

HARISH BANDA

Assistant Professor of Chemistry

University of Texas at El Paso, Texas, hbanda1@utep.edu, 915-747-8778

Research Interests

Electrochemical energy storage in rechargeable devices; Lithium-ion, Sodium-ion, and supercapacitors

Professional Appointment

Sept 2022 – Present **The University of Texas, El Paso**
Department of Chemistry
Tenured-track Assistant Professor

Feb 2019 – Aug 2022 **Massachusetts Institute of Technology (MIT), Cambridge, MA**
Department of Chemistry
Postdoctoral Associate
Advisor: Prof. Mircea Dincă

Education

Oct 2015 – Oct 2018 **Ph.D. in Chemistry**
University of Grenoble Alpes
Advisors: Prof. Florence Duclairoir & Prof. Lionel Dubois
Dissertation title: *“Development of Graphene-based Composite Materials for Electrochemical Energy Storage Applications”*

Aug 2010 – May 2015 **BS-MS in Chemistry**
Indian Institute of Science Education and Research, Trivandrum, India
Advisors: Prof. Mahesh Hariharan & Prof. M.M. Shaijumon

Awards & Honors

2022 **Texas Rising Star Award**
Awarded \$300,000 as research support for promising faculty

2022 **INSPIRE Faculty Award**
Selected for 5-year research support sponsored by Ministry of Higher Education in India

2018 **Global Young Scientists Summit Delegate**
Nominated as one of the three delegates from France to attend Global Young Scientists Summit in Singapore

2017 **Best Student Presenter Award**
Award at the International Conference on Carbon Materials for Energy Storage, France

2015 – 2018 **Graduate Student Scholarship**
Awarded by the French Commission for Alternative Energies and Atomic Energy (CEA)

2010 – 2015 **INSPIRE Fellowship**
Award by the Department of Science & Technology, India

2013	National Quiz Finalist Runner-up at the national competition organized by the Indian Association for Hydrogen Energy and Advanced Materials (IAHEAM)
2002 – 2007	National Scholarship for Sponsored Schooling Awarded by the Ministry of Education in India and selected through a nationwide exam

Publications ([Google Scholar](#), [ORCID](#))

(* Corresponding Author)

- [15] Dontireddy, G.M.R.; Suman, S.P.; **Banda, H.*** “Insights into Stability and Degradation Pathways of Two Dimensional Metal Organic Frameworks in Electrochemical Energy Storage Device” *Journal of Materials Chemistry A, Invited, In Preparation*
- [14] Suman, S.P.; Dontireddy, G.M.R.; Chen, T.; Dou, J-H.; **Banda, H.*** “A Layered Organic Cathode for High-Energy, Fast-Charging, and Long-Lasting Li-ion Batteries” *ACS Energy Letters, Submitted*
- [13] **Banda, H.**; Chen, T., Dincă, M. “A Layered Organic Cathode for High-Energy, Fast-Charging, and Long-Lasting Li-ion Batteries” *ACS Central Science, In Press*
- [12] **Banda, H.**; Chen, T., Dincă, M. “High-Rate Energy Storage in Hydrogen-Bonded Fused Aromatic Molecules” *Joule, 2023, 7, 986-1002*
- [11] **Banda, H.**; Dou, J.-H.; Chen, T.; Zhang, Y.; Dincă, M. “Dual-Ion Intercalation and High Volumetric Capacitance in a Two-Dimensional Non-Porous Coordination Polymer” *Angewandte Chemie International Edition, In press: DOI issued*
- [10] **Banda, H.**; Dou, J.-H.; Chen, T.; Libretto, N. J.; Chaudhary, M.; Bernard, G. M.; Miller, J. T.; Michaelis, V. K.; Dincă, M. “High-Capacitance Pseudocapacitors from Li⁺ Ion Intercalation in Nonporous, Electrically Conductive 2D Coordination Polymers” *Journal of the American Chemical Society, 2021 143 (5), 2285–2292*
- [9] Bi, S.; **Banda, H.**; Chen, M.; Niu, L.; Chen, M.; Wu, T.; Wang, J.; Wang, R.; Feng, J.; Chen, T.; Dincă, M.; Kornyshev, A. A.; Feng, G. “Molecular Understanding of Charge Storage and Charging Dynamics in Supercapacitors with MOF Electrodes and Ionic Liquid Electrolytes” *Nature Materials 2020, 19 (5), 552–558*
- [8] **Banda, H.**; Lee, D.; Périé, S.; Marcucci, C.; Dubois, L.; Taberna, P.-L.; Simon, P.; Taberna, P.-L.; De Paëpe, G.; Duclairoir, F. “Revealing Electrolytic Ion-Sorption in Layered Graphene Galleries Through Low-Temperature Solid-State NMR” *Chemistry of Materials, 2023, 35, 10, 3841-3848*
- [7] **Banda, H.**; Périé, S.; Daffos, B.; Taberna, P.-L.; Dubois, L.; Crosnier, O.; Simon, P.; Lee, D.; De Paëpe, G.; Duclairoir, F. “Sparsely Pillared Graphene Materials for High-Performance Supercapacitors: Improving Ion Transport and Storage Capacity” *ACS Nano 2019, 13 (2), 1443–1453*
- [6] **Banda, H.**; Périé, S.; Daffos, B.; Dubois, L.; Crosnier, O.; Simon, P.; Taberna, P.-L.; Duclairoir, F. “Investigation of Ion Transport in Chemically Tuned Pillared Graphene Materials through Electrochemical Impedance Analysis” *Electrochimica Acta 2019, 296, 882–890*
- [5] **Banda, H.**; Daffos, B.; Périé, S.; Chenavier, Y.; Dubois, L.; Aradilla, D.; Pouget, S.; Simon, P.; Crosnier, O.; Taberna, P.-L.; Duclairoir, F. “Ion Sieving Effects in Chemically Tuned Pillared Graphene Materials for Electrochemical Capacitors” *Chemistry of Materials 2018, 30 (9), 3040–3047*
- [4] **Banda, H.**; Aradilla, D.; Benayad, A.; Chenavier, Y.; Daffos, B.; Dubois, L.; Duclairoir, F. “One-Step Synthesis of Highly Reduced Graphene Hydrogels for High Power Supercapacitor Applications” *Journal of Power Sources 2017, 360, 538–547*

- [3] **Banda, H.**; Damien, D.; Nagarajan, K.; Raj, A.; Hariharan, M.; Shaijumon, M. M. "Twisted Perylene Diimides with Tuneable Redox Properties for Organic Sodium-Ion Batteries" *Advanced Energy Materials* 2017, 7 (20), 1701316
- [2] **Banda, H.**; Damien, D.; Nagarajan, K.; Hariharan, M.; Shaijumon, M. M. "A Polyimide Based All-Organic Sodium Ion Battery" *Journal of Materials Chemistry A* 2015, 3 (19), 10453–10458
- [1] Sarkar, S.; **Banda, H.**; Mitra, S. "High-Capacity Lithium-Ion Battery Cathode Using LiV₃O₈ Nanorods" *Electrochimica Acta* 2013, 99, 242–252

Patents

- [4] Dincă, M.; **Banda, H.**; Chen, T. "Rechargeable Batteries, Including Organic Batteries" PCT/US2022/047839, Filed on September 21 2022
- [3] Dincă, M.; **Banda, H.**; Chen, T. "Fused Aromatic Molecules as Electrode Materials" PCT/US2022/013925, Filed on August 19 2021
- [2] Dincă, M.; Dou, J.-H.; Borysiewicz, M.; Parenti, R.; **Banda, H.** "Metal-Organic Frameworks for Supercapacitor Electrodes" US Patent No. US20210098203A1 & EU Patent No. EP3830850A1
- [1] Gentile, P.; **Banda, H.**; Duclairoir, F. "Process for Manufacturing Composite Consisting of Graphene Monolith and Silicon" EU Patent No. EP3401293A1

Workshops & Meetings

Oral Presentations

- NSF PREM CMR, UTEP, 2024
- Additive manufacturing of batteries, UTEP, 2023
- NSF PREM Seminar, UTEP, 2023
- Graduates Orientation, UTEP, 2023
- Lamborghini S.p.A, Modena, Italy, 2019
- Materials Research Society Spring Meeting, Phoenix, 2018
- Molecular Systems and Nanomaterials for Energy and Health (SyMMES), Grenoble, France, 2018
- International Conference on Carbon Materials for Energy Storage, Lyon, France, 2018
- Molecular Systems and Nanomaterials for Energy and Health (SyMMES), CEA, Grenoble, 2017
- Indo-US Workshop on Engineered Electrodes for Energy Storage, Trivandrum, India 2015
- Indo-US Workshop on Engineered Electrodes for Energy Storage, Karaikudi, India, 2014

Poster Presentations

- International Conference on Carbon Materials for Energy Storage, Lyon, France, 2018
- Global Young Scientists Summit, Singapore, 2018
- Department of Chemistry, University of Grenoble, France 2018
- International Meeting on Lithium-Ion Batteries, Chicago, 2016
- Graphene Flagship Winter Workshop, Les Houches, France, 2015

Professional Preparation

2022 – Present **PhD Thesis Advisor**
 UTEP

2020	Kaufman Teaching Certificate Program MIT <i>A semester-long course that teaches future faculty modern pedagogical approaches</i>
2020	Shutdown STEM Department of Chemistry, MIT <i>A day-long workshop series as part of an initiative from a multi-identity, intersectional coalition of STEM academics taking action for Black lives</i>
2019	Research Mentor The Dincă lab, Department of Chemistry, MIT <i>Mentored 1 undergraduate students: Angela Y Cai</i>
2017	Research Mentor CEA, France <i>Mentored 2 French-speaking undergraduate students: Sandy Périé & Coralie Marcucci</i>

Peer Review Service

DOE – BES RENEW FOA	2022
ACS – Chemistry of Materials	2019: 1
ACS – Applied Nano Materials	2019: 1
ACS – Journal of American Chemical Society	2022:2
ACS – Energy Letters	2022:1
RSC – Chemical Science	2019 – 2020: 3
RSC – Journal of Materials Chemistry A	2016: 1
Wiley – Batteries & Supercapacitors	2019: 1
Elsevier – Electrochemistry Communications	2017 – 2019: 2
Journal of Coordination Chemistry	

Service

2023 – Present	Dissertation committee member for 3 PhD students
2023 – Present	Department of Chemistry & Biochemistry EH&S Committee
2022 – Present	Department of Chemistry & Biochemistry Awards Committee
2019 – 2020	Served as an elected member for 1600-people MIT-Postdoctoral Association (PDA) Helped launch social, professional and DEI initiatives by the MIT-PDA Worked with MIT Vice President Prof. Maria Zuber and the MIT corporation to enhance child-care and housing facilities for Postdoc families during the COVID-19 pandemic
2015	Proposed and led a team of 40 peers to design and launch a blog on graduate admissions at universities in India, Europe and US. It was intended to be an aid for undergraduates.