Dr.-Eng. Anca Mazare

Postdoctoral researcher and habilitation candidate in materials science

AFFILIATION	Friedrich-Alexander-Universität Erlangen-Nürnberg
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01 Profile

Materials scientist specializing in oxide-based catalytic materials, nanostructured thin films, and single-atom/dual-atom catalysts. The research integrates materials synthesis with advanced spectroscopy to reveal structure-function relationships in heterogeneous and light-driven catalytic systems, biomedical interfaces, and functional coatings.

Habilitation programme: Oxide nanostructures and their modification for tailor-made material interactions (since May 2022).

02 Academic appointments

Since May 2022

Habilitation candidate

Friedrich-Alexander-Universität Erlangen-Nürnberg

Habilitation programme on oxide nanostructures and tailor-made material interactions.

Sep 2021-Feb 2022; Apr 2022-Jan 2023

Visiting associate professor

Tohoku University, Advanced Institute for Materials Research, Sendai, Japan

International appointment at AIMR.

Nov 2012-present

Postdoctoral researcher

Friedrich-Alexander-Universität Erlangen-Nürnberg, LKO

Research in oxide nanostructures, catalysis, surface analysis, and interfacial applications.

Oct 2011-Oct 2012

Teaching assistant

Politehnica University of Bucharest, Romania

Teaching role preceding the FAU appointment.

03 Education and training

Oct 2009-Nov 2012

Ph.D. Chemistry

Politehnica University of Bucharest, Romania

Doctoral training in chemistry.

Oct 2008-Jul 2010

Master's Degree in Biocompatible Substances, Materials and Systems

Politehnica University of Bucharest, Romania

Graduate training in biocompatible materials and systems.

Oct 2005-Jul 2008

Bachelor of Economic Sciences

Romanian-American University, Romania

Bachelor-level training in economic sciences.

Oct 2003-Jun 2008

Diploma Engineer, Dipl.-Eng.

Politehnica University of Bucharest, Romania

Engineering diploma.

04

Research programme and methods

Central question: How can oxide nanostructure geometry and surface modification be used to create tailored material interactions?

Four connected research themes:

- Oxide nanostructures and thin films
- Single-atom and dual-atom catalysts
- Surface analysis and structure-function relationships
- Biomedical interfaces and functional coatings

Methods: materials synthesis, surface modification, defect engineering, XPS, ToF-SIMS, FTIR, Raman, GDOES, catalytic and photoelectrochemical evaluation, and interface-focused analysis.

05

Teaching and mentoring

Since 2014 — **Nanooberflächen und Strukturierung**

Friedrich-Alexander-Universität Erlangen-Nürnberg

Lecture, 2 hours per week.

Since 2020 — **ToF-SIMS**

Friedrich-Alexander-Universität Erlangen-Nürnberg

Practical course / internship.

Since 2021 — **Surface Analysis II**

Friedrich-Alexander-Universität Erlangen-Nürnberg

Lecture and exercise, 2 hours plus 1 hour per week.

Since 2024 — **Basic Electrochemistry II**

Friedrich-Alexander-Universität Erlangen-Nürnberg

Lecture and exercise, 2 hours plus 2 hours per week.

Since 2023 — **MAP and corrosion / surface-analysis internships**

Friedrich-Alexander-Universität Erlangen-Nürnberg

Internship responsibility.

- Since 2012: mentoring more than 10 Ph.D. and postdoctoral researchers.
- Since 2014: eight Bachelor's or Master's theses supervised.

06

Funding and project participation

Emerging Talents Initiative (1/21 ETI), Friedrich-Alexander-Universität Erlangen-Nürnberg.

Participation in DFG and EU third-party funding applications.

Project participant in SAN4Fuel - Single Atom-Based Nanohybrid Photocatalysts for Green Fuels; Horizon Europe Twinning, grant agreement 101079384; project period 1 November 2022 to 31 October 2025.

07

Academic service

- Patents: EP21166558.3A, PCT/EP2022/058409, and USPTO application 63/499,717.
- Reviewer for Electrochimica Acta, Surface and Interface Analysis, Colloids and Surfaces B: Biointerfaces, and other journals.
- Reviewer of research proposals for Poland, the Czech Republic, and the Netherlands.
- More than 20 oral, invited, or keynote presentations.
- Member of the Internship Committee, Department of Materials Science and Engineering, FAU, since 2023.
- ProfiLehre plus Advanced/Aufbaustufe certificate for higher-education teaching, 8 February 2024.

08 Selected collaborations

- Prof. Ales Iglic - University of Ljubljana, Slovenia
- Prof. Marco Altomare - University of Twente, MESA+ Institute, Netherlands
- Prof. Michael Otyepka - Palacký University Olomouc / RCPTM, Czech Republic
- Prof. Manuella Killian - University of Siegen, Germany
- Prof. Ayumi Hirano-Iwata - Tohoku University, Japan
- Prof. Corina Andronescu - University of Duisburg-Essen, Germany
- Prof. Thomas Kuhne - HZDR / CASUS, Germany
- Prof. Silke Christianssen - Fraunhofer IKTS, Germany
- Prof. Jason Xu Zhichuan - Nanyang Technological University, Singapore

09 Languages

- Romanian (native)
- English (CPE C2)
- German (Goethe-Zertifikat B2)
- French (advanced)

10 Selected awards

- Best Oral Presentation at Session 4, CMSE2021.
- Best Presentation Award, NanoBioMat 2021.
- Materials 2022 Outstanding Reviewer Award.
- Coatings 2022 Outstanding Reviewer Award.

11 Selected publications

1. A. Mazare, M.H. Ulubas, H. Kim, I. Fomicheva, G. Sarau, S.H. Christiansen, W.H. Goldmann, A.B. Tesler. Binding Kinetics of Self-Assembled Monolayers of Fluorinated Phosphate Ester on Metal Oxides for Underwater Aerophilicity. Langmuir, 2025, 41(3), 1868-1875. DOI: 10.1021/acs.langmuir.4c04320.

2. A. Mazare, W.H. Goldmann, E. Kocak, B. Osuagwu, S. Qin, R. Cao, P. Schmuki. Silver-Loaded Titania-Based Metal-Organic Frameworks as a Platform for Silver Ion Release for Antibacterial Applications. Nano Letters, 2025. DOI: 10.1021/acs.nanolett.5c02681.

3. J. Park, A.B. Tesler, E. Gongadze, A. Iglic, P. Schmuki, A. Mazare. Nanoscale topography of anodic TiO2 nanostructures is crucial for cell-surface interactions. ACS Applied Materials & Interfaces, 2024, 16, 4430-4438. DOI: 10.1021/acsami.3c16033.

4. I. Hwang, A. Mazare, J. Will, T. Yokosawa, E. Spiecker, P. Schmuki. Inhibition of H2 and O2 recombination: the key to a most efficient single-atom co-catalyst for photocatalytic H2 evolution from plain water. Advanced Functional Materials, 2022, 32(44), 2207489. DOI: 10.1002/adfm.202207849.

5. K. Lee, A. Mazare, P. Schmuki. One-dimensional titanium dioxide nanomaterials: Nanotubes. Chemical Reviews, 2014, 114(19), 9385-9454. DOI: 10.1021/cr500061m.

12 Professional profiles

FAU CRIS: https://cris.fau.de/persons/101708300/publications

ORCID: https://orcid.org/0000-0002-4836-946X

Google Scholar: https://scholar.google.de/citations?user=-Wryz8kAAAAJ

ResearchGate: https://www.researchgate.net/profile/Anca_Mazare