

DO QUYEN

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SUMMARY

I am a chemical engineer and battery researcher who works with time-resolved data. In my PhD at NTNU (2022 – 2026) I measure electrochemical, strain and pressure signals from battery cells for weeks, and I find out which chemical process sits behind each change. I wrote a sliding-window Pearson correlation method in Python for this. It is accepted in *J. Phys. Energy*. I would like to use the same way of thinking to link process signals to redox and dissolution reactions in battery recycling.

WHAT I BRING TO THIS ROLE

- **Time-resolved data:** Weeks-long, real-time measurements from cells, logged and processed automatically in Python.
- **Signal-to-mechanism analysis:** Sliding-window Pearson correlation method that separates chemical and mechanical effects in one signal (*J. Phys. Energy*, 2026).
- **Electrochemistry and redox:** EIS, cyclic voltammetry, chronoamperometry, galvanostatic cycling and PITT on battery materials.
- **Battery materials:** Sodium-ion alloying anodes and solid-state Na–S cells (*JACS*, 2025 co-author).
- **Analytical methods:** XRD (operando and ex-situ) and SEM; lab senior for XRD and SEM in Korea.
- **Process background:** BSc in chemical engineering (petrochemistry), process engineer in production at Terumo Vietnam, IBM Data Analyst certificate.

EXPERIENCE

Norwegian University of Science and Technology (NTNU)

Trondheim, Norway

PhD Researcher, Battery Materials and Real-Time Monitoring

2022 – 2026

- Designed and ran long-duration degradation tests on battery materials under combined electrochemical and mechanical load, and separated true material response from measurement artifacts.
- Linked structure change to measured signals with operando X-ray diffraction during the test and SEM afterward, so no conclusion rested on one method alone.
- Characterized materials with electrochemical methods (EIS, cyclic voltammetry, chronoamperometry, PITT) and linked each signal to the physical change behind it.
- Built a test platform with fiber Bragg grating sensors and load cells, from purchase specifications and workshop drawings to calibration and daily operation.
- Developed a sliding-window Pearson correlation method in Python that separates chemical and mechanical effects inside one measurement. Accepted in *J. Phys. Energy*, 2026.
- Wrote Python pipelines for acquisition, filtering, analysis and remote monitoring, which made multi-week tests repeatable and cut manual work.
- Documented methods and results for co-authors and partners, and kept several parallel projects on schedule.

Terumo Vietnam

Vietnam

Process Engineer

2017 – 2018

- Improved process stability in high-volume plastic molding of medical products by systematic control of temperature, pressure and humidity.
- Served on the corporate 5S board and helped improve production flow.

Soonchunhyang University

South Korea

Research Assistant and Lab Senior, Photovoltaics Laboratory

2018 – 2020

- Owned the laboratory characterization instruments (XRD, SEM): calibration, user training and maintenance planning.

- Made semiconductor thin films from solution and controlled their structure through film thickness and annealing temperature.
- Introduced 5S standards, improving traceability and reducing risk in the lab.

University of Genoa

Master's Thesis Researcher, Membrane Laboratory

Italy

2021 – 2022

- Developed and tested composite polymer and filler membranes for fuel cells, from fabrication through characterization.

EDUCATION

- **PhD, Energy and Process Engineering** (battery materials, real-time monitoring, data analysis) — NTNU, Trondheim, Norway, 2022 – 2026
- **SERP+ Joint Master (Erasmus Mundus Scholarship)** — Chemistry (Paris-Saclay), Nanomaterials Science and Technology (Porto), Materials Science and Engineering (Genoa), 2020 – 2022
- **MSc, Future Convergence Technology** — Soonchunhyang University, South Korea, 2018 – 2020. GPA 4.38 / 4.5 (A+)
- **BSc, Chemical Engineering and Technology** (petrochemistry) — VNU University of Science, Vietnam, 2013 – 2017. Distinction, top 5 percent of class
- Norwegian for Foreigners, 30 ECTS, NTNU (B1/B2). IBM Data Analyst Professional Certificate, 2024.

SKILLS

- **Data analysis:** Python (acquisition, processing, correlation and sliding-window analysis, automation), Excel, Origin; IBM Data Analyst Professional Certificate
- **Real-time monitoring:** Automated data logging, remote monitoring, sensor integration and calibration (fiber Bragg gratings, load cells)
- **Electrochemistry:** EIS, cyclic voltammetry, chronoamperometry, galvanostatic cycling, PITT
- **Materials characterization:** Operando and ex-situ XRD, SEM, thin-film and catalyst synthesis
- **Languages:** English (fluent), Norwegian (B1/B2, 30 ECTS), Vietnamese (native)

SELECTED PUBLICATIONS

1. **Do, Q.**, et al. “Decoupling the Chemo-mechanical Response During Battery Cycling Using Sliding-Window Pearson Correlation.” *Journal of Physics: Energy*, accepted 2026.
2. Nguyen, H. Q., Kanedal, M. D., Todt, J., Jin, F., **Do, Q.**, et al. “Revealing the Hidden Polysulfides in Solid-State Na–S Batteries.” *Journal of the American Chemical Society* 147(27), 2025.
3. **Do Quyen**, et al. “Controlling the morphology of solution-processed CuIn(S,Se)₂ absorber layers by film thickness and annealing temperature.” *Mol. Cryst. Liq. Cryst.* 707(1), 2020.
4. Lim, H., et al. (incl. **Do Quyen**) “Energy storage and generation through desalination using flow-electrodes capacitive deionization.” *J. Ind. Eng. Chem.* 81, 2020.

(Full publication list available on request)

HONORS

- Erasmus Mundus Scholarship, SERP+ Master Program (2020 – 2022)
- Fully Funded Scholarship, Soonchunhyang University (2018 – 2020)
- Excellent Academic Results and Leadership Award, VNU-HUS (2017)

REFERENCES

- **Prof. Steven T. Boles** — NTNU, Trondheim (PhD supervisor), steven.boles@ntnu.no
- **Prof. Daniel Rettenwander** — NTNU, Trondheim (PhD co-supervisor), daniel.rettewander@ntnu.no
- **Assoc. Prof. Antonio Comite** — University of Genoa (master's supervisor), antonio.comite@unige.it