

BAYADER ALSHEHRI

Master's Student in Chemical Engineering | Energy Storage & Advanced Battery Researcher

Member, Studies & Development Committee - Saudi Association for Electric Vehicle Technologies (AEV TSA)

Abha, Saudi Arabia | 0597099696 | 447800667@kku.edu.sa

PROFESSIONAL SUMMARY

Master's student and researcher in Chemical Engineering at King Khalid University, specializing in advanced energy storage systems and next-generation battery technologies. My research focuses on solid-state sodium-sulfur (Na-S) batteries, innovative electrolytes, polymer-ceramic composite electrolytes, and NASICON-based ceramic materials. I have research experience in electrochemical characterization, ionic conductivity analysis, and battery-material development, with a strong interest in translating innovative materials research into technologies that support sustainable energy and the electric-vehicle sector.

PROFESSIONAL MEMBERSHIP

Member, Studies & Development Committee - Saudi Association for Electric Vehicle Technologies (AEV TSA)

Contributing to scientific and technical interests related to electric-vehicle technologies, energy storage, batteries, and advanced materials.

RESEARCH INTERESTS

- Advanced Energy Storage Systems
- Solid-State Sodium-Sulfur (Na-S) Batteries
- Innovative Electrolytes and Next-Generation Electrolyte Materials
- Polymer-Ceramic Composite Electrolytes
- NASICON-Based Ceramic Electrolytes
- Ionic Conductivity and Electrochemical Transport Properties
- Battery Materials Development and Performance Evaluation
- Sustainable Energy and Electric-Vehicle Battery Technologies

RESEARCH EXPERIENCE & SCIENTIFIC ACTIVITIES

Researcher in Advanced Energy Storage and Innovative Electrolytes

Conducting research on advanced materials and innovative electrolyte systems for solid-state sodium-sulfur batteries. My work explores the development and improvement of ceramic, and polymer-ceramic composite electrolytes, with particular attention to ionic conductivity, electrochemical behavior, interfacial compatibility, and the role of NASICON-based materials in next-generation battery systems.

- Developing and evaluating innovative electrolyte concepts for advanced battery applications.
- Investigating polymer-ceramic integration strategies for composite solid electrolytes.
- Analyzing ionic conductivity and electrochemical impedance data.
- Studying NASICON-based ceramic materials and their potential role in solid-state battery systems.
- Supporting the development of advanced materials for safer and more efficient energy-storage technologies.

INTERNATIONAL CONFERENCES & RESEARCH ACHIEVEMENTS

AIChE Annual Meeting - Accepted research presentation related to solid-state sodium-sulfur batteries and advanced electrolyte materials.

The Electrochemical Society (ECS) Meeting - Accepted research presentation in the field of advanced energy storage, battery materials, and innovative electrolyte technologies.

EDUCATION

Master of Science in Chemical Engineering
King Khalid University | 2025 - Present
Research focus: advanced energy storage, sodium-sulfur batteries, and innovative electrolyte materials.

Bachelor of Science in Chemistry
King Khalid University | 2017 - 2021

Patient Care Technician Program
Saudi Commission for Health Specialties | 2022 – 2023

PROFESSIONAL EXPERIENCE

Healthcare Provider
Health Affairs, Ministry of National Guard - Riyadh | 2023 - 2025
Provided patient-care support within a multidisciplinary healthcare environment while developing strong skills in teamwork, communication, accuracy, responsibility, and adherence to established procedures and protocols.

Laboratory Trainee
Ministry of Health - Abha | 2022
Completed practical laboratory training involving standard clinical laboratory procedures, sample handling, quality control, laboratory safety, and adherence to operational protocols.

TECHNICAL SKILLS

Electrochemical & Research • Electrochemical Impedance Spectroscopy (EIS) • Ionic Conductivity Analysis • Electrochemical Data Analysis • Battery Materials Research • Solid-State Electrolytes • Innovative Electrolyte Development	Materials, Software & Analysis • Polymer-Ceramic Composite Electrolytes • NASICON-Based Materials • Battery Performance Evaluation • OriginLab • Microsoft Office • Scientific Data Analysis & Technical Reporting
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CERTIFICATES & TRAINING

- Basic Life Support (BLS)
- Infection Prevention and Control
- Laboratory Safety
- Patient Safety
- Fire Safety
- Medical Ethics
- OriginLab Software Training