The **Innovative Electron Microscopy Department** develops and applies electron microscopy methodologies for nanoscale and atomic-resolution characterization of functional materials and their interfaces, with specific focus on soft-hard interfaces.

MSCA-DN E-CHEMIN (DC2): CHARACTERIZATIN OF SOLID-LIQUID AND SOLID-SOLID ELECTROCHEMICAL INTERFACES OPERANDO ANT THE NANOSCALE

The aim of the project is to reveal the nanoscale details of the ionic transport at electrode-electrolyte interfaces *in operando* focusing on the specific role of composite materials in improving sodium ion batteries (SIBs) and zinc ion batteries (ZIBs) performances. The DC will design and test microbattery closed-cell setups based on MEMS chip technology and perform operando characterizations of solid-solid (S-S) and solid-liquid (S-L) interfaces using probe corrected scanning transmission electron microscope (STEM) and related spectroscopy techniques. Processes at Na-ion carbonaceous anode and their composites for SIBs will be compared. Zn composite cathodes for ZIBs will be tested. Tight cooperation with DCs#1 and #4, assisting with nanoscale characterisation of carbonaceous, composite covalent anode materials in SIBs, and multifunctional ion-conductive polymers in rechargeable aqueous ZIBs, is expected. Operando experiments will be compared with ex-situ TEM analysis of materials from coin cells at different states of charge to ensure comparability of the results. Chemical composition, electronic structure at S-L, S-S and S-S-L interfaces will be probed by EELS.

Expected results:

(1) Successful assembly and nanoscale study of the S-L, S-S, S-S-L interfaces in microbattery devices. (2) Unveiling interface-performances relationships (e.g., composition-porosity-structure with SEI formation for SIBs, ZIBs used within the project).

The selected candidate will be required to enroll in a PhD program at Saarland University

Main supervisor: **Prof. Nadja Tarakina** (INM, https://www.leibniz-inm.de/en/innovative-elektronenmikroskopie/)

Co-supervisor: **Dr. Paolo Guisto** (MPIKG, https://www.mpikg.mpg.de/2d-covalent-thin-films-for-energy-storage)

Co-supervisors from secondments:

Dr. N. Krans (Protochips, https://www.protochips.com/),

Prof. M. Pumera (VSB, https://nanorobots.vsb.cz/en).

Leibniz Gemeinschaft

Zertifikat seit 2012
audit berufundfamilie

CONTACT

INM – Leibniz-Institut
fuer Neue Materialien gGmbH
Campus D2 2
66123 Saarbruecken
www.leibniz-inm.de

You will stay 4 months at VSB Technical University of Ostrava (Prof. M. Pumera) and 3 months at Stockholm University (Prof. Jiayin Yuan).

Vacancy requirements

Applicants must not already hold a doctoral degree at the date of recruitment and not have resided or carried out their main activity (work, studies, etc.) in Germany for more than 12 months in the 36 months immediately before the recruitment date.

Eligibility will be verified at the time of recruitment.

Master's degree or equivalent in Materials Science, Electrochemistry, Chemistry, Applied Physics or closely related disciplines.

Excellent communication and writing skills, thorough command of the English language.

- Good knowledge of electrochemistry, materials science. S
- Skills in experimental electrochemistry and electrochemical technologies.
- Experience with material characterization using electron microscopy and/or spectroscopy techniques and corresponding data interpretation will be an advantage.
- Ability to work as a member of an international, multi-disciplinary team.
- German language knowledge is very beneficial.

The salary will comply with the rules of the 2025 MSCA Doctoral Network program under Horizon Europe and consists of:

- a living allowance (country correction coefficient applies)
- a mobility allowance (€710/month)
- and, if applicable, a family allowance (€660/month).

All amounts are subject to national taxation and social security regulations.

More details about the position, application procedure and recruitment can be found on the e-ChemIn webpage (www.e-chemin-dn.eu).

Other benefits:

- Social Security coverage T
- Training, Networking and secondment opportunities C
- Career Development plan

The position is funded for 36 months under the MSCA Doctoral Network. The total contract duration is 36 months.

Starting date: from 01.11.2026 but not later than 01.04.2027

Zertifikat seit 2012
audit berufundfamilie

CONTACT

INM – Leibniz-Institut
fuer Neue Materialien gGmbH
Campus D2 2
66123 Saarbruecken
www.leibniz-inm.de

Type of contract: Full-time employment contract in accordance with national regulations.

Hours per week: full time (39,5 h / week)

Place of work: **INM - Leibniz Institute for New Materials** is located in **Saarbrücken, Germany**, and is an internationally leading center for materials research, a scientific partner to national and international research institutions, and a provider of research and development for companies throughout the world. The INM is an institute of the Leibniz Association and has about 250 employees.

The knowledge of German is a plus but not a requirement as English is a main working language at INM.

Applicants must submit:

- CV (including a detailed description of residence and main activities over the last 3 years).
- Motivation letter
- Copies of academic degrees
- Contact details of referees

Application deadline is **20.09.2026**

Apply via: https://www.leibniz-inm.de/stellenangebote/ or scan the QR code.

The INM practices an open and appreciative corporate culture in which the existing diversity is promoted and lived. The institute is an equal opportunity employer with a certified family-friendly policy, and it provides offers for a better work-life balance, flextime, and mobile working. We promote professional opportunities for women and strongly encourage them to apply. Full-time jobs can be generally divided. People with disabilities are expressly encouraged to apply and will be given priority if equally qualified.

Zertifikat seit 2012
audit berufundfamilie

CONTACT

INM – Leibniz-Institut
fuer Neue Materialien gGmbH
Campus D2 2
66123 Saarbruecken
www.leibniz-inm.de