



Ava Karami

Physicist (PhD) · Technology consulting, technical sales & support, project leadership

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PROFILE

Physicist (PhD, RWTH Aachen, magna cum laude) with nine years across materials research, industry R&D and two federally funded energy consortia worth $\approx$ €5.7 M. Turns complex measurement data into decisions that research institutes, industry partners and funding bodies can act on.

Has coordinated a consortium meeting, taught a Master's lecture, co-chaired a conference symposium and supervised PhD and master students — the working range of someone who is used to being the technical voice in a room of partners, clients and teams.

Now moving from the laboratory towards clients and teams: technology consulting, technical sales & support or project leadership in energy, materials or deep-tech.

KEY FACTS

9+ years in materials research, industry R&D and consortia	€5.7 M combined funding of the two consortia she works in (BMBF, BMWK)	2022 E-MRS Young Researcher Award, Spring Meeting, Symposium K	2 first-author journal papers (Solar RRL, J. Phys.: Energy)
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CORE COMPETENCIES

Consulting & analysis	Quantitative data analysis · Multi-method data integration · Evidence-based recommendations · Problem structuring · Technical reporting
Collaboration & leadership	Consortium coordination · Stakeholder management (research, industry, ministries) · Project planning & prioritisation · Supervision of PhD & master students
Communication & teaching	International conference talks · Symposium co-chair · Master's lecture design and delivery · Peer-reviewed publications · Presenting to mixed technical audiences
Technical domain	Hydrogen storage · Thin-film photovoltaics (CIGSe) · Semiconductor physics · Materials characterization (APT, SEM, FIB, EBSD) · FE modelling & reliability

EXPERIENCE

Postdoctoral Researcher

01/2025 – today

Max-Planck-Institute for Sustainable Materials · Düsseldorf

GreenH2Metals (BMBF, $\approx$ €2.6 M): circular metal alloys for efficient and safe hydrogen storage

- Own the analysis work package for FeTi hydrogen-storage alloys; convert nanoscale data (APT, SEM, FIB) into alloy-design recommendations for the consortium partners.
- Correlate nanoscale microstructure with hydrogen-storage performance to identify the drivers behind material behaviour and degradation.
- Act as interface to institute and industry partners: results presented at consortium meetings and international conferences.
- Define characterization workflows used across the project; supervise PhD students.

Associate Researcher

01/2023 – 12/2024

University of Freiburg, INATECH · Freiburg

EFFCIS-II (BMW, ≈ €3.1 M): high-efficiency Cu(In,Ga)Se₂ thin-film solar cells

- Internal consultant for atom-probe analysis: scoped, ran and interpreted measurements for interdisciplinary projects across functional materials.
- Co-designed experiments and data analysis with research teams; co-authored peer-reviewed publications and journal manuscripts.
- Designed and taught a Master's lecture on CIGS solar cells; supervised graduate students.
- Co-chaired a symposium at the E-MRS Fall Meeting 2023, Warsaw.

Doctoral Researcher

10/2020 – 12/2022

RWTH Aachen University, I. Physics Institute (IA) · Aachen

EFFCIS-II: semiconductor materials and grain-boundary engineering for CIGSe solar cells

- Investigated how nanoscale chemistry at grain boundaries governs photovoltaic device performance.
- Integrated quantitative results from several characterization methods into performance insights for the consortium.
- Collaborated with academic and industrial partners; organized the EFFCIS-II consortium meeting at RWTH Aachen.
- Young Researcher Award, E-MRS Spring Meeting 2022; first-author publications and international talks.

Research Intern & Master's Thesis

01/2019 – 11/2019

Robert Bosch GmbH, Corporate Research and Advanced Development · Renningen

Reliability of epoxy resins for automotive electronics

- Investigated thermo-oxidative ageing of epoxy resins; designed accelerated ageing experiments and characterized degradation.
- Built and validated finite-element lifetime models for polymer components.
- Translated experiment and simulation into a reliability assessment for the development team; industry-based Master's thesis.

Student Research Assistant

04/2017 – 01/2019

Ruhr University Bochum, Institute for Materials · Bochum

- Microstructural, chemical and structural characterization of aluminium alloys and shape-memory polymers.

EDUCATION

Doctorate in Physics — magna cum laude

10/2020 – 05/2026

RWTH Aachen University, I. Physics Institute (IA)

Dissertation: influence of host-element and impurity composition on the properties of grain boundaries in Cu(In,Ga)Se₂ solar cells

M.Sc. Materials Science and Simulation — 81/100

10/2016 – 03/2020

Ruhr University Bochum

Thesis at Bosch Corporate Research: mathematical description and numerical estimation of ageing in high-temperature PCB resins

B.Eng. Materials and Metallurgical Engineering — 73/100

10/2011 – 03/2016

Iran University of Science and Technology, Tehran

Thesis: mechanical properties of ST52 steel rebars versus polymer-matrix composite rebars

PUBLICATIONS & TALKS

- Karami, A. et al. — Role of light and heavy alkalis in Cu(In,Ga)Se₂ absorbers. *Journal of Physics: Energy* 8, 015010 (2026). First author.
- Karami, A. et al. — Sodium in Cu(In,Ga)Se₂ solar cells: to be or not to be beneficial. *Solar RRL* 8, 2300544 (2024). First author.
- Cojocaru-Mirédin, O., Karami, A. et al. — Understanding the role of light and heavy alkalis in Cu(In,Ga)Se₂ absorbers using atom probe tomography. *MATSUS Fall 2024 (nanoGe)*.
- Karami, A. et al. — Role of Na and Ag in the interconnection between chemical composition and electrical properties of grain boundaries in Cu(In,Ga)Se₂. Talk, E-MRS Spring Meeting 2022, Symposium K.

RECOGNITION

- Young Researcher Award — European Materials Research Society, Spring Meeting 2022, Symposium K (thin-film chalcogenide photovoltaics).
- Co-Chair of a symposium — E-MRS Fall Meeting 2023, Warsaw.

LANGUAGES

Persian native · **English** fluent (C1) · **German** upper-intermediate (B2)