

R E S U M E

May 2026

1. PERSONAL DETAILS

Full name: Ofek Peretz
E-mail: ofekperetz@technion.ac.il
Public profiles: ORCID ID: [link](#), Google scholar: [link](#)

2. ACADEMIC DEGREES

03/2018 – 03/2023: **Ph.D. (Direct Track)**, GPA: 94.3/100
Faculty of Mechanical Engineering
Technion – Israel Institute of Technology, Haifa, Israel
Supervisor: Assoc. Prof. Amir D. Gat
Dissertation title: “Transient dynamics of viscous flow interacting with bistable elastic structures.”

10/2013 – 03/2017: **B.Sc., *Summa cum Laude***, GPA: 94.6/100
Faculty of Mechanical Engineering
Technion – Israel Institute of Technology, Haifa, Israel
“Reamim – R&D **excellence program** for undergraduate students”

03/2012 – 01/2013: Pre-Academic Preparatory Program, **Ranked 1st in class**, GPA: 95.1/100

3. ACADEMIC APPOINTMENTS

Expected 09/2026: **Assistant Professor**
Faculty of mechanical Engineering, Technion – Israel Institute of Technology, Haifa, Israel
Energy-to-Motion Lab (E2M Lab): energy cycles and propulsion in small-scale autonomous systems, soft robotics, compliant micro-combustion actuation, distributed actuation.

03/2023 – 09/2026: **Postdoctoral Associate**
Sibley School of Aerospace and Mechanical Engineering
Cornell University, Ithaca, NY, USA
Advisor: Prof. Robert F. Shepherd
Soft robotics locomotion, micro-combustion actuators, wave energy harvesting, and embedded systems.

4. PROFESSIONAL EXPERIENCE

03/2015 – 06/2017: Mechanical Simulations Engineer (Intern)
Systems Engineering Department, Rafael Advanced Defense Systems.
Finite element analysis of complex structures, designed and conducted stress experiments of composite materials, and aeroelastic wing optimization.

- 01/2015 – 01/2017: Physics teacher
Ankori – External School Studies
Taught physics (5 units) for external matriculation students.
- 03/2007 – 08/2011: Military service - ‘Yahmam’ unit, Field Intelligence – Lieutenant, **with honors**.
- Combat Team Leader: Directed intelligence collection, designed and executed complex operations.
 - Squad Leader Course Commander: Led professional training for squad leaders (60+ soldiers per session, conducted four times).

5. RESEARCH INTERESTS

- Micro-combustion for high-density energy systems
- Energy harvesting for autonomous systems
- Underwater autonomous systems and soft robotics
- Underground locomotion (moling and digging)
- Fluid-structure interaction
- Multistable structures

6. TEACHING EXPERIENCE

- 2018 – 2023: Lead Teaching Assistant
Faculty of Mechanical Engineering
Technion – Israel Institute of Technology, Israel
- 036032 Analytical Fluid Mechanics (036032), graduate level.
- 03401386 Fluid Mechanics 1, undergraduate level, International School.
- 034039 Experimental Methods Laboratory, undergraduate level.

7. PUBLIC PROFESSIONAL ACTIVITIES

Reviewer for archived journals

- Nonlinear Dynamics
- Journal of Fluid Mechanics
- Nature Communications
- Advanced materials

Membership in professional societies

- American Physics Society (APS)
- Israel Society for Theoretical and Applied Mechanics (ISTAM)

8. FELLOWSHIPS, AWARDS AND HONORS

- 2024: Innovating Distributed Embedded Energy Prize (InDEEP), U.S. Department of Energy (\$100,000, Top 10 Wave Energy Technologies).
- 2023: Technion Jacobs Award for Outstanding Article – Selected for best paper in engineering for 2022.
- 2019 – 2022: Israel Council of Higher Learning, “Nehemia Levtzion Scholarship”, for outstanding doctoral students (three years scholarship).
- 2017 – 2018: Faculty Excellence in Research Award (received three times).

- 2017: “Sherman Interdisciplinary Scholarship” for distinguished academic achievements
 2017: Dean’s Graduate Studies Scholarships.
 2017: Technion President’s List for academic achievements (received four times).
 2016: Rafael most valued student employee award for 2016 (top 2%).
 2015: Rafael scholarship for excellence, based on academic and professional achievements.
 2015: “Nadav Baloah Warrior Scholarship” for promising students who served in combat.

9. PUBLICATIONS

Referred papers in professional journals, Applicant in **bold**, corresponding author marked by *.

- J1. **Peretz O.** & Gat A.D.*, (2019), “Forced vibrations as a mechanism to suppress flutter—An aeroelastic Kapitza’s pendulum”,
[*Journal of Fluids and Structures*, 85, 138-148.](#)
- J2. **Peretz O.***, Mishra A.K., Shepherd R.F., & Gat A.D., (2020), “Underactuated fluidic control of a continuous multistable membrane”,
[*Proceedings of the National Academy of Sciences*, 117\(10\), 5217-5221.](#)
- J3. **Peretz O.***, Ben Abu E., Zigelman A., Givli S., & Gat A.D., (2022), “A metafluid with multistable density and internal energy states”,
[*Nature Communications*, 13\(1\), 1810.](#)
 - Featured in [Top 50 Recent Papers in Material Science](#).
 - Awarded Technion Jacobs Prize for Best Publication of 2022.
- J4. Heisser R.H., Aubin C.A., **Peretz O.**, Kincaid N., An H.S., Fisher E.M., Sobhani S., Pepiot P., Gat A.D. & Shepherd R.F., (2021), “Valveless microliter combustion for densely packed arrays of powerful soft actuators”,
[*Proceedings of the National Academy of Sciences*, 118\(39\), e2106553118.](#)
- J5. Breitman P., Pukshansky M., Zigelman A., Ben Abu E., **Peretz O.**, Givli S., & Gat A.D., (2022), “Flows in straws: Viscous flows in one-dimensional metamaterial”,
[*Physical Review Applied*, 18\(6\), 064077.](#)
- J6. **Peretz O.***, Ben Abu E., Zigelman A., Givli S., & Gat A.D., (2023), “Multistable metafluid based energy harvesting and storage”,
[*Advanced Materials*, 35\(35\), 2301483.](#)
- J7. Aubin C.A., Heisser R.H., **Peretz O.**, Timko J., Lo J., Helbling E.F., Sobhani S., Gat A.D. & Shepherd, R.F.* (2023). “Powerful, soft combustion actuators for insect-scale robots”,
[*Science*, 381\(6663\), 1212-1217.](#)
 - Features in [Science Magazine Podcast episode](#) and [Veritasium YouTube video](#).
- J8. Heisser H.R., Lya K., **Peretz O.**, Kim S.Y., Diaz-Ruiz C., Miller R., Aubin C., Sobhani S., Shepherd R.F.*, (2025), “Explosion-powered eversible tactile displays”,
[*Science Robotics*, 10, eadu2381.](#)
- J9. **Peretz O.***, Walker H., Blasi D., Aracri S., Cowen E., Pawlak G., & Shepherd R.F.*, (2026), “Modular, Scalable, and Resilient Soft Wave Energy Harvester”, [*Device*, 13, 101166.](#)

Accepted papers

- J10. Afonso G., Hilton E., Shepherd R.F., Koivikko A., **Peretz O.**, Porri T., Lunningham T., E. Bemis K., Bemis W.*, (2026), “Fin Rays as Rotating Elements in an Undulatory System.”, *Ichthyology and Herpetology*.

In preparation

- J11. Walker H., **Peretz O.**, Garcia D., Shepherd R.F., Pawlak G., “Modeling and Validation of a Small-Scale Wave Energy Converter”, Expected 2026.
- J12. **Peretz O.**, Shepherd R.F., Pawlak G., “Modular High-Power Valveless Combustion for Autonomous Underground Molding”, Expected 2026.
- J13. **Peretz O.**, Uleman A., Cinquemani S., Shepherd R.F., “Direct Wave-to-Motion Swimming for Soft Robotic Anguilliform Propulsion”, Expected 2026.

Patents

- P1. **Peretz O.**, Shepherd R., Ly K., Koivikko A., (2025) “Soft, origami inspired, wave energy converter,” US Provisional 63/842, 526.
- P2. **Peretz O.**, Ben Abu E., Gat A.D, (2024), "Metafluid-based Cooling System (MCS)", US Provisional 63/792, 867.
- P3. Gat A.D, Elbaz S., **Peretz O.**, (2019), "Embedded fluidic network aircraft skin", US 2022/0097821 A1.

10. CONFERENCES

Presenters in **bold**.

Contributed talks and posters

- C1. **Peretz O.**, Haji M., Bemis W., & Shepherd R, (2025) “*Soft, distributed, wave energy harvester*”, Innovating Distributed Embedded Energy Forum, NREL, Colorado, USA, (Talk).
- C2. **Peretz O.**, Kim Y., & Shepherd R., (2024), “*High density combustion array for underground molding*”, ARPA-E Energy Innovation Summit, Dallas, Texas, USA, (Talk).
- C3. **Peretz O.**, Zigelman A., Givli S., & Gat A.D, (2022), “*A Metafluid with Multistable Density and Internal Energy States*”, Material Research Society (MRS) Spring Meeting, Hawaii, USA, (Talk).
- C4. **Peretz O.**, & Gat A.D., (2021), “*Underactuated fluidic control of a continuous multistable structure*”, The 25th International Congress of Theoretical and Applied Mechanics (ICTAM), (Talk).
- C5. **Peretz O.**, & Gat A.D., (2019), “*Experiments and analysis of viscous flows in bistable elastic channels*”, 72nd Annual Meeting of the APS Division of Fluid Dynamics, Atlanta, USA., (Talk).
- C6. **Peretz O.**, & Gat A.D., (2018), “*Viscous flow in bistable elastic channels-analogy to Stefan's solidification problem*”, 71st Meeting of the APS Division of Fluid Dynamics, Seattle, USA, (Talk).

11. Volunteer activity

- 2023 – Present: Branch Manager, Science Abroad
Community manager of the Israeli scientific community at Cornell.
- 2017 – 2019: Advisor, Alpha program
Mentored talented high school students in modern scientific research.
- 2015 – 2016: Mentor, Sikuim Program, Yedidim – Youth and Society Organization
Supported youth-at-risk with criminal backgrounds to integrate into normative society.