Khashayar (khashy) Bagheri

Electrochemist/Materials engineer; PhD

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☆ Valid work permit and Flexible location in France - Driving License B, 32 years old

EXECUTIVE SUMMARY

Electrochemist & materials engineer with 8+ years of experience in Li-ion & Na-ion batteries, covering design, testing, safety validation, and manufacturing support. Worked on industrial battery projects with Renault, TIAMAT, and EnerSys. Experienced in battery R&D, failure analysis, and materials development, with hands-on involvement in cross-functional teams for gigafactory planning and industrial scale-up. Proven leadership in delivering safe and reliable solutions for automotive and energy applications.

EXPERIENCE

Senior Li-ion Engineer

EnerSys — 2024 - Present — Arras, France

- Led electrochemical, mechanical, environmental, and safety validation of Li-ion cells and BPMs, ensuring compliance with standards and SECE requirements.
- Designed and optimized test instrumentation and DOE workflows, improving data analysis and speeding up design feedback.
- Performed PFMEA, root-cause investigations, and safety reviews using 8D and Fishbone Analysis to improve reliability.
- Risk management & reliability analyses (FMEA, safety assessments, 8D, Fishbone) ensuring product safety, compliance, and long-term reliability.
- Battery Management System (BMS) integration, validation, and testing.
- Advanced data analytics (Python, AI, ML) for root-cause investigations, KPI monitoring, and performance optimization.
- Led thermal, electrochemical & aging studies to predict lifetime performance.
- Weld quality analysis and verification of battery module assembly to improve strength, safety, and manufacturability.
- APQP methods to support industrialization & improve manufacturing processes.
- Led cross-functional teams and external labs to manage battery validation programs and deliver results on time.
- Led thermal propagation & SECE tests, for safety improvements.
- Review of test data to support operational integrity assessments.
- Managed projects and teams to ensure collaboration and on-time results.
- Part of cross-functional team on gigafactory planning & process improvements.

PhD researcher

CNRS-CEMHTI — 10/2020 - 12/2023 — Orléans

High precision and rapid *operando* determination of state of charge (SOC) in batteries for integration in Battery Management System (BMS).

- Cell assembly (Swagelok, Coin cell, pouch cell, in situ cell), Cycling, Formation.
- Electrochemical performance of industrial Li-ion & Na-ion batteries (NVPF/C, NMC/Graphite, LFP/Graphite, etc) in collaboration with Renault Group and TIAMAT, supporting characterisation and material optimization.
- Cathode electrode and electrolyte formulations/ Cell validation & analysis.
- Lithiation/ Sodiation and crystallinity effect of electrode.
- Nuclear Magnetic Resonance (NMR) spectroscopy & imagaing (MRI).
- Analysis of de-sodiation & Solid Electrolyte Interface (SEI) products.
- Developed advanced cell configurations and testing protocols to support industrial validation and pre-commercialization of Na-ion and Li-ion cells.
- Identifying degradation pathways & proposed material-level improvements.
- Optimized electrolyte formulations and slurry coatings to improve performance.
- Operando/Ex situ analysis of degradation products (Li plating, SEI).
- Interface analysis of the electrode/electrolyte (spectroscopy/imaging).

Materials engineer (trainee)

ArcelorMittal (Automotive Product Properties Department)

03/2019 - 09/2019 — Maizières-lès-Metz

Developed a multiphysics model to predict stress corrosion cracking and hydrogen embrittlement in steels for automotive application.

- 3D simulation and electrochemical modeling using COMSOL Multiphysics.
- Electrochemical/corrosion/Mechanical tests.
- Optimize product design & properties/International codes & standards.
- Degradation mechanisms of metals and alloys.
- Managing technical and financial files/ Processing and data analysis.

SKILLS

Materials characterization and Instrument

Cyclic Voltamettry (CV), EIS, GCD & GITT

XRD, NMR, SEM, TEM/Structural analysis

Battery Pack Validation (BPM/BMS integration)

Battery Safety Standard and Testing

EDS, XPS, FT-IR, BET, Raman, UV-Vis, VSM

DSC, TGA/Thermal analysis · MRI/Imaging

Mechanical and corrosion tests · Autoclave

Metallography microstructure and analysis

Software and computer skills

MATLAB, OriginPro · Python/Programming

COMSOL Multiphysics, ABAQUS/Simulation

EC-Lab, Topspin · Microsoft Office · FEA

Artificial intelligence · 3D MAX · AutoCAD

Machine learning · Adobe · 3D scanning

EDUCATION

PhD in Chemistry and Materials Science

CEMHTI-CNRS, Université d'Orléans

M.Sc. in Materials & Mechanical Engineering

Ecole Nationale Supérieure d'Arts et Métiers (ENSAM) ParisTech

M.Sc. in Materials Science & Engineering

University of Tehran (UT)

B.Sc. in Materials Engineering & Metallurgy

Babol Noshirvani University of Technology

LANGUAGES

English: Fluent · French: Fluent

Persian: Native · German: Beginner

EXPERIENCE

Researcher

Nanotechnology Center of SQU — 06/2018 - 10/2018 — Oman

- Synthesis & characterization (XRD, SEM, TEM, XPS, Uv-vis, RAMAN, VSM, EDX) of semiconductors, Polymers, 2D (Graphene), ceramic & composite materials.
- Simulation of the photocatalytic degradation of dyes using magnetic nanocomposites with COMSOL and MATLAB.
- Designing and modifying process steps.
- Process documentation and standardization.
- Project Management and leadership.
- Physical and mechanical properties of materials.

Research Assistant

Research Center of UT — 09/2017 - 06/2018

- Li-ion battery assembly, testing and analysis.
- Battery safety/abuse tests.
- Polymer electrolyte membrane fuel cell (PEMFC) 3D simulation using COMSOL.
- Linear and non-linear kinetic models, Technical and scientific writing.
- Characterization of materials & properties (porosity/thermodynamics/interface).

R&D engineer

Materials Lab, NIT — 02/2016 - 07/2017

- Material selection & their characterization.
- Crystallographic structure, Surface treatment and coating.
- Corrosion control management, corrosion rate calculations.
- Root cause, risk analysis, International codes, and standards.
- Quality control, maintenance and inspection strategy (NDT tests).
- Processing and data analysis, Failure analysis of engineering materials.

VOLUNTEERING AND COMMITTEE MEMBERSHIPS

Comitte member of "Young researcher day, J2C" for holding conferences for young researchers and students.

Université d'Orléans

Member of "Scientific Association of Metallurgy and Materials Engineering", holding tremendous scientific classes, conferences.

University of Tehran

Board member of "Association for Science and Technology".

Babol Noshirvani University of Technology

Volunteer teacher of "Physics and Mathematics".

Ghalamchi

CERTIFICATION

Spectroscopic Characterization & Imaging of Battery Materials

Advanced Materials Characterization

Battery Safety/Testing Standards (UN 38.3,UL 9540(A),UL 1973,UL 2580)

Electrical Authorization B1 B2 BR

Non-Destructive Testing (NDT)

ADR Certification: Transport of Dangerous Goods

Project Management / FEA and ML Modeling

STRENGTHS

Research & development, Team leadership, Teamwork

Time, Project and Budget management

Ability to solve complex problems, Diligent

Public Relations, Autonomous and Self-motivated

Data analysis, Strong laboratory skills (clean room)

Proficient in written and oral presentations

PUBLICATIONS

4 published papers, 1 submitted and 2 other under review

INTERESTS

Self-education, Chess, Reading, Traveling Singing, Hiking, Billiards, cooking