Dr. Yakup Bakış
Physicist | Researcher | Nanotechnology Specialist
Üsküdar, Istanbul, Turkey
Email: dr.ybakis@gmail.com

Professional Summary

Experienced physicist with **15+ years** of expertise in **nanotechnology, semiconductor devices, sensors, and thin film fabrication**. Specialized in **nanomaterials, organic/inorganic electronic devices, spectroscopic characterization, and advanced material analysis techniques**. Led multiple **TUBITAK-funded projects** and published numerous **peer-reviewed research articles**. Skilled in **TEM, SEM, AFM, XRD, and spectroscopy systems** with hands-on experience in **nanofabrication and thin-film deposition techniques**.

Education

- **Ph.D. in Physics**, Gebze Technical University, Turkey (2011)
  - Thesis: *Investigation of A3B3C62 Ferroelectrics Semiconductor with Dielectric Spectroscopy*
- **M.Sc. in Physics**, Gebze Technical University, Turkey (2005)
  - Thesis: *Dielectric Spectroscopy of Layered TlInS2 Crystal*
- **M.Ed. in Physics Education**, Marmara University, Turkey (2001)
- **B.Sc. in Physics**, Istanbul University, Turkey (1998)
  - Focus: *Neutron Activation Energy*

Research & Work Experience

IRADETS Innovative Radiation Detector Systems (2023 - Present)

- Conducting R&D on **radiation detection technologies**.
- Developing **sensor calibration and data analysis algorithms**.

OPTOMED Calibration and Metrology Training Center (2021 - 2023)

- Responsible for **ISO 17025-compliant calibration processes** for optical and electronic measurement systems.

İstanbul University-Cerrahpaşa, Institute of Nanotechnology and Biotechnology (2010 - 2016)

- Served as **Coordinator & Researcher**.
- Supervised R&D projects in **nanofabrication, thin-film deposition, and organic electronics**.
- Managed **30+ advanced scientific instruments**, including **SEM, AFM, Raman, XRD, CVD, and e-beam deposition systems, photo/ebeam-lithography**.

Gebze Technical University, Physics Department (2007 - 2009)

- Conducted research on **ultraviolet light detectors and semiconductor layer structures**.
- Worked on **TUBITAK-funded projects** in semiconductor material characterization.

Technical Expertise

- **Nanofabrication:** Optical & e-Beam Lithography, RIE.
- **Thin Film Deposition**: MBE, e-Beam, RF/DC Sputtering, CVD, OVPD, PECVD.
- **Material Characterization:** SEM, AFM, XRD, GIXRD, XRF, EDX (Surface and structural analysis at micro- and nano-scale).
- **Optical Spectroscopy**: UV/Vis, Raman, FTIR, Photoluminescence, Confocal Microscopy
- **Electrical Measurements**: Dielectric Spectroscopy, I-V, C-V, Four Probe Measurements
- **Radiation Detection**: GAMMA camera & Dosimetry Development.
- **Embedded Systems & Programming**: Python, C++, LabVIEW, MATLAB, Java, PHP, STM32/ARM Microcontroller Programming, mobile apps.
- **Data Acquisition & Interface Development:** Design and implementation of data acquisition systems; development of user interfaces for instrument control; integration of hardware with software platforms such as LabVIEW, MATLAB, and Python; experience with National Instruments hardware and communication protocols (e.g., GPIB, USB, Ethernet).
- **Industrial Testing & Calibration:** Electrical, mechanical, optical, and thermal sensor characterization; calibration and testing in compliance with international standards (ISO/IEC 17025); evaluation of selectivity, sensitivity, and stability**.**
- **PCB Design & Fabrication & Prototyping:** CNC PCB Milling, PCB Design & Manufacturing, Soldering & Assembly. Gerber File Generation.
- **CAD & CAM Software**: SolidWorks, AutoCAD, PCB Design programs.

Research Projects & Funding

- **Fabrication & Characterization of Nano-structured OFETs** (TUBITAK, 2014-2017)
- **Light-Emitting Diode based on Porous Silicon** (University Research Fund, 2014-2016)
- **Development of Nanostructured Organic Solar Cells** (University Research Fund, 2015-2017)
- **Creation of Awareness from 7 to 70 on Nanotechnology** (TUBITAK 4004, 2013-2014)

Selected Research Projects Application

- ***Enhanced OFET with Self-Assembled Nanostructures for Biosensor Applications*** (Marie Skłodowska-Curie, Individual Fellowships: Global, 2019)

Publications & Conferences

- **11 SCI-indexed publications** in **nanotechnology, semiconductor physics, and material science**.
- Oral & poster presentations at **NanoTR Conferences and Brazil-Turkey Nanotechnology Seminars**.

Selected Publications

- Bakış, Y., Auwal, I. A., Ünal, B., Baykal, A. *"Maxwell-Wagner relaxation in grain boundary of BaBixLaxYxFe12-3x O19 hexaferrites."* **Composites Part B** 99 (2016) 248-256.
- Bakış, Y., Auwal, I. A., Ünal, B., Baykal, A. *"Conductivity and dielectric properties of SrLaxBixYxFe12-3x O19 hexaferrites."* **Ceramics International** 42 (2016) 11780-11795.

Submitted Conference Proceedings

- Alpat, A. B., et al. *"MRADSIM (Matter-RADiation Interactions SIMulations)."* **arXiv preprint** arXiv:2411.11173 (2024).
- Alpat, A. B., et al. *"IRADCAL: A Monolithic Inorganic Scintillator And Thin Scintillators To Measure Low Energy Electron, Proton And Heavy Ion Albedo Spectrums From Lunar Surface."* **arXiv preprint** arXiv:2411.11178 (2024).

Workshops & Conferences

- **12th International Nanoscience & Nanotechnology Conference (NanoTR-12)**, Kocaeli, Turkey, June 2016.
- **Brazilian-Turkish Nanotechnology Seminar**, Universidad Federal do ABC, Santo Andre, Brazil, December 2015.
- **Vision Research Laboratories of Universities Workshop II**, Dumlupinar University, Kütahya, Turkey, November 2015.
- **Turkish-Brazilian Nanotechnology Workshop**, Istanbul, Turkey, December 2014.

Patent Application

- *Transistor and Method Developed to Improve Performance of Microchips* (Patent No: PT2015-01786, Class: H01L).

TEACHING & SUPERVISION

- Lectured in English (2013-2016):
  - **BNTE 610**: Solar Energy and Technology
  - **BNTE 613**: Materials Characterization Techniques
  - **BNTE 614**: Advanced Semiconductor Devices
  - **BNTE 617**: Semiconductor Physics and Technology
  - **BNTE 619**: Organic Electronic, Devices, and Technologies
  - **CHEM 405**: Material Chemistry
  - **CHEM 432**: Solid State Chemistry and Inorganic Materials

- Thesis Supervision
  - **Co-Supervisor:** Design and Morphological Investigation of Porous Silicon Nanostructures, Yaseen Zainab (2016).
  - **Supervisor:** Nano Material Doped Organic Solar Cell Production and Characterization, Arslan Yasin (2015).

Languages

- **English: Fluent (4+ years of teaching in English at IB high schools and universities).**
- **August 2021** YÖKDil: **68,75**
- **Turkish: Native.**

References

Available upon request.