Shehadeh Mahran

Curriculum Vitae

www.linkedin.com/in/
github.com/

Fluent: Hebrew, Arabic, English — Beginner: Spanish

Education

2020–Present **Ph.D. in Biophysics**, *Weizmann Institute of Science*, Rehovot, Israel
Department of Chemical & Biological Physics
Advisor: Prof. Gilad Haran
Focus: Protein folding & dynamics using single-molecule FRET and plasmonic nanostructures; combined experimental pipelines with ML (LSTM) for photon time-series analysis; BEM/FDTD for nanoantenna optimization.

2016–2019 **M.Sc. in Physics**, *Weizmann Institute of Science*, Rehovot, Israel
High Energy Physics Department
Advisors: Prof. Eilam Gross & Prof. Ehud Duchovni
ATLAS Collaboration data analysis (ROOT/C++).

2012–2016 **B.Sc. in Physics & Materials Science and Engineering**, *Technion – Israel Institute of Technology*, Haifa, Israel

Research Experience

2020–Present **Ph.D. Research — Single-Molecule Biophysics**, *Weizmann Institute of Science*, Rehovot, Israel
Advisor: Prof. Gilad Haran

- Designed and executed smFRET experiments with plasmonic nanoantennas to boost photon yield.
- Developed time-series ML (LSTM) models for protein dynamics; built analysis pipeline for photon streams.
- Performed BEM and FDTD simulations to optimize local-field enhancement and emission pathways.

2019–2020 **Research Assistant — Light–Matter Interactions in Ultracold Atoms**, *Weizmann Institute of Science*, Rehovot, Israel
Group of Prof. Nir Davidson
Explored collective nonlinear optics and light–matter interactions in BECs.

2016–2019 **M.Sc. Research — High Energy Physics (ATLAS)**, *Weizmann Institute of Science*, Rehovot, Israel
Developed ROOT/C++ analysis for ATLAS; contributed to searches and precision measurements.

2015 **Computational Physics/Chemistry Project**, *Weizmann Institute of Science*, Rehovot, Israel
Advisor: Prof. Maytal Caspary Toroker
Modeled metal-oxide catalysts for PEC water splitting (VASP, Quantum ESPRESSO).

Publications

Zaffran, J., Stevens, M. B., Trang, C. D. M., **Nagli, M.**, **Shehadeh, M.**, Boettcher, S. W., & Caspary Toroker, M. (2017). Influence of Electrolyte Cations on Ni(Fe)OOH Catalyzed Oxygen Evolution Reaction. *Chemistry of Materials*, 29(11), 4761–4767.

Zaffran, J., **Nagli, M.**, **Shehadeh, M.**, & Caspary, M. (2018). Efficient cationic agents for exfoliating two-dimensional nickel oxide sheets. *Theoretical Chemistry Accounts*, 137, 1–5.

CERN–LHC–ATLAS author; see INSPIRE-HEP profile: 1624629.

Conferences, Internships, & Schools

2025 Biophysical Society Annual Meeting, Los Angeles — Poster/Presentation.

2024 Weizmann AI Hub internship — Developed LSTM model for FRET photon time series.

2021 Summer School in Plasmonics, Paris.

Scholarships & Awards

2025 Breakthrough Prize in Fundamental Physics (ATLAS Collaboration).

2023 Certificate of appreciation for advancing diversity & inclusion, Weizmann Institute.

2016 Council for Higher Education Scholarship for excellent students from the Arab Community.

2015 Amos de-Shalit Ulpana for Physics, Weizmann Institute.

2013 Technion Dean Price for Excellence

Teaching & Outreach

2022–2023 Teaching math, thinking skills, and English in Arab secondary schools (Lod & Ramle).

2021 Founded Arab Forum at Weizmann to promote wellbeing, culture, and inclusion.

2018–Now Science tutor with Davidson Institute; outreach for secondary/high-school students.

2018–2022 Volunteer Physics & Math teacher in Lod High School project (periphery).

2015–2016 First-year Physics Lab Tutor, Technion.

2015–2017 Tutor, Virtual School (") — Teaching 5-unit Physics.

2013–2014 Perach Project participant (mentoring & group activities).

2012–2015 Translator, Khan Academy (Hebrew/Arabic/English).

2011–2012 Personal tutor, Ma'an Foundation, Makr.

Certifications & Creative Pursuits

Technion Courses Teaching Certificate.

ITTT ESL 120-hour Certificate; ITTT TBE 50-hour Certificate.

365 Data Science — Certificate of Achievement: Introduction to Data and Data Science.

Certificate of Professional Acting (1-year), Jaffa Arab–Hebrew Theatre.

Skills

Experimental smFRET, fluorescence microscopy, plasmonics nanoantennas, optical instrumentation.

Computational MATLAB, Python, C/C++, C#, ROOT, Linux, VASP, Quantum ESPRESSO, FDTD, BEM, HTML.

Languages Hebrew, Arabic, English ; Spanish (beginner).