

Scholarship for Student Position (Ref. EP-S-2025-6)

The Faculty of Mechanical Engineering at Silesian University of Technology (SUT) hereby announces competition for the student position (Ref. EP-S-2025-6). The successful applicant will participate in the research project titled: "*Learning the Physics of Dendrite Growth in Lithium-Ion Batteries: An Attention Mechanism Approach for Prevention and Mitigation (DENDRITEPHASE)*". The DENDRITEPHASE research project is jointly funded by the Narodowe Centrum Nauki (NCN), Poland and Fonds voor Wetenschappelijk Onderzoek Vlaanderen (FWO), Belgium. Within this project, researchers from SUT (Gliwice, Poland) and KU Leuven (Leuven, Belgium) will collaborate to investigate the mechanisms of dendrite growth in Lithium-Ion Batteries. The costs associated with the research stay of the successful applicant at SUT for the position Ref. EP-S-2025-6 will be covered using funds from the grant (UMO-2023/51/I/ST11/02716) provided by the NCN.

Requirements:

1. Masters's degree awarded in any field of science, engineering, management or arts including but not limited to chemistry, physics, technology, materials engineering, biomedical engineering, mechanical engineering, etc.
2. Proven background in at least two of the following scientific areas (refer Requirement 6.): (1) Scanning Electron Microscopy, (2) Mechanical property measurement, (3) Electrical property measurement, (4) Energy conversion technology or Energy Storage Materials, (5) Porous materials design, (6) Machine learning;
3. Knowledge of experimental design and synthesis of porous materials and nanomaterials ;
4. Good command of spoken and written English language ;
5. Ability to work independently as well as work together in team.
6. Publication track record : The candidate has authored scientific research article in SCI(E) journal as a first author in original research paper. Paper should have a clear evidence of the work on electron microscopy characterization and mechanical property (e.g. compressive strength, Poisson's ratio, fracture toughness, elastic modulus etc.) measurement.

Job description:

Lithium-ion batteries (LIBs) are characterized by their high specific energy density, typically ranging from 100 to 265 Wh/kg, making them among the most efficient and reliable mobile energy storage devices today. However, dendrite growth in the anode remains one of the most critical challenges limiting their long-term performance and safety. Despite decades of extensive research on the interfacial dynamics at the electrode/electrolyte interface, the fundamental mechanisms governing the nucleation and growth of Li dendrites are still not fully understood. The selected candidate will join the DENDRITEPHASE project team to conduct advanced experimental research on the physics of dendrite growth in Lithium-ion batteries. The candidate will convey the results of the experiments to other team members of the projects (The data and results from the experiments will be utilized by other team members of the project for training/validating in-silico models or building/validating computational models.)

The main tasks for the scholar are:

1. Perform mechanical testing and material characterization of electrode (dense and porous electrodes) and solid electrolytes of Lithium-ion battery. (task 1)
2. Perform electrochemical testing and characterization in solid and liquid electrolyte batteries. Integrate the result of electrochemical experiments with mechanical experiments (task 2).
3. Relay the data and results of tasks 1 and 2 to other research team members.
4. Publish the data and results of tasks 1 and 2 in scientific journals.

NCN call for proposals type: OPUS LAP – ST (NCN as lead agency*)

FWO call for proposals type: WEAVE (FWO as partner agency**)

Further information about the OPUS LAP/WEAVE:

* <https://www.ncn.gov.pl/en/ogloszenia/konkursy/opus26>

<https://ncn.gov.pl/en/wspolpraca-zagraniczna/wspolpraca-wielostronna/weave>

** <https://www.fwo.be/en/support-programmes/all-calls/senior-researchersresearch-teams/weave-fwo-partner/>

Form of tender submission: email (Ref. **EP-S-2025-6**)

Closing timeline for submission of tenders: 30.11.2025

Terms of Employment:

Announcement of competition results: As soon as possible

Number of position(s): 1

Place of work: Faculty of Mechanical Engineering, Silesian University of Technology, Gliwice, Poland

Duration of scholarship: 6 months

Working hours: Full time (40 h/week).

Date of commencement of employment: As soon as possible.

Additional Information:

The application should contain the following documents/information:

1. CV including the following information (list of scientific achievements, a list of publications, conference presentations, awards and distinctions for scientific activity, experimental skills, Document related to the Requirements sections etc.) ;
2. Copy of the Masters's degree diploma or equivalent document or a document confirming the last year of Masters's studies;
3. Copy of the Masters's thesis abstract;
4. Application letter or letter of motivation (maximum 1 page)
5. Acronym for reference of this position (Reference: **EP-S-2025-6**).

In addition to the above documents, please prepare a document consisting of the following statement:

"I consent to the processing of my personal data for the purpose of recruitment in accordance with Art. 6 sec. 1 letter a of the Regulation of the European Parliament and of the Council (EU) 2016/679 of 27 April 2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46 /EC (general regulation on data protection)."

Application document (all of the documents combined together as a single pdf file) in English should be sent electronically to one of the Co-Principal Investigators (Co-PIs) of the project - Dr. Anil Kunwar (e-mail address: anil.kunwar@polsl.pl). This document must be also sent simultaneously as a CC email to another co-PI of the project - Professor Nele Moelans (e-mail address: nele.moelans@kuleuven.be). It is recommended to include the job reference (Reference: **EP-S-2025-6**) in the subject of the email message.