

Curriculum Vitae

Personal information Name: Alessandro Alleva

Education since leaving school

- BSc in Materials Engineering and Nanotechnology (2018, Politecnico di Milano)
- MSc in Materials Engineering and Nanotechnology (2021, Politecnico di Milano)
- PhD in Energy and Nuclear Engineering (2025, Politecnico di Milano)

Past appointment

- Holder of a Research Assignment
- duration of appointment: 15/12/2024 – 14/12/2025
- Level of appointment: Research Assistant
- Employer: Free University Bozen
- Assigned to the PRIN project “Biodegradable thin film electronics for massively deployable and sustainable Internet of Things applications”, responsible of thin film deposition for device fabrication (unconventional and flexible electronics). In particular, I have been working with PVD systems and lithography in a cleanroom environment.

Professional experience

From / to	Job title	Name of academic Institution	Academic level	responsibilities
10/2020 – 06/2021	Research Intern	IMEC (BELGIUM)	Master Student	Assigned to the Si PV group, fabrication and characterization of thin films by means of PECVD

Experience in academic teaching

- Teaching assistant for the courses: Electronic Circuit Design (24/25), Basics of Electronics (25/26), Electronic Devices (25/26), Sistemi Elettronici (25/26). All of them at UniBz.
- Supervision of 3 different MSc theses.

Other academic responsibilities

- 10 hours appointment for the organization of the PhD course “Smart Energy for the Future”, delivered as a series of seminars in the 2023/2024 A.Y. in Politecnico di Milano (prof. Francesco Di maio).

Memberships Member of the Emerging Printed Electronics Research Infrastructure (EMERGE) proposal review board.

Publications Sharma, R., **Alleva, A.**, Hajjiah, A., Sivaramakrishnan Radhakrishnan, H., & Poortmans, J. (2022). Comparison of c-, n-, and o-incorporated non-blistering pecvd si films for application in sio x-based passivating contacts for si solar cells. ACS Applied Energy Materials, 5(8), 9994-10001.

Salman, Y., Waseem, S., **Alleva, A.**, Banerjee, P., Bonanni, V., Emanuele, E., ... & Bozzini, B. (2023). Synthesis, characterization, functional testing and ageing analysis of bifunctional Zn-air battery GDEs, based on α -MnO₂ nanowires and Ni/NiO nanoparticle electrocatalysts. Electrochimica Acta, 469, 143246.

(Article resulting from the Master's thesis of Salman and Waseem, which I co-supervised)

Alleva, A., Ciancio, R., Emanuele, E., Gianoncelli, A., Kourousias, G., & Bozzini, B. (2024, August). Electrochemical, Structural, and Hyperspectral Imaging Investigation of Bifunctional Zn-Air Battery Gas-Diffusion Electrodes. In Electrochemical Society Meeting Abstracts 245 (No. 46, pp. 2573-2573). The Electrochemical Society, Inc..

Bozzini, B., **Alleva, A.**, Bonanni, V., Ciancio, R., Kourousias, G., Guzzi, F., ... & Gianoncelli, A. (2025). Degradation of α -MnO₂ in Zn-air battery gas-diffusion electrodes: An investigation based on chemical-state mapping. Electrochimica Acta, 513, 145534.

(Carried out all the experimental parts, the data analysis and the maps interpretation. Coded the script for image analyses)

Emanuele, E., Agrios, A. G., **Alleva, A.**, Bonanni, V., Ciancio, R., Gianoncelli, A., ... & Bozzini, B. (2025). Carbon-Cloth Supported ZnO Nanorods as Binder-Free Zinc-Ion Battery Anodes: An Investigation into the Electrode Formation Process. Advanced Sustainable Systems, 2400921.

Bozzini, B., **Alleva, A.**, Emanuele, E., Gul, S., Qin, T., Yun, W., & Mancini, L. (2025). Scale-up of zinc-air battery electrodes enhanced by 3D X-ray imaging. 14th Conference on Industrial Computed Tomography.

(Carried out the part relative to GDEs)

Alleva, A., Mele, C., Nespoli, F. & Bozzini, B (2025). The architecture of bifunctional Mn-Ni oxide-based Zn-air battery GDEs: fabrication, functional testing and ageing analysis. Electrochimica Acta, 147751.

Bozzini, B., **Alleva, A.**, Brollo, M. E. F., Ciancio, R., Dal Zilio, S., Kourousias, G., ... & Gianoncelli, A. (2025). Electrochemical wet-cell fabrication for in situ soft-X ray hyperspectral imaging of real-life ORR electrocatalysts. Journal of Analytical Atomic Spectrometry.

Nijkoops, A., Zamboni, R., Maqsood, F., Rasheed, A., Gurusekaran, A., **Alleva, A.**, Boom, R., Petti, L., Münzenrieder, N. Sacrificial Layer Free Transfer of Thin-Film Electronics using a Super-Hydrophilic Substrate. ACS Applied Electronic Materials.

Further data

IWES 2023 in Bressanone

Oral presentation: "Electrochemical, structural and soft X-ray spectromicroscopic characterization of bifunctional Zn-air battery gas-diffusion electrodes."

Won the best presentation award

IWES 2024 in Rome

Poster presentation: "Novel formulation of a catalyst ink for the production of Zn-air battery gas diffusion electrodes by spray coating."

ECS 245th Meeting in San Francisco

Oral presentation: "Electrochemical, Structural, and Hyperspectral Imaging Investigation of Bifunctional Zn-Air Battery Gas-Diffusion Electrodes."

E-MRS 2025 Fall Meeting in Warsaw

Poster presentation: "Transient and Biocompatible Chitosan-Based Thin-Film Temperature Sensors Aiming Sustainable Electronics and Multifunctional Sensing."

NANOSOLI Summer School (Catania, 2022)

Summer school: nanostructured solid-liquid interfaces for electrochemistry.

Online Machine Learning for Electron Microscopy (2023)

Summer school: application of AI and machine learning in imaging and microscopy. Used Python.

INFRACHIP School (Lisbon, 2025)

Hands-On Training: advanced and sustainable fabrication methods for electronics.

NeaPolis Innovation Summer Camp (Online, 2025)

Summer school provided by ST Microelectronics on the use of STM32 microcontrollers

Entrepreneurship

Co-founder of a photographic film development laboratory in Legnano (Ghisa FilmLab)

**Language
competence**

English C1 (TOEIC certificate)