

Personal Details

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Education

1. Senior Lecturer, 8/2019, Department of Physical Electronics, School of Electrical Engineering, Tel Aviv University. Research topics: Advanced architectures and new methods for photoelectrochemical energy storage. Advanced devices for water desalination.
2. Postdoctoral research, 3/2016-07/2019, Joint Center for Artificial Photosynthesis, Lawrence Berkeley National Lab, USA. Research title: Advanced architectures and new methods for photoelectrochemical energy storage.
3. Postdoctoral research, 1/2015-3/2016, Faculty of Materials Engineering, Technion, Israel. Research title: High solar flux concentration water splitting.
4. Postdoctoral research, 1/2015-3/2016, School of Electrical Engineering, Tel-Aviv University, Israel. Research title: Multiple State Electrostatically Formed Nanowire Transistors .
5. PhD 4/2010-1/2015, School of Electrical Engineering, Tel-Aviv University, Israel. Thesis research: Photon Enhanced Thermionic Emission for Solar Energy Conversion.
6. Accepted to direct Ph.D. 4/2010, Tel Aviv University, Israel .
7. M.Sc. 10/2008-3/2010, School of Electrical Engineering, Tel-Aviv University, Israel. Thesis research: High voltage solar cells. Average grade: 91.5.
8. B.Sc. 2004-2008, Electrical Engineering department, Ben Gurion University, Israel. Graduated with an average grade of 87.

Publications

1. G. Segev *et al.* The 2022 solar fuels roadmap. *J. Phys. D: Appl. Phys.* **55**, 323003 (2022)
2. A. Herman, J.W. Ager, S. Ardo, G. Segev, Ratchet based ion pumps for selective ion separations, arXiv preprint, 2022, arXiv:2202.01429
3. D. Grave, G. Segev, “Non-unity photogeneration yield of mobile charge carriers in transition metal-oxides”, *Journal of Physics D: Applied Physics*, 2021, 55 (2), 023001
4. T. Yeshurun*, Y. Bar David, A. Herman*, S. Barsheshet, R. Zilberman, G. Bachar, A. Liberzon, G. Segev, “A simulation of a medical ventilator with a realistic lungs model”, 2020, F1000 Research (preprint)
5. T. Song, Z. Yuan, M. Mori, F. Motiwala, G. Segev, E. Masquelier, ... C. M. Sutter-Fella, “Revealing the Dynamics of Hybrid Metal Halide Perovskite Formation via Multimodal In Situ Probes”, *Advanced Functional Materials*, 2020, 30(6), 1908337.
6. G. Segev, J. W. Beeman, J. B. Greenblatt, I. D. Sharp, “Hybrid photo-electrochemical and photo-voltaic cells”, *Nature Materials*, 2018, 17, 1115-1121.

7. C.M. Jiang, G. Segev, L. H. Hess, G. Liu, G. Zaborski, F. M. Toma, J. K. Cooper, Ian D. Sharp, "Composition Dependent Functionality of Copper Vanadate Photoanodes", *ACS applied materials & interfaces*, 2018, 10, 10627–10633, DOI: 10.1021/acsami.8b02977
8. G. Segev, C. M. Jiang, J. K. Cooper, J. Eichhorn, F. M. Toma, I. D. Sharp, Quantification of the loss mechanisms in emerging water splitting photoanodes through empirical extraction of the spatial charge collection efficiency, *Energy and Environmental Science*, 2018, 11, 904–913.
9. G. Segev, H. Dotan, D. Ellis, I. Piekner, D. Klotz, J. Beeman, J. K. Cooper, D. Grave, I. Sharp and A. Rothschild, "Empirical extraction of the spatial separation and collection efficiency of photogenerated charge carriers in photovoltaic and photoelectrochemical devices", *Joule*, 2018, DOI: 10.1016/j.joule.2017.12.007.
10. Gauldin, G. Liu, C Chen, L. Löbber, A. Li, G. Segev, J. Eichhorn, S.l Aloni, A. Scharzberg, I. D Sharp, F. Toma, "Fabrication and optical characterization of polystyrene opal templates for the synthesis of scalable, nanoporous (photo) electrocatalytic materials by electrodeposition", *Journal of Materials Chemistry A*, 2017, DOI: 10.1039/C7TA00512A.
11. K. Walczak, G. Segev, D. Larson, J. Beeman, F. Houle, I. Sharp, "Hybrid Composite Coatings for Durable and Efficient Solar Hydrogen Generation under Diverse Operating Conditions", *Advanced Energy Materials*, 2017, DOI: 10.1002/aenm.201602791.
12. M. Assif, G. Segev, and Y. Rosenwaks, "Dynamic and Power Performance of Multiple State Electrostatically Formed Nanowire Transistors," *IEEE Trans. Electron Devices*, vol. 64, no. 2, pp. 571–578, Feb. 2017
13. Kribus, G. Segev, "Solar energy conversion with photon-enhanced thermionic emission", *Journal of Optics*, 18(7), 073001, 2016 .
14. R. Sandovsky, R., G. Segev, G., A. Kribus, "Investigation of contact grid geometry for photon-enhanced thermionic emission (PETE) silicon based solar converters", *Solar Energy*, 133, 259–273, 2016 .
15. G. Segev, H. Dotan, K. Malviya, A. Kay, M. T. Mayer, M. Grätzel and A. Rothschild, "High solar flux concentration water splitting with hematite (α -Fe₂O₃) photoanodes", *Advanced Energy Materials*, 2015. DOI: 10.1002/aenm.201500817
16. G. Segev, D. Weisman, Y. Rosenwaks, and A. Kribus, "Negative space charge effects in PETE solar converters", *Applied Physics Letters*, 107, 013908, 2015. DOI: 10.1063/1.4926625
17. G. Segev, I. Amit, A. Godkin, A. Henning, and Y. Rosenwaks, "Multiple State Electrostatically Formed Nanowire Transistors," *Electron Device Lett. IEEE*, vol. PP, no. 99, p. 1, 2015.
18. G. Segev, Y. Rosenwaks, and A. Kribus, "Limit of efficiency for photon-enhanced thermionic emission vs. photovoltaic and thermal conversion", *Solar Energy Mat. Solar Cells* 140, pp 464-476, 2015.
19. Dymshits, A. Henning, G. Segev, Y. Rosenwaks and L. Etgar, "The electronic structure of metal oxide/organo metal halide perovskite junctions in perovskite based solar cells," *Scientific Reports*," vol. 5, p. 8704, Jan. 2015.
20. G. Segev, Y. Rosenwaks, and A. Kribus, "Loss mechanisms and back surface field effect in photon enhanced thermionic emission converters," *Journal of Applied Physics*, vol. 044505, 2013.
21. G. Segev, Y. Rosenwaks, A. Kribus, "High performance photo-thermionic solar converters", *Solar energy materials and solar cells* 113, pp. 114-123, 2013.

22. G. Segev, A. Kribus, "Performance of CPV modules based on vertical multi-junction cells under non-uniform illumination", *Solar Energy* 88, 2013, 120–128.
23. G. Segev, Y. Rosenwaks, A. Kribus, "Efficiency of photon enhanced thermionic emission solar converters", *Solar Energy Mat. Solar Cells*, vol. 107, pp. 125–130, 2012.
24. G. Segev, G. Mittelman, A. Kribus, "Equivalent Circuit Models for Triple-junction Concentrator Solar Cells", *Solar energy materials and solar cells* 98, 57–65, 2012, doi:10.1016/j.solmat.2011.10.013.
25. R. Pozner, G. Segev, R. Sarfaty, A. Kribus and Y. Rosenwaks, "Vertical junction Si photovoltaic cells for concentrating PV", *Progress in Photovoltaics Research and Applications* 20, 197–208, 2012, DOI: 10.1002/pip.1118.
26. N.T. Shaked, G. Segev, and J. Rosen, "Three-dimensional object recognition using a quasi-correlator invariant to imaging distances", *Opt. Express* 16, 17148-17153 (2008).

Conference proceedings

1. R. Sandovsky, G. Segev, Y. Rosenwaks, A. Kribus, , "Contacts Configuration for Novel Photoelectric-Thermionic Solar Cells", *Proceedings of the 29th European Photovoltaic Solar Energy Conference and Exhibition (2014)*; doi: 10.4229/EUPVSEC20142014-1AO.3.6
2. G. Segev, Y. Rosenwaks and A. Kribus, "Single bandgap solar converters unbounded by the Shockley Queisser limit", *AIP Conference Proceedings* 1556, 53 (2013); doi: 10.1063/1.4822198.
3. G. Segev, A. Kribus and Y. Rosenwaks, "High performance photo-thermionic solar converters", *Proc. IEEE 27th convention of electrical and electronics engineers in Israel* ,November 2012, Eilat, Israel.
4. R. Sarfaty, A. Cherkum, R. Pozner, G. Segev, E. Zeierman, Y. Flitsanov, A. Kribus and Y. Rosenwaks, "Vertical junction Si micro-cells for concentrating photovoltaics", *26th European Photovoltaic Solar Energy Conf.*, September 2011, Hamburg, Germany.
5. R. Sarfaty, G. Segev, R. Pozner, A. Kribus and Y. Rosenwaks, "Vertical junction high efficiency concentrator photovoltaic cells", *Proc. IEEE 26th convention of electrical and electronics engineers in Israel* ,November 2010, Eilat, Israel.
6. R. Pozner, G. Segev, R. Sarfaty, A. Kribus and Y. Rosenwaks, "Vertical junction Si photovoltaic cells for concentrating PV", *Proc. 6 Int. Conf. Concentrating Photovoltaic Systems*, April 2010, Freiburg, Germany.
7. G. Segev, A. Kribus, R. Pozner, R. Sarfaty, and Y. Rosenwaks, "CPV modules based on monolithic vertical multi-junction cells, *Proc. 16 Sede Boqer Symp. Solar Electricity Production*, February 2010, Sede Boqer, Israel.

Patent applications

1. Ratchet-based ion pumping membrane systems, filed 19/6/2019, US patent application no. 16/907,076.
2. Hybrid Photo-Electrochemical and -Voltaic Cells for High Efficiency Electrical Power and Fuel Production, US10370766B2, filed 2/10/2016.
3. Multiple State Electrostatically Formed Nanowire Transistor, US10707355B2, EP3149771B1, filed 25/5/2014.

Grants and Prizes

1. R&D 100 Award, 2022
2. Israeli Ministry of Energy, 2022
3. Israel Science Foundation, 2022
4. ERC starting grant, 2022
5. Israeli ministry of energy, research grant, 2020
6. The Kranzberg foundation, research grant, 2020
7. Gordon center for energy studies, research grant, 2020
8. Azrieli fellowship for new faculty, 2019
9. Israeli ministry of energy, post-doctoral scholarship, 2016-2018
10. Tel Aviv University Rector's list for excellence in teaching, 2014
11. Tel Aviv University Renewable Energy Center, travel grant, 2013
12. The Gordon center for energy studies, research grant, 2011
13. Israeli ministry of science, Eshkol scholarship, 2011.
14. Tel Aviv University faculty of engineering excellence award for academic achievements in Msc. studies, May 2011
15. The Gordon center for energy studies, research grant, 2010

Volunteer work

1. 2022, "[Madan Bareshet./ iScientist](#)", Science communication to high school students
2. 2014, Bosmat high school, Haifa, Physics tutor
3. 2013, Alliance high school, Haifa, Math tutor
4. 2012, Ariel high school, Tirat Hacarmel, Physics tutor
5. 2011, "Let there be light" Solar education organization
6. 2010, *Kfar Galim* educational youth village: tutor
7. 2009, *Jamila*- the night crew of the Israel anti drug authority: youth guide
8. 2006, *At Home Together*- a Jewish agency program: finding host families for immigrant teenagers
9. 2005, *World Union of Jewish Students*, "Keshet" project: representing Israeli students in campuses and student conventions
10. 2004, *Elem*- Youth in distress in Israel: youth guide and tutor

Media Coverage (Hebrew)

1. A Tel Aviv University Researcher is awarded a prestigious prize for green hydrogen research, Sept 2022, <https://www.ynet.co.il/environment-science/article/b1d41zaxi>

2. Researchers consolidate a global roadmap for solar fuels, ynet.co.il, June 2022, <https://www.ynet.co.il/environment-science/article/sj6zn5v55>
3. Progress in hydrogen fuel generation, nrg.co.il, December 2015, <http://www.nrg.co.il/online/13/ART2/741/278.html?hp=13&cat=138&loc=10>
4. Technion development: Solar hydrogen generation, ynet.co.il, November 2015, <http://www.ynet.co.il/articles/0,7340,L-4731456,00.html>
5. How to produce solar electricity?, Up to a constant, blog, <https://kavua.wordpress.com/tag/אנרגיה-מתחדשת/>
6. One PhD student a day, Calcalist, October 2012, <http://www.calcalist.co.il/local/articles/0,7340,L-3585477,00.html>

Media Coverage (English)

1. A Solar Cell That Does Double Duty for Renewable Energy, blogged by 4 and picked up by 20 news outlets, Oct. 2018.