



PROPOSAL

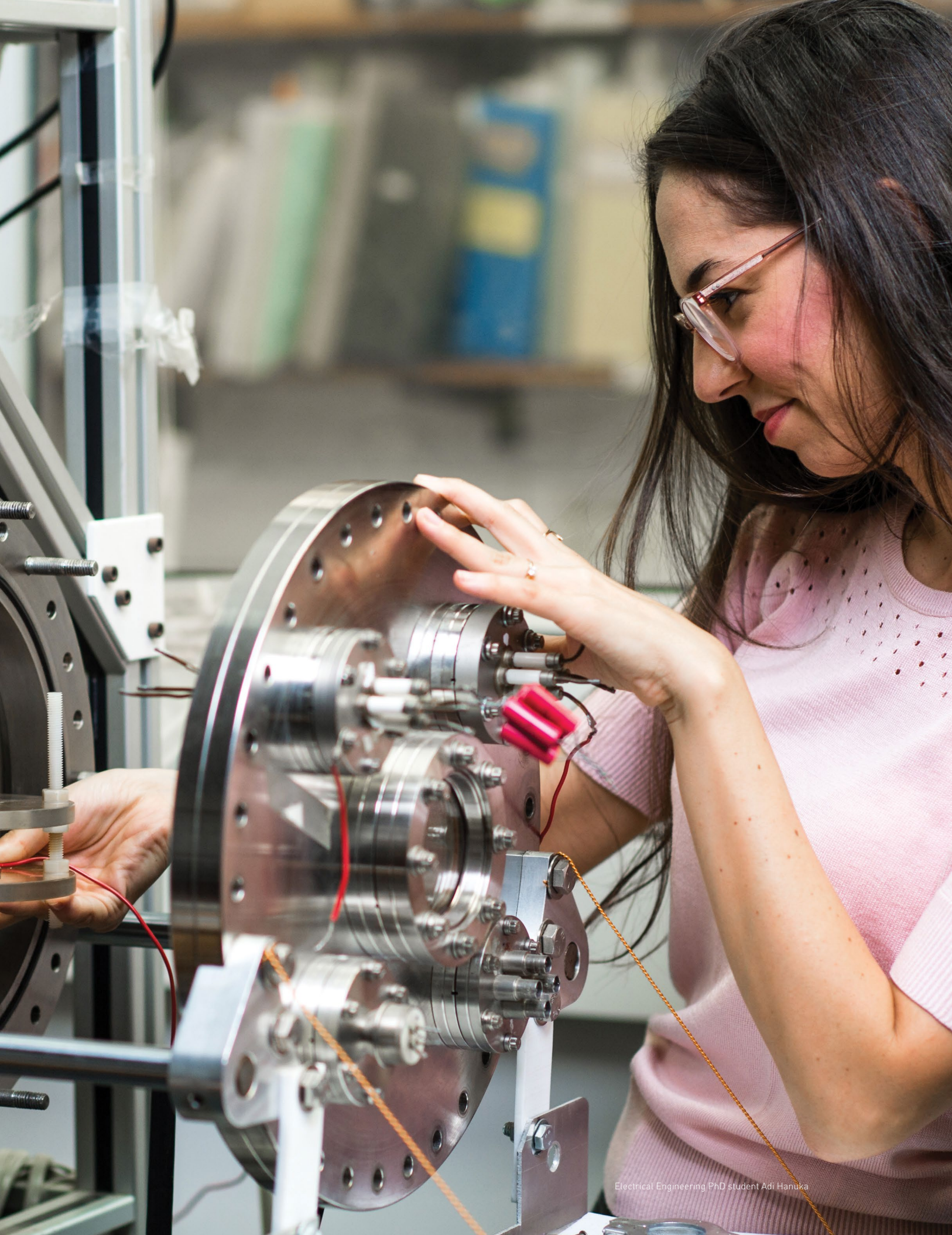
Funding in support of the  
**TECHNION WOMEN  
IN SCIENCE INITIATIVE**



Division of Public Affairs and  
Resource Development

Technion – Israel  
Institute of Technology

**2022-2023**



Electrical Engineering PhD student Adi Hanuka



Dr. Maayan Duvshani-Eshet heads Technion's Life Science and Engineering Infrastructure Unit and the Technion Genome Center

**The Technion proposes to establish the Technion Women in Science Initiative dedicated to promoting career options for women in Israel's high-tech industries and STEM academia. The fund will support women's opportunities up through the highest levels of academic training; it will offer female students increased financial assistance and alleviate some of the structural impediments to women's participation in advanced academic studies.**

This initiative adds a new layer to the tapestry of Technion programs that empower women to set about a career path in STEM – including community outreach, academic conferences, workshops and mentorship programs conducted at the high school, undergraduate, graduate and faculty levels of engagement.

“ With the incredible progress we made in Computer Science and AI in the last decade, I am seeing some of my childhood science fiction dreams coming true, like being able to talk to an AI like Alexa at home to help me shop, bake a cake or turn on the lights. This is only the beginning. We need more talented students, and especially young women, to study science and technology in graduate school in order to help push the boundaries of science and build tools that meet the unique needs of users across the world. ”

–**Yoelle Maarek**, *VP of Research and Science*,  
Alexa Shopping, Amazon



# 1 in 5

IS A WOMAN

In the EU women are underrepresented in the physical sciences, mathematics, engineering and architecture



Dist. Prof. Mordechai (Motti) Segev (l) with students in the faculty of physics

## Women in STEM

In highly technologized economies STEM competences are the gateway to higher-paying jobs and greater influence in the public sphere. The digitization of knowledge, smart systems and interconnected technologies are hallmarks of contemporary progress in healthcare, energy, transportation, entertainment, manufacturing and commerce. If a country is to remain competitive in the 21st century, it must encourage its best and brightest to pursue STEM-centric careers. In this context, gender inequality in STEM education is both immoral and economic folly: not only does it suppress women's right to compete on equal footing with men, it deprives society of half of the elite human capital that it could have applied to innovative-entrepreneurial processes.

Indeed, gender equality in scientific research and technological innovation is a

core value of governments and academia throughout the democratic world. This value is enshrined in laws and treaties, and extensively operationalized through gender mainstreaming at universities and research institutes.

In the European Union, with which Israel is comparable, the results have been mixed at best.<sup>1</sup> On average, women make up the majority of all doctoral graduates in the biological and environmental sciences; in the physical sciences, mathematics, engineering and architecture they are considerably unrepresented – making up only between 20% to 40% of doctoral graduates.

Among career academics in STEM, women's representation declines even further; less than a quarter of tenure or tenure-track faculty are women. In the U.S. the picture is more or less the same.<sup>2</sup>

1 European Union Report: She Figures 2018 (Publications Office of the E.U., 2019)

2 Sources: U.S. Council of Graduate Schools; Society of Women Engineers, *Research and Trends for Women in STEM*.



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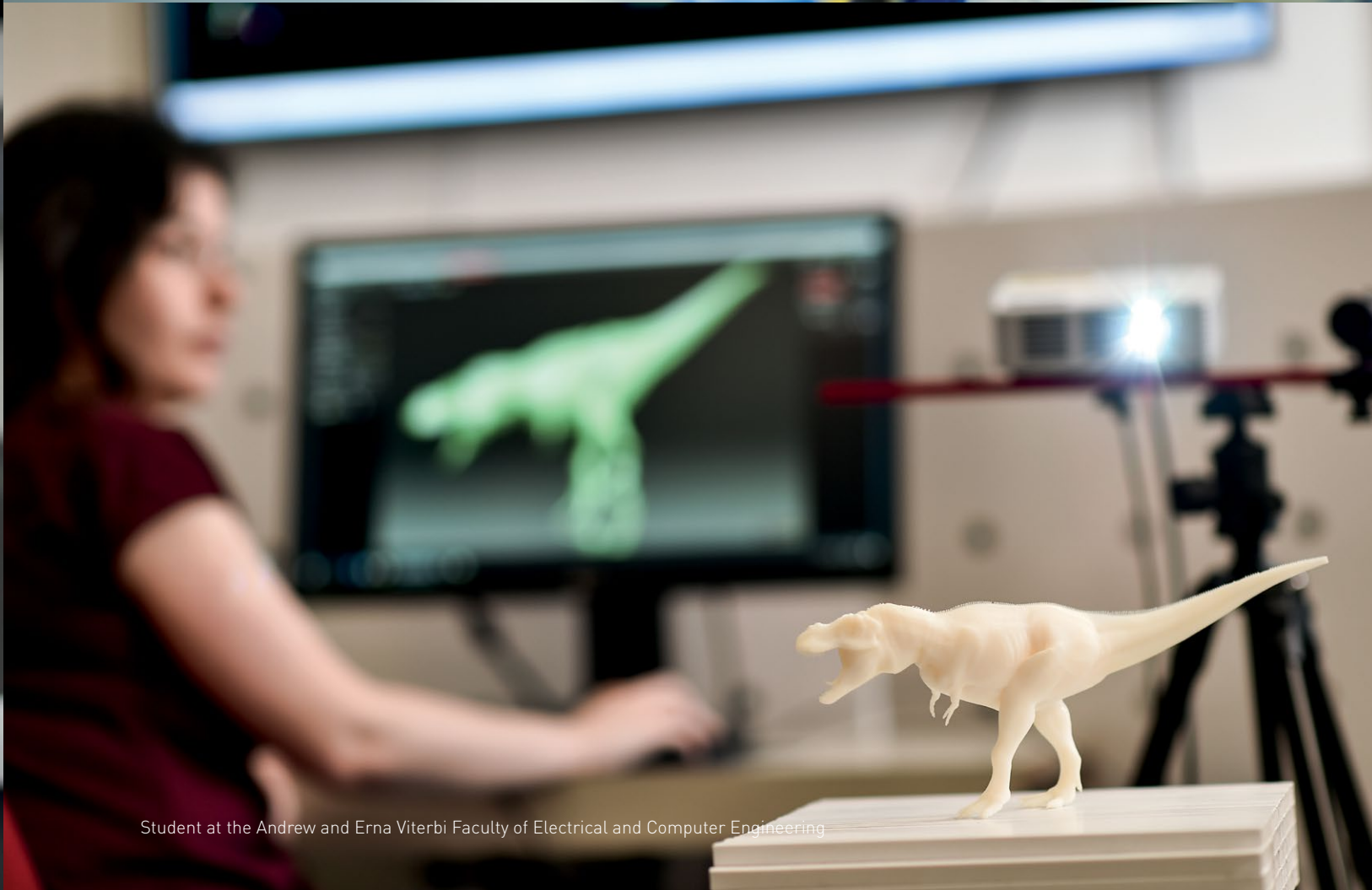
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Student at the Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering



Prof. Ester Segal, Faculty of Biotechnology and Food Engineering



Student at the Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering

## Opportunities and Challenges in Israel

**A**s a matter of culture and policy, Israel is committed to gender egalitarianism in all facets of human endeavor. This commitment is keystone to the Israeli democratic ethos and a bedrock of Israeli constitutional law. Equal conscription of women and men into the Israel Defense Forces is no less than a holy grail of Israeli society; in Israel, women serve shoulder to shoulder with men in fighting and support units in one of the world's elite armed forces.

At first glance, higher education in Israel is no exception. Women and men have equivalent access to academic studies. Indeed, significantly more women than men receive undergraduate and master's degrees in Israel; men and women earn doctorates at virtually equivalent rates.<sup>3</sup> Yet, in Israel – like in the E.U. and the U.S. – glaring disparities between men and women still exist in many of the STEM disciplines. As of 2015, women account for 38% of all students enrolled in the physical sciences in Israel's institutions of higher learning; they make up 29% of the students in mathematics, statistics and computer science.<sup>4</sup> While women constitute an encouraging 45% of Technion's overall doctoral student body,

they continue to be vastly underrepresented – among students and faculty – in most non-life-science STEM faculties.

Israeli women undertaking postdoctoral studies confront uniquely difficult challenges. They are considerably older and more likely to have begun a family than women at the same studies level in other countries<sup>6</sup>; more often than not, pursuing a post doctorate abroad involves uprooting school-age children or a spouse in mid-career. Opting out of post-doctoral studies abroad, however, virtually guarantees their exclusion from high-tier academic employment in Israeli institutions. Many women simply relent and move on to non-academic options.

Still, in the classical engineering disciplines, the problem begins even earlier. Women constitute 20% of Technion's MSc students in aerospace engineering, 15% of its MSc students in systems engineering, mechanical engineering and electrical engineering, and a mere 8% in autonomic systems and robotics. This is in part due to a noticeable drop in the proportion of women advancing from undergraduate degree to graduate level studies.

**51%**

OF THE ISRAELI  
POPULATION IS  
UNDERREPRESENTED

**The reality, in which 51% of the population is drastically underrepresented in the classical engineering disciplines, has left a gaping hole in Israel's high-tech industrial base. Israel's economy underperforms, as thousands of positions remain unfilled.**

3 Recipients of Academic Degrees (2018/19) [Israel's Central Bureau of Statistics, 2020].

4 *The Status of Women in Israel "Beijing +20"* (The Authority for the Advancement of Women, the Israeli Prime Minister's Office).

5 This is true across all of Israel's academic institutions. See (מרכז המחקר והמידע של הכנסת, 2014)

6 Ironically, because of their military service, the median age at which undergraduate students in the E.U. complete their degree is 4 years younger than that of undergraduate students in Israel – See *Education Indicators in Focus* (OECD, May 2014).

The median age of a doctoral student in Israel is 34.



Student at the Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering

**The Technion Women in Science Initiative aims at encouraging women to undertake career paths in Israeli STEM academia and related industries. The initiative seeks to encourage women to undertake graduate studies in the engineering and hard science disciplines; it similarly focuses on removing practical and economic roadblocks to a postdoctoral commitment and to improving the conditions of entry-level academic faculty. The initiative welcomes women of all cultures and backgrounds encouraging diversity and equal opportunity.**

The ultimate goal is for more women to assume key positions throughout Israel's academia and leading industries.



Prof. Roni Penn, Assistant Professor in the Faculty of Civil and Environmental Engineering



Teaching Assistant and master's student in the Computer Science Faculty, Lina Maudlej wins the Council for Higher Education Award for Social Involvement in the Community

## The Program

The proposed Technion Women in Science Initiative will consist of three main facets:

### Fellowships at the MSc Level and Doctoral Levels

Fellowships will be awarded to female MSc and PhD students, with an emphasis on those studying in disciplines in which women are generally underrepresented. Fellowships in the amount of \$20,000 and \$25,000 per year, respectively, will be awarded based on academic merit.

### Supplemental Aid for Postdoctoral Fellows Abroad

Every year, outstanding female scientists embarking on post-doctoral research abroad will be awarded a fellowship in the amount of \$60,000 for two years of post-doctoral training.

### Postdoctoral Fellows in Israel

Technion fellowships for postdoctoral studies will be awarded to those, who fall within one of the following categories, and because of familial circumstances are unable to relocate abroad:

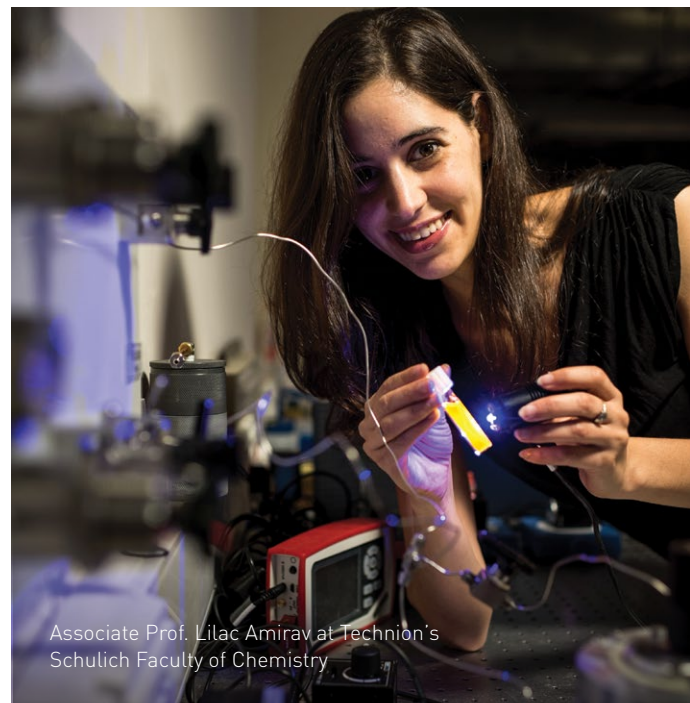
- Those who qualified at the Technion and will do their postdoctoral studies at another Israeli university; or
- Those who qualified at another Israeli university and will do their postdoctoral studies at the Technion.

International collaboration in postdoctoral research is a prerequisite for this fellowship.

Postdoctoral fellows in Israel will be awarded a fellowship of \$60,000 for two years of post-doctoral training.

Recipients will be selected in accordance with guidelines and considerations outlined in the call for candidates. The program will address the uniquely low representation of women in the following faculties:

- Aerospace Engineering
- Physics
- Mathematics
- Computer Science
- Mechanical Engineering
- Electrical Engineering
- Chemistry
- Civil and Environmental Engineering



Associate Prof. Lilac Amirav at Technion's Schulich Faculty of Chemistry



## Funding

Robotics student at Technion's Student at the Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering

### Contribution requested

We invite you to partner with us to promote women in all areas of STEM. The Technion is seeking support in the amount of \$5,300,000 over a ten-year period that will allow women to advance to higher degrees and thereby enhance their competitive edge when applying for key positions in Israel's academia and leading industries.

### Donor Recognition

1. Donors of gifts of over \$1M will be honored with the title "Guardian" the highest level of donor recognition.
2. Fellowships will be named for the donor in accordance with Technion standards and for gifts in excess of \$100,000 the fellowships will be listed in the "President's Report," the official annual report of the Technion..
3. For gifts above \$25,000, a plaque bearing the name of the donor will be placed in a prominent location at the Technion. Alternatively, digital recognition will be given in lieu of a plaque.



Dr. Arielle Fischer, Assistant Professor in the Faculty of Biomedical Engineering



Technion biologist Prof. Marcelle Machluf is among the 14 torch bearers at Israel's 70th Anniversary ceremony - in national recognition of her research achievements.