DR. NUJUD BADAWI

-University of Hafr Al–Batin College of Science, Department of Physics,
Hafer Al-Batin 39921, Saudi Arabia

Email nujuds@uhb.edu.sa

Phone +966560047380

https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.researchgate.net/profile/Nujud-Badawi&ved=2ahUKEwjJpPf51qyIAxWghP0HHevNBQQFnoECBMQAQ&usg=AOvVaw2RBjevTyh058Wan1qv_Tba

-https://orcid.org/0009-0005-9216-4444

https://sdgswhoswho.org/listing/nujud-badawi/

-https://www.webofscience.com/wos/author/rid/AAZ-2452-2020

Education

-Bachelor's degree from Northern Border University with an excellent grade and first class honors

-Master's degree in solid physics from Umm Al-Qura University with an excellent grade and first class honors

-Doctorate in Physics from the University of Malaysia with an excellent grade with first class honours

-English language from the University of Cleveland, Ohio in America

Languages

Arabic language - English language - Malay language

Authors' Biography

DR. NUJUD BADAWI

Dr. NUJUD M BADAWI is a material scientist experienced in preparation, development and characterization of polymer and polymer electrolytes as a source of energy for use in various electrochemical devices. The novelty of her research was the successful invention of highly adhesive polymer membranes, Conductive fabric, environmentally friendly polymer electrolytes and techniques in the fabrication of green electrochemical devices. Dr. NUJUD BADAWI is well recognized in her field, internationally and locally, evidenced by the many international and national awards she has received. She is a Member of Saudi Chemical Society. She holds a bachelor's degree in general physics, a master's degree in solid state physics, and a phd in physics. She worked at Centre For Ionics Universiti Malaya (C.I.U.M). Department of Physics,. Faculty of Science. Universiti Malaya.50603 Kuala Lumpur, Malaysia. She

has authored number of research papers published in peer reviewed Journals of International commendation and conference papers. She is an expert in polymer material, transition metal oxide/sulfides/CNTs/ graphene materials synthesis, characterization, and their application in energy storage and energy harvesting.

AREA OF RESEARCH INTEREST

-3D,2D And 1D Nanomaterials

-Thin Films

-Graphene and Carbon nanotubes (CNT) (SWCNTs and MWCNTs) Technology

-Conductive cotton

-Sensors: Biosensors

-Energy Storage Technologies: Battery and Supercapacitor **"electrode And electrolytes"**

-solid-state electrolytes **"Hydrogel"**

Conferences Attended

-Poster Presentation – "Eco-friendly Arabic Gum/Graphene (AGG) Composites as Solid-State Electrolytes" The First Conference of Innovation and Entrepreneurship in Saudi Universities (Idea, Invention & Impact Track), 2025.

-Research Participation – The 25th Scientific Forum for Hajj, Umrah, and Visit Research, Umm Al-Qura University, 2025 ,Presented research titled "From Waste to Energy: Activated Carbon and Hydrogel Supercapacitor Derived from Date Seed Waste for Pilgrim Infrastructure Applications."

-The first Gulf Chemistry International Conference & Exhibition

(GCA-2022) Technical Committee.

- Photovoltaic Energy Technologies Conference in the Middle East and North Africa 2024,Date Time: Mar 28, 2024 11:00 Riyadh , 2 occurrence(s).

-Education Department in Hafar Al-Batin Governorate, Educational Affairs, Capacity Development for the year 2025.

AWARDS AND ACHIEVEMENTS " Exhibitions"

-1st Place Winner – Healthy Longevity Track (Genetics & Biotechnology), Health Datathon 2025, organized by the Saudi Ministry of Health, Hevolution Foundation, and Misk Foundation, Awarded for developing an innovative biotechnology solution advancing healthy lifespan extension.

-1st Place Winner – Community Entrepreneurship Track, "Athar Hackathon," The First Conference of Innovation and Entrepreneurship in Saudi Universities (King Abdulaziz University, 2025), Awarded or developing a high-impact social innovation addressing community challenges.

-1st Place – Applied Sciences and Technology Research Track, The 2nd Scientific Forum, Northern Borders University, 2025.

-2nd Place Winner – "Power Bank" Project ,
Electrathon 2025, organized by the Saudi Electricity Regulatory Authority,
Recognized for developing an innovative sustainable energy storage solution addressing future electricity challenges.

-Gold Medal From International Invention, Innovation & Technology Exhibition ;ITEX 2021

-Best of the Best Award from International Invention, Innovation & Technology Exhibition ;ITEX 2021

-Gold Medal from International Invention, Innovation & Technology Exhibition ;ITEX 2023

-The CLIMATE CHANGE AWARD from International Invention, Innovation & Technology Exhibition ;ITEX 2023

-Bronze medal in AIREX 2022.

Positions and assignments:

-Member of the Entrepreneurship Center under the Deanship of Graduate Studies and Scientific Research for the year 2025-2026.
- Content reviewer for the General Physics 2 course in e-learning for the year 2024.
- Head of the Scientific Research Committee, College of Science, Hafar Al-Batin University 2024-2025.
- Member of the Saudi Society of Arab Chemists 2023 and 2024, King Saud University, Riyadh.
- Supervising public education students within the Mawhiba Program, Education Department in Hafar Al-Batin Governorate, Educational Affairs, Capacity Development for the year 2024-2025.
- Supervising male and female students in general education, as part of the King Abdulaziz Foundation 2025 initiative.
- 2025 Springer, International Journal of Ionics, peer reviewed.
- Supervising research projects for graduation for the first and second semesters of the year 1446 AH.
- Supervising the Creativity and Innovation Booth and the College of Science Booth at the Career and Employment Day Exhibition, Hafar Al-Batin University 2025.
-Supervising the College of Science booth at the cultural exhibition, Hafar Al-Batin University, 2025.
- Member of both: Physics Department Certificate Accreditation Committee, Extracurricular Activities Committee, Quality Committee 2024-2025.
- Head of the Extracurricular Activities Committee at the College of Science for the years: 2015, 2016, 2017, 2018.

Workshops and courses Attended

-Kaizen Methodology, the Journey of Continuous Improvement in the Work Environment, Cheminaz, 4/28/2025.

- Scientific concepts for developing chromatographic analysis methods, Cheminaz, 2025\3\17.

- The Key to Leadership and Persuasion presented by the Misk Professional Preparation Program at Misk Skills 2025 Mar 17.

- Improving the ROI of Solar Photovoltaic Projects in the Kingdom of Saudi Arabia Course 2025-4-23 Organized by Solarabic

- Investment skills in human development May 4, 2025 Mahara Program, Islamic Economic Club.

- XRF AND XRD fundamentals and applications4/21/2025 Chiminase.

-Artificial Intelligence Skills in Higher Education, Mahara Program, April 13, 2025.

- Skills required for the job and the labor market April 6, 2025 Kuwait University.

- "Meeting: Between Entrepreneurship and Innovation: Present Challenges and Future Opportunities" presented by the Misk Professional Preparation Program at Misk Skills. 2025, March 11.

-Skills of a Successful Educational Leader in the Age of Artificial Intelligence, part of the accompanying program for the Conference on Foreseeing the Future of Education in the Age of Artificial Intelligence, May 6-7, 2025.

-Artificial Intelligence and Big Data, part of the accompanying program for the conference “Foreseeing the Future of Education in the Age of Artificial Intelligence,” May 6-7, 2025, for three hours.

- SCISPACE Research Paper Explorer to be used in scientific research January 28, 2025.

- Activity-based learning strategies, Eve’s Space Program, Economic Club, Kuwait University, February 25, 2025.

- Cheminar: Scientific Concepts for Developing Chromatographic Analysis Methods: Foundations and Applications 2025, March 17, Riyadh

- Cheminar: Uncertainty calculations and their importance in the validity of laboratory results, February 17, 2025. Chemical Research and Innovation Association.

- Skills required for the job and the labor market, Mahara Program, Kuwait University, February 16, 2025.

- Skills in employing artificial intelligence tools in planning and data analysis. Mahara Program, February 11, 2025.

- Identify the requirements of the Laboratory Quality Management System 17025: ISO 2017, held on January 20, 2025, Chemical Research and Innovation Association, Cheminar

- Change leadership skills: the art of turning challenges into opportunities for success, Mahara Program, February 9, 2025.

- Formulating previous studies in research, Eve's Space Program, Kuwait University, February 4, 2025.

-Using Google in Scientific Research June 30, 2024 Kuwait University.
- Enhance your skills and prepare for the job market, presented by the Misk Professional Preparation Program at Misk Skills 2024.

-Skill of creating creative ideas, June 2, 2024, Mahara Program, Kuwait University.
-Common errors in scientific research May 11, 2024 Islamic Economics Club Kuwait University.

-Using the SCISPACE research paper explorer in scientific research, Rajab 28, 1446 AH, Islamic Economics Club.

-Microsoft Word Problem Solving Skill 3, Sha'ban 3, 1446 AH, Mahara Program, Islamic Economics Club.
-Using artificial intelligence tools in scientific research September 10, 2024 Kuwait University.
-Canva design skills August 11, 2023 Kuwait University.

- Self-confidence development skills August 4, 2024 Islamic Economic Club.
-Scientific research is the engine of sustainable development towards a better future. Damascus Academy for Training and Community Awareness 5-26-2024.

-Skills and benefits of using the Birkman International Scale, September 15, 2024, Kuwait University.

-Energy storage solutions to enable microgrids in the Arab region(Tuesday, April 30, 2024: 4 PM.online)

- Presentation and delivery skills course in scientific conferences. Organizer: Imam - (Abdul Rahman bin Faisal University. (Wednesday, April 24, 20247 PM. Online)

-SEM and EDS analysis Held At King Saud University,2019

-TGA And DCS analysis Heled At King Saud University,2019

- Important-publish-high-impact-journal-certificate

- Turn-thesis-article-certificate

- Digital Marketring

Member of Saudi Chemical Society

National Center for E-Learning

LIST OF PUBLICATIONS

- DOI: 10.1016/j.inoche.2024.113876

https://doi.org/10.1016/j.ijhydene.2024.10.367-

https://doi.org/10.1016/j.inoche.2024.113482

https://doi.org/10.1016/j.ceramint.2024.11.072

https://doi.org/10.1016/j.micpath.2024.107059

https://doi.org/10.1016/j.flatc.2024.100758

https://doi.org/10.24294/can.v7i2.6348

https://chemistry-europe.onlinelibrary.wiley.com/doi/abs/10.1002/cssc.202400958

- **Nujud Badawi M.,** M. Bhuyan, Namrata Agrawal, Yogesh Kumar. Synthesis, technological prospects and applications of MXene in biomedicine, supercapacitors and sensors: A review. Characterization and Application of Nanomaterials 2024, 7(2), 6348. https://doi.org/10.24294/can.v7i2.6348

-**Nujud Badawi, M.,** Batoo, K. M., Hussain, S., Subramaniam, R., Kasi, R., Bhuyan, M., Imran, A., & Muthuramamoorthy, M. (2023). Natural Solid-State Hydrogel Electrolytes Based on 3D Pure Cotton/Graphene for Supercapacitor Application.
Micromachines 2023, Vol. 14, Page 1379, 14(7), 1379.
https://doi.org/10.3390/MI140713792

-Sachin Sharma Ashok Kumar, **Nujud Badawi M,** J. Liew, Prasankumar Thibeorchews, Ramesh Kasi, S. Ramesh, S. Ramesh, S.K. Tiong. High-Performance Sodium-Ion Batteries with Graphene: An Overview of Recent Developments and Design. 13 August 2024.
https://doi.org/10.1002/cssc.202400958

-**Nujud Badawi, M.,** Agrawal, N., Adil, S. F., Ramesh, S., Ramesh, K., Adil, S. F. MXenes the future of solid-state supercapacitors: Status, challenges, prospects, and applications.Arabian Journal of Chemistry.2024.
https://doi.org/10.1016/j.arabjc.2024.105866

-**Nujud Badawi, M.,** Mujasam Batoo, K., Hussain, S., Agrawal, N., Bhuyan, M., Bashir, S., Subramaniam, R., Kasi, R., & My, R. K. (2023). Design and Characterization of Electroconductive Graphene-Coated Cotton Fabric for Wearable Electronics.
Coatings 2023, Vol. 13, Page 1601, 13(9), 1601.
https://doi.org/10.3390/COATINGS13091601

-**Nujud Badawi, M.,** Batoo, K. M., Bhatia, M., Subramaniam, R. T., Kasi, R., & Verma, R. (2023). Construction of solid state cotton batteries with safety features of electrolytes/electrodes:
A review. Materials Today Communications, 34, 104949.
https://doi.org/10.1016/J.MTCOMM.2022.104949

-**Nujud Badawi, M.,** Bhatia, M., Ramesh, S., Ramesh, K., Kuniyil, M., Shaik, M. R., Khan, M., Shaik, B., & Adil, S. F. (2023). SelfHealing, Flexible and Smart 3D Hydrogel Electrolytes Based on Alginate/PEDOT:PSS for Supercapacitor Applications. Polymers 2023, Vol. 15, Page 571, 15(3), 571. https://doi.org/10.3390/POLYM15030571

- **Nujud Badawi, M.,** Batoo, K., Ramesh, S., Ramesh, K., & Imran, A. (2023). SWCNTs/PEDOT: PSS Coated Cotton for Wearable Clothes and Supercapacitor Applications.
Sustainability 2023, Vol. 15, Page 889, 15(1), 889.
https://doi.org/10.3390/SU15010889

-**Nujud Badawi, M**, Bhatia, M., Ramesh, S., Ramesh, K., Khan, M., & Adil, S. F. (2023). Enhancement of the Performance

Properties of Pure Cotton Fabric by Incorporating Conducting Polymer (PEDOT:PSS) for Flexible and Foldable Electrochemical Applications. Journal of Electronic Materials 2023, 1–15. https://doi.org/10.1007/S11664-022-10170-3

-**Nujud Badawi, M.,** & Batoo, K. M. (2023). Correction to: Hybrid conductive cotton coated with SWCNTs/PEDOT:PSS for smart clothes and supercapacitor applications (Journal of Materials Science: Materials in Electronics, (2023), 34, 5, (416), 10.1007/s10854-023-09853-2). Journal of Materials Science: Materials in Electronics, 34(7), 1–1. https://doi.org/10.1007/S10854-023-10098-2/METRICS

-**Nujud Badawi, M.,** Agrawal, N., Adil, S. F., Ramesh, S., Ramesh, K., Bashir, S., M, N. B., Agrawal, N., Adil, S. F., Ramesh, S., Ramesh, K., & Bashir, S. (2023). Review on wearable supercapacitors fabricated by highly flexible conductive fiber materials. New Carbon Mater., Corrected Proof, 38(2), 1–19. https://doi.org/10.1016/S1872-5805(23)60721-8

-Sharma, S Kumar., **Nujud Badawi, M**, Zhang, S., A., Alduhaish, O., Ramesh, K., Ramesh, S., Khan, M., Shaik, B., & Adil, S. F. (2023). Anticorrosion, Thermal Degradation, and Hydrophobic Performances of Graphene/TiO2 Nanocomposite Coatings. *Polymers 2023, Vol. 15, Page 2428*, *15*(11), 2428. https://doi.org/10.3390/POLYM15112428

-Alhashmi Alamer, F., & **Nujud Badawi, M.,** (2022). Manufacturing Organic Environmentally Friendly Electrical Circuits Using the Composites' Single-Walled Carbon Nanotubes and PEDOT:PSS. *Energy Technology*, *10*(2), 2100830. https://doi.org/10.1002/ENTE.202100830

-Kumar, S. S. A., Bashir, S., Pershaanaa, M., Kamarulazam, F., Kuppusamy, A. V., **Nujud Badawi, M.,** Ramesh, K., & Ramesh, S. (2022). WITHDRAWN: A review of the role of graphene-based nanomaterials in tackling challenges posed by the COVID-19 pandemic. Carbon Trends, 100208. https://doi.org/10.1016/J.CARTRE.2022.100208

-Khan, M., Assal, M. E., Tahir, M. N., Khan, M., Ashraf, M., Hatshan, M. R., Khan, M., Varala, R., **Nujud Badawi, M.,** & Adil, S. F. (2022). Graphene/inorganic nanocomposites: Evolving photocatalysts for solar energy conversion for environmental remediation. Journal of Saudi Chemical Society, 26(6), 101544. https://doi.org/10.1016/J.JSCS.2022.101544

-Majekodunmi, J. T., Alsultan, T. Y. T., Anwar, K., **Nujud Badawi M.,** Jain, D., Kumar, R., & Bhuyan, M. (2023). The α-particle clustering and half-lives of the newly discovered 207,208Th decay chains within relativistic-Hartree-Bogoliubov approach. Nuclear Physics A, 122652. https://doi.org/10.1016/J.NUCLPHYSA.2023.122652

-Sachin SharmaAshok Kumar , **Nujud Badawi M.,** Khalid Mujasam Batoo , I.A. Wonnie Ma , K. Ramesh , S. Ramesh , & MohdAsif Shah.(2023).Fabrication and characterization of graphene oxide based polymer

nanocomposite coatings, improved stability and hydrophobicity .Scientifc Reports
13:8946. https://doi.org/10.1038/s41598-023-35154-z

-**Nujud Badawi, M.,** Kuniyil, M., Bhatia, M., Kumar, S. S. A., Mrutunjaya, B., Luqman, M., & Adil, S. F. (2023). Recent advances in flexible/stretchable hydrogel electrolytes in energy storage devices. Journal of Energy Storage, 73, 108810.https://doi.org/10.1016/J.EST.2023.108810

-**Badawi, MN** (Badawi, Mohammed Nujud) ; Agrawal, N ; Kumar, Y ; Khan, M ; Hatshan, MR ; Alayyaf, AA ; Adil, SF .(2024).Cellulose nanocomposite tough hydrogels: synergistic self-healing, adhesive and strain-sensitive
properties. POLYMER SCIENCE. https://doi.org/10.1002/pi.6644

- Kumar, S. S. A**., M, N. B.,** Liew, J., Thibeorchews, P., Kasi, R., Ramesh, S., Ramesh, S., & Tiong, S. K. (n.d.). High-Performance Sodium-Ion Batteries with Graphene: An Overview of Recent Developments and Design. *ChemSusChem*, e202400958. https://doi.org/10.1002/CSSC.202400958

- **Nujud Badawi** , Mrutunjaya Bhuyan , Mohammad Luqman , Rayed S. Alshareef , Mohammad Raf
Hatshan , Abdulrahman Al-Warthan , Syed Farooq Adil .(2024). MXenes the future of solid-state supercapacitors: Status, challenges, prospects, and applications .Arabian Journal of Chemistry. https://doi.org/10.1016/j.arabjc.2024.105866

Book Chapter

Chapter 1:The Functionality of Nanofiber Technology and Their Composites for Energy Applications. Cutting-Edge Advances in Nanofibers and Fibers: Shaping Future Applications. DOI: 10.4018/979-8-3373-0230-0 ,ISBN13 Softcover: 9798337302317,EISBN13: 9798337302324
DOI: 10.4018/979-8-3373-0230-0.ch001

Chapter 5: Nanofibers for High-Nanofibers for High-Energy Solutions. Cutting-Edge Advances in Nanofibers and Fibers: Shaping Future Applications

DOI: 10.4018/979-8-3373-0230-0.ch005