsalan, and Edreese H. Alsharaeh, **(*ACS omega* 2024, 9, 13, 15294-15303) (IF: 4.1).**

23. Graphene-Based 2D Materials for Rechargeable Batteries, Hydrogen Production and Storage-A Critical Review, **Bongu Chandra Sekhar**, Sehar Tasleem, Mohan Raj Krishnan and Edreese H. Alsharaeh, (***RSC Sustainable Energy Fuels***, **2024, 8, 4039-4070) (IF:5.0).**

24. A 2D hybrid nanocomposite: a promising anode material for lithium-ion batteries at high temperature, **Bongu Chandra Sekhar**, Abdelrahman Soliman, Muhammad Arsalan and Edreese H. Alsharaeh, (***Nanoscale Adv.,* 2024, 6, 5612-5624) (IF:4.6).**

25. Navigating the hydrogen prospect: A comprehensive review of sustainable source-based production technologies, transport solutions, advanced storage mechanisms, and CCUS integration, Sehar Tasleem, **Bongu Chandra**

Sekhar, Mohan Raj Krishnan, Edreese H. Alsharaeh, **(*J. Energy Chem.*, 2024, 97, 166-215) (IF: 14.9).**

26. Biowaste Derived Carbon as Electrode Material for Sodium Batteries and Capacitors, **Bongu Chandra Sekhar**, and Edreese H. Alsharaeh, **(Materials Advances, 2025, 6, 6856-6867) (IF: 4.7).**

27. Recent Developments and Prospects on Functional Graphene-Based Nanocomposites as Potential Sulfur Hosts for Next-Generation Lithium-Sulfur Batteries, Mohan Raj Krishnan, **Bongu Chandra Sekhar**, and Edreese H. Alsharaeh, **(Energy & Environmental Materials, 2025, 8, 5, e70032) (IF: 14.1).**

28. 2D (Boron Nitride/Graphene/Molybdenum Disulfide) Composite-Modified Separator for High-Performance Li–S Batteries, **Bongu Chandra Sekhar,** T Shafaut, and Edreese H. Alsharaeh, **(ACS Energy & Fuels, 2025, 39, 33, 15876–15887) (IF: 5.3).**

29. Comparative Study of Acid-Modified g-C_3N_4 Coupled 2D Flower-Like Flakes vs. Nanoparticulate NiO: Aluminum-Modified gCN/2D Flaked NiO for Efficient Morphology-Driven Hydrogen Evolution, Sehar Tasleem, **Bongu Chandra Sekhar**, and Edreese H. Alsharaeh, **(Fuel, 2025, 406, 136898) (IF: 7.5)**

CONFERENCES

1. Oral Presentation in the **"Twelfth International Symposium on Advances in Electrochemical Science and Technology, (ISAEST-12)",** held during 8-10, January, 2019 at Hotel Trident, Chennai.
2. Presented a poster entitled **"Investigation of MnFeO3/Multiwalled Carbon Nanotubes Composite as Potential Anode for Lithium-Ion Batteries, (18th IMLB)",** held in Chicago, Illinois, U.S.A 19-24, June, 2016.
3. Participated in **"EMSI-2015"** workshop held at Vasi, Navi Mumabai, 8-10, July, 2015.
4. Participated in **2nd Indo-US workshop** held at CSIR-CECRI, Karaikudi, India, 19-20, June, 2015.
5. Presented a paper **"Facile Synthesis of Hollow Mn_2O_3 Microspheres as a Potential Anode Material for Lithium-Ion Batteries, 13th Eurasia Conference on Chemical Sciences (EUASC2S-13)",** held at Bangalore, India, 14- 18, December, 2015.

6. Attended **"Professor Doron Aurbach's School on Advanced Batteries and Supercapacitors" organised by the India section of the "Electrochemical Society 6 (ECS)"** during 13-15, May, 2014 at Hotel JC Residency, Kodaikanal, Tamil Nadu, India.
7. Presented a paper in the **"International Conference on "Recent Advances in Textile and Electrochemical Sciences-2013 (RATES-2013)"** at Alagappa University, Karaikudi during 21-23, March, 2013.
8. Presented a paper in the **"Tenth International Symposium on Advances in Electrochemical Science and Technology (ISAEST-10)"** held during January 28-30, 2013 at Hotel Green Park, Chennai.
9. Participated in **"Asian Conference on Electrochemical Power Sources (ACEPS-6)"** held during January 5-8, 2012 at Hotel Green Park, Chennai.

AWARDS

1. Awarded **Junior Research Fellow (JRF) (0467/1067 rank)** from the University Grants Commission in the year of December-2010.
2. Subsequently assessed by an expect committee in 2013 and recommended for **UGC-SRF.**
3. Qualified B.ed examination state level rank **1004 in 2009**
4. **Second Prize in oral presentation** in the National Science Day celebrations at CSIR- Central Electrochemical Research Institute, Karaikudi on February 28th, 2015.

Supervising and Mentoring

I also trained and supervised research of master (3 members) and Ph.D co-workers (7 members).

Experimental /Analytical Skills

Electrochemical techniques

1. Experience in handling with electrochemical workstation - Autolab, Arbin, Biologic VMP3 and VSP.
2. Cyclic Voltammetry, Chronopotentiometry, Linear sweep voltammetry, etc.
3. Galvanostatic and Potentiostatic electrolysis.

Analytical techniques

1. X-ray Diffraction (XRD).

2. Scanning Electron Microscopy (SEM).
3. Transmission Electron Microscopy (TEM).
4. Atomic Force Microscopy (AFM).
5. Glove box.

Spectroscopic techniques

1. FT-IR, UV-Visible, XPS.
2. Laser Raman Microscope.
3. Interpretation of spectroscopic results.

Work Style /Strength

1. Hard working, Passion for R&D, Team spirit, Self-motivated, designing of newer flowcharts related to work, Dedication with Tireless attempts.
2. Tendency to learn new knowledge and adapt to new working environments quickly.

Research Interests

1. Optimization of synthesis procedures to prepare nano/porous materials and composites for energy storage and conversion (Li-ion batteries).
2. The synthesis - structure –morphology- property relationship of electrode materials.
3. Transition metal oxides based materials for different energy storage application.
4. By using radiolysis as a tool to find a suitable anode material for lithium-ion batteries.
5. Different types of electrodes (carbon and transition metal oxides) and electrolytes (Ionic liquids and biredox ionic liquids) for supercapacitor applications.

Declaration

I hereby declare that the above-mentioned details are true to the best of my knowledge.

Yours Sincerely,

(BONGU CHANDRA SEKHAR)