# dr inż. Katarzyna Gwóźdź

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## RESEARCH FOCUS

> *Semiconductor physics, pyrophototronic photodetectors, deep-level transient spectroscopy (DLTS), oxide semiconductors, photovoltaic materials, and LabVIEW-based measurement systems.*

## BIBLIOMETRIC INDICATORS

| 49 | 900+ | 17 | 30+ |
|---|---|---|---|
| PUBLICATIONS | CITATIONS | H-INDEX | CONFERENCE PRESENTATIONS |

## ACADEMIC POSITIONS & EDUCATION

**Assistant Professor (Adiunkt)** **2023 – Present**
Department of Experimental Physics, Faculty of Fundamental Problems of Technology, Wrocław University of Science and Technology

**Assistant Professor (Adiunkt)** **2021 – 2023**
Department of Quantum Technologies, Faculty of Fundamental Problems of Technology, Wrocław University of Science and Technology

**Ph.D. in Physics** **2021**
Department of Quantum Technologies, Faculty of Fundamental Problems of Technology, Wrocław University of Science and Technology
Thesis: "*Optimization of the ZnO-Si photovoltaic cells*" | Supervisor: Prof. Ewa Popko

**Assistant (Asystent)** **2019 – 2021**
Department of Quantum Technologies, Faculty of Fundamental Problems of Technology, Wrocław University of Science and Technology

## RESEARCH VISITS & INTERNATIONAL MOBILITY

**Politecnico di Torino, Italy** **2026**
Host: Prof. Davide Papurello
Research stays on functional energy materials and CSP systems engineering.

**University of Minho, Braga, Portugal** **2018 – 2024**
Hosts: Prof. Maria de Jesus de Matos Gomes, Dr. José Silva
4 research visits on pyroelectric, pyrophototronic, and photodetector characterization.

**Technische Universität Dresden, Germany** **2016 – 2022**
Host: Dr. Vladimir Kolkovsky and Prof. Jörg Weber
7 research stays (cumulative ~13 months) focused on defect spectroscopy and DLTS measurements.

**Institute of Physics, Polish Academy of Sciences, Warsaw, Poland** **2015**
Host: Dr. hab. Rafał Pietruszka
Research internship on ALD oxide thin films for photovoltaics.

## KEY RESEARCH GRANTS & PROJECTS

**Principal Investigator (Kierownik) | OPUS 29 (NCN)** **2026 – 2029**
Project No. DEC-2025/57/B/ST7/02143
"Recovering Lost Energy: Harnessing Thermal Effects in Pyrophototronic Photodetectors"

**Principal Investigator (Kierownik) | MINIATURA 7 (NCN)** **2023 – 2024**
Project No. DEC-2023/07/X/ST7/00073
"Light detection through pyrophototronic effect in oxide-based flexible structures"

## SELECTED KEY PUBLICATIONS

1. N. Estrócio, A. R. Jayakrishnan, **K. Gwóźdź**, et al., *"CMOS-compatible ZrO2-based film for photoplethysmography sensors..."*, **ACS Applied Materials & Interfaces** 18(1), 2130-2138 (2026).
2. **K. Gwóźdź**, A. Kaim, J. Silva, *"From rigid silicon to soft hybrids: A review on emerging materials..."*, **APL Electronic Devices** 2(2), 011503 (2026).
3. N. E. Silva, ..., **K. Gwóźdź**, et al., *"Ultra-Sensitive, Self-powered, CMOS-Compatible Near-Infrared Photodetectors..."*, **Advanced Functional Materials** 35(14), 2416979 (2025).
4. A. Kaim, **K. Gwóźdź**, *"myDLTS: LabVIEW based software for deep level transient spectroscopy..."*, **SoftwareX** 26, 101679 (2024).

## AWARDS & HONORS

**Laureate of 'Primus' and 'Secundus' Scientific Excellence Programs** **2020 – Present**
Wrocław University of Science and Technology
Competitive university incentive programs for outstanding publication output.

**Rector's Award for Scientific Achievements (8-time Recipient)** **2016 – 2025**
Wrocław University of Science and Technology
Awarded for high-impact research and university service (2016–2018, 2020, 2022–2025).

**Minister of Science Scholarship for Outstanding Doctoral Students** **2017**
Ministry of Science and Higher Education, Poland
National award for achievements during Ph.D. studies.

**Distinction in the "Young Scientists" Competition** **2022, 2015**
XXI & XIV National Conference on Electronics (KKE), Poland

**Best Paper & Presentation Award** **2016**
14th Students' Science Conference (Fundamental Research Category)

## ACADEMIC LEADERSHIP, SERVICE & OUTREACH

**Institutional Leadership & Governance:** Member of the Faculty Board (2024–2028), Council of Young Scientists (2021–2023), and Academia Iuvenum Executive Board Secretary (2022–2023). Member of the Technical Physics Program Committee, Deputy Coordinator of 'Polytechnica Nova', and Lem European Research Prize Committee (2023). Co-author of the PKA Accreditation Report (2026).

**Student Supervision & Mentorship:** Academic Advisor for 'NanoIn' Student Club; Project Leader for Orlen-funded 'SemiLab' (2025–2026); Co-author of 'TASK' Educational Grant (2024). External Mentor for Empiriusz Foundation (2024) and Sciencon (2022).

**Educational Outreach & Publications:** Faculty High School Outreach Coordinator; Physics Lab Coordinator & Jury for WUST Academic High School (ALO). Co-translator of the OpenStax "*University Physics*" textbook (2019) and PLANCKS 2022 Jury Member.

## SKILLS & EXPERTISE

**Characterization & Spectroscopy:** Deep-Level Transient Spectroscopy (DLTS, LDLTS, ODLTS, IDLTS, PICTS), I-V / C-V Characterization, Photovoltaic Testing (T, R, EQE, Efficiency), Photoluminescence (PL), Raman Spectroscopy, AFM, Kelvin Probe, Infrared Thermography.
**Software, Programming & Data Analysis:** LabVIEW (Certified LabVIEW Developer - CLD), MATLAB, OriginLab, Gwyddion, FLIR Research Studio, LaTeX.
**Thin Film Deposition & Fabrication (Complementary):** Atomic Layer Deposition (ALD), Sputtering (Magnetron/Ion-Beam), Pulsed Laser Deposition (PLD), 3D Printing.
**Management & Certifications:** PRINCE2® Foundation, Agile Project Management, Action Learning / Problem Solving.