Mohamed CHAKIR
PhD Inorganic Chemistry

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SKILLS & KEY ACCOMPLISHMENTS

- >20 years' experience in inorganic chemistry, electrochemistry, and materials (actives materials for batteries & solid electrolyte), cell design and testing, development, and production of Li/Na-ion batteries.
- I Worked for laboratories, startup and large company, and this diverse set of experiences allowed me to build robust technical view on Li-ion batteries from its design to its integration.
- Technical governance and coordination of collaborative projects on Li & Na ion batteries (ANR, H2020, Horizon)
- R&D teams & projects management: Successfully led the execution of a 4 years collaborative ANR program, 4 years project with CEA-LiTEN and 4 years JDA with US startup "Ionic materials" on ASSB.
- Management of multidisciplinary and international team leaders
- The implementation of a new generation batteries roadmaps, including Active materials and electrolytes.
- Built from scratch and implemented All Solid State Batterie activities in Renault.
- Successfully designed, developed launched several Li-ion and Na-ion batteries.
- Piloting and managing internal and external collaboration activities: academics and industrial partners (Universities, Cell makers, institutes, startups, cathode, and anode Material's suppliers)
- Program technical status Reporting (workshops, technical and steering committees)
- Subcontractors, PhD and Master student's supervision,
- Communication: Patents: 14, Scientific papers :13

EXPERIENCES

November 2023- present
Innovation Batteries Project Leader – Ampere sas

- Low cost and fast charging Innovative Batteries
- Cobalt free chemistries based batteries: LFP, LMFP, Na-ion, Mn-rich and LNMO

November 2021- October 2023
Innovation Batteries Project Manager – Advance engineering dpt, Renault

- Batteries Project management (cost, planning, Performance's validation plan, ..)
- Responsible of Battery's techno bricks Projects (cell and chemistry, thermal management, ..)

December 2019 to October 2021
Junior Expert on All Solid-State Batteries – Renault

- Responsible of definition and steering of All Solid-State Batteries (ASSB) activities
- Define and propose ASSB technology's vision in Renault/Nissan alliance (benchmark, roadmap, KPI)
- R&D Activity and technical Roadmap execution in collaboration with RNTBCI (In), Nissan (Jp, US) and external partners (labs and Institutes, startups, cell makers, PhD programs)
- Technical managing of battery team (Renault Nissan Technical Business Center, RNTBCI)
- Drive day-to-day activities to meet overall company objectives on ASSB topics.

Mai 2014 to November 2019
All Solid-State Batteries _Technical Responsible – Renault

- Technical leader on ASSB and Implementation of the topic within Renault

- Implementation of PhD programs on ASSB topic in collaboration with different laboratories (CEA, College de France, Chimie Paris, LRCS, LEPMI, ICGM)
- Establishment, negotiation and execution of partnerships' contracts with external partners (NDA/MTA, JDA)
- Led the drafting and submission of technical grant proposals to ANR for ASSB cell development projects
- Establishment and technical management of the 4 years JDA contract activities with Ionic Materials startup (US)
- Reporting of program technical status (Workshops, Steering committee, management meeting)

February 2011 to April 2014

High Energy cell Program manager - Renault-CEA advanced laboratory

- Planification and coordination of different activities and resources
    - Multi-teams (active materials, electrolyte, electrodes process, cell design, testing)
    - Multi-chemistry (Graphite, Silicon, Li-rich, LNMO, LTO, NMCs)
- Benchmarking and Materials' evaluation responsible
- Led a team of engineers to design, develop, testing /evaluation, release, and support the chemical components of Li-ion batteries.
- Management of R&D activities carried out on new generations of Lithium-ion batteries
- Responsible and management of the formulation/coating JDA (Renault-CEA-LG)
- Execute company projects by enabling multi-functional teams to deliver groundbreaking solutions.

Avril 2009-Januarry 2011

R&D Engineer on Li-ion Batteries, Enerdel, Indianapolis, USA

- Designing, development and electrochemical characterization of Li-ion cells (coin to 20Ah cell).
- Responsible for NMCs cathodes development and optimization (Formulation, structure stability,…).
- Active and inactive materials evaluation (LTO, LNMO, LFP, NMCs, tape, packaging, separator,..)
- Strongly involved in tape effect and its optimization by performing and designing specific studies (moisture/drying process)
- Synthesis (1kg scale), electrochemical and physico-chemical characterizations of new cathode and anode materials for Li-ion batteries (USABC program)

April 2007 to October 2008

Research Engineer Li-ion Batteries & DLC, CIRIMAT-Toulouse (ARKEMA, BOLLORE),

- Synthesis, electrochemical and physico-chemical characterization of CNT-SnO_2 carbon nanocomposites for Li-ion batteries.
- Design and electrochemical performances study of organic radical batteries technology
- Electrolyte optimization for DLC supercapacitors

September 2005 to november2006

Researcher on inorganic chemistry, LCMS, Casablanca,

- Master's students supervising
- Writing and publishing of research work (PhD thesis) related to the structural and spectroscopic study of new phosphates and arsenates of Nasicon and KTP structure ($Na_3MZr(PO_4)_3$, $LiTiOPO_4$,…)

April 2004 to April 2005

Postdoctoral researcher, Evaluation of new cathodes Materials for LIB, ICMCB, Bordeaux,

- Synthesis, characterizations and optimization of new high voltage active materials for Lithium-ion batteries application: olivine, Li_2MPO_4F (Co, Ni), $Li_3MZr(PO_4)_3$, (Co, Ni, Mn)

October1996 to December 2003

Master, DEA, PhD Thesis: inorganic chemistry and materials, LCMS, Casablanca

- Synthesis and characterization of new inorganic compounds, for different application: batteries, Solid electrolyte, ionic conductors, pigments,..
- Structural and spectroscopic studies of new phosphates and arsenates with Nasicon and KTP type structure.
- Physico-chemical and structural characterization of natural Apatites phosphates (CERPHOS)

EDUCATION

- Education:
    - 2022- Master GMP Hybrids & Electrics (IFP School, Paris)
    - 2003- PhD on Solid state chemistry (Hassan II University, Casablanca)

Domaines d'Expertise :

- Matériaux et chimie inorganiques :
    - Phosphates, oxides, sulfates, sulfures, arséniates, …
    - Synthèse, caractérisation physico chimique, Etude structurale et cristallographique
    - Application :
        - Batteries Lithium-ion,
        - Batteries Sodium ion,
        - Batterie post Li-ion : Li-soufre,
        - Pile à combustible,
        - Électrolytes solides,
        - Stockage d'hydrogène
        - Pigments

- Stockage d'énergie :
    - Li-ion, Na-ion, Li-soufre, Fluor -ion, All solid state batteries, Piles à combustible, supercapacitors
    - Matériaux de cathode, anodes, électrolytes, séparateurs
    - Process d'enduction et de fabrication de composants électrochimiques (de pile bouton jusqu'aux cellules de taille EV (>100Ah))
    - Evaluation électrochimique et intégration de batteries