

# Nir Sukenik

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## Curriculum Vitae

### Education and Research Experience:

- **2022-present:** Fulbright Postdoctoral Fellow in the Department of Physics at the University of Southern California (USC), USA.  
Fulbright postdoctoral fellow researching electron and spin transport mechanisms in electroactive microorganisms under Prof. Moh El-Naggar.
- **2017-2022:** PhD in applied physics at the Hebrew University of Jerusalem (HUJI), Israel.  
Researching spin effects created by chiral molecular layers on superconductors and ferromagnets under Prof. Yossi Paltiel.
- **2015-2017:** Applied physics studies in the Nano Technology Excellence program for MSc, at HUJI, Israel.  
Studying electron transport through chiral molecules using a microfabricated superconductor-chiral molecule-normal metal junction device under Prof. Yossi Paltiel
- **2012-2015:** Physics and Chemistry studies for BSc. at HUJI, Israel.  
2014-2015: undergraduate physics project, developing ferromagnetic nanoparticle and chiral molecule devices for spintronics under Prof. Yossi Paltiel  
2013: Undergraduate summer project: research of photovoltaic solar cells using carbon quantum dots under Prof. Lioz Etgar.

### Publications:

- T. Q. Dang, C. C. Harris, S. Yadav, F. Zhao, L. T. Baczewski, M. Y. El-Naggar, and **N. Sukenik**. 'Probing the Role of Molecular Orientation on Spin-Selective Electron Transport through the Bacterial Multiheme Cytochrome MtrA' J. Phys. Chem. Lett. 2026, XXXX, XXX, XXX-XXX
- M. S. Chavez, M. A. MacLean, **N. Sukenik** et al. "Electrode-Respiring *Geobacter sulfurreducens* for Biofilm-Localized Palladium Nanoparticle Formation" (2023, article in review and available on the ChemRxiv)
- C. M. Niman\*, **N. Sukenik**\* et al. 'Bacterial extracellular electron transfer components are spin selective' J. Chem. Phys. 2023, 159, 145101
- **N. Sukenik** et al. 'Imprinting Chirality on a Conventional Superconductor' Adv. Physics Res. 2023, 2200072.
- M. Ozeri, T.R. Devidas, H. Alpern, E. Persky, A. V. Bjorlig, **N. Sukenik** et al., "Scanning SQUID Imaging of Reduced Superconductivity Due to the Effect of Chiral Molecule Islands Adsorbed on Nb," Adv. Mater. Interfaces 2023, 10, 2201899.
- H. Alpern, M. Amundsen, R. Hartmann, **N. Sukenik** et al., "Unconventional Meissner screening induced by chiral molecules in a conventional superconductor," Phys. Rev. Materials 2021, 5, 114801.
- T.S. Metzger, R. Siam, Y. Kolodny, N. Goren, **N. Sukenik** et al., "Dynamic Spin-Controlled Enantioselective Catalytic Chiral Reactions," J. Phys. Chem. Lett. 2021, 12(23), 5469.

- I. Meirzada\*, **N. Sukenik**\* et al., "Long-Time-Scale Magnetization Ordering Induced by an Adsorbed Chiral Monolayer on Ferromagnets," ACS Nano 2021, 15(3), 5574.
- **N. Sukenik** et al., "Correlation between Ferromagnetic Layer Easy Axis and the Tilt Angle of Self Assembled Chiral Molecules," Molecules 2020, 25(24), 6036.
- M. Periyasamy, H. Bradshaw, **N. Sukenik** et al., "Universal proximity effects in hybrid superconductor-linker molecule-nanoparticle systems: The effect of molecular chirality," Appl. Phys. Lett. 117, 242601.
- H. Alpern, K. Yavilberg, T. Dvir, **N. Sukenik** et al., "Magnetic-related States and Order Parameter Induced in a Conventional Superconductor by Nonmagnetic Chiral Molecules," Nano Lett. 2019, 19, 8, 5167.
- A. Ziv, A. Saha, H. Alpern, **N. Sukenik** et al., "AFM-Based Spin-Exchange Microscopy Using Chiral Molecules," Adv. Mater. 2019, 1904206.
- **N. Sukenik** et al., "Proximity Effect Through Chiral Molecules in Nb-Graphene Based Devices," Adv. Mater. Technol. 2018, 1700300.
- E. Katzir, **N. Sukenik** et al., "Enhanced Vortex Pinning in Nb Using Proximity Effect Through Organic Molecules," Jour. of Phys. Commun. 2018.
- E. Katzir, **N. Sukenik** et al., "Probing Molecular-Transport Properties Using the Superconducting Proximity Effect," Small Methods 2017, 1, 1600034.

\*Equal contribution

### Professional History:

- **2022-present:** Mentoring a graduate students on spin effects measured through multiheme cytochrome nanowires as a postdoctoral fellow at USC.
- **2023-2025:** Chair of the 2025 Electron Spin Interactions with Chiral Molecules and Materials Gordons Research Seminar.
- **2019-2022:** Instructor of Mechanics for engineers at HUJI.
- **2018-2020:** Instructor of Semi-Conductor Devices course at the Azrieli College of Engineering.
- **2018:** Mentoring of Undergraduate project on the interaction of chiral molecules with super-paramagnetic particles as a PhD student at HUJI.
- **2017-2022:** Instructor of Physics lab for engineers at HUJI.
- **2014-2018:** Instructor for high school students of Physics in the virtual high school of CET.

### Conference Presentations:

#### Oral Presentations:

- 'The role of electron spin in bioenergetics and extracellular electron transfer' Rapid fire talk at American Society of Microbiology (ASM) Meeting, Los Angeles, CA, USA 2025
- 'The Role of Spin in Extracellular Respiration of Metal-Reducing Bacteria', American Physics Society (APS) March Meeting, Anaheim, CA, USA 2025
- 'CISS Effect in Extracellular Electron Transport', German Physical Society (DPG) meeting, Regensburg, Germany, 2025
- 'Electron Spin Effects in Extracellular Electron Transport Proteins', Materials Research Society Fall Meeting, Boston, MA, USA 2024
- 'A New Spin on The Biotic-Abiotic Electron Conduits of Bacterial Respiration', Moore Foundation 2023 Quantum Imaging, Sensing, & Metrology Meeting, Sausalito, CA, USA 2023
- 'Chiral Induced Magnetization Flipping', HUJI Nano Conference, Jerusalem, Israel 2022

#### Poster Presentations:

- American Society of Microbiology (ASM) Meeting, Los Angeles, CA, USA 2025
- Electro Microbiology Conference, Aarhus, Denmark, 2025
- Noth America- International Society of Microbial Electrochemical Technologies, Houston, TX, USA 2024
- Electron Spin Interactions with Chiral Molecules and Materials Gordon Research Conference, NH, USA 2023
- Bioelectronics Gordon Research Conference, NH, USA 2023
- Electronic and Magnetic Properties of Chiral Structures and their Assemblies, Telluride, CO, USA 2022
- Nano IL, Israel, 2021
- HUJI Nano Conference, Israel 2020
- the Nano Materials at the atomic scale special seminar & workshop, Israel 2019
- the Superconducting Spintronics and Majorana Physics Symposium, Cambridge, UK, 2018

### **Fellowships & Awards:**

- Best Poster Award at Noth America- International Society of Microbial Electrochemical Technologies 2024
- Fulbright Postdoc Fellowship 2022-2023
- Lipper prize for excellence in PhD research 2022
- Brojde Scholarship for Excellence 2021-2022
- Best Poster Award at the Nano Materials at the atomic scale special seminar & workshop in the Hebrew University 2019
- Lipper Prize for excellence in PhD research 2019
- Best Poster Award at the Superconducting Spintronics and Majorana Physics Symposium in Cambridge, 2018
- Nano Science Excellence Program scholarship 2015-2017
- Institute for Medical Research Israel-Canada Scholarship Award for Innovative Engineering and Computer Science 2016-2017

### **STEM Outreach and Professional Service:**

- Volunteer in organizing ‘Summer of Quantum in Los Angeles’ event 2025
- Panelist in academia panel discussion at SoCal Graduate Pathways to STEM 2024
- Reviewer for the Royal Chemical Society 2024