

Amit N. Shocron – Curriculum Vitae

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January 8th, 2024

Research Position

2024 – present: Postdoctoral research, Department of Chemical and Environmental Engineering, Yale University, CT, USA

Supervisor: Prof. Menachem Elimelech

Education

2018 – 2023: Ph.D., Mechanical Engineering, Technion – Israel Institute of Technology, Haifa, Israel

Research Topic: *Ion selectivity mechanisms in capacitive deionization*

Advisor: Assoc. Prof. Matthew E. Suss

2014 – 2017: M.Sc. cum Laude, Mechanical Engineering, Technion – I.I.T., Haifa, Israel

Thesis: *The Effects of Surface Transport on Water Desalination by Capacitive Deionization*

Advisor: Assoc. Prof. Matthew E. Suss

2011-2014: B.Sc. Summa cum Laude, Mechanical Engineering, Technion – I.I.T., Haifa, Israel

Awards and Honors

1. 2023-2024, **Vaadia-BARD Postdoctoral Fellowship.**
2. 2023, **The Russell Berrie Nanotechnology Institute Excellence Scholarship**, Technion, Haifa, Israel.
3. 2022, 2nd Best Poster, Grand Technion Energy Program Research Day, Technion, Haifa, Israel.
4. 2022, **Best Poster Presentation**, 1st Meeting of the International Electrokinetics Society, 14th International Symposium on Electrokinetics, Tel-Aviv University, Tel-Aviv, Israel.

5. 2022, The Aharon and Ephraim Katzir Study Grant, The Batsheva de Rotchild Fund for The Advancement of Sciences in Israel, The Israel Academy of Sciences and Humanities (declined by me).
6. 2022, Faculty of Mechanical Engineering Excellence Fellowship, Technion, Haifa, Israel.
7. 2021, Technion Graduate School Jacobs Citation for Academic **Excellence and Outstanding Research Achievement** in Ph.D. Studies, Technion, Haifa, Israel.
8. 2021, **Best Poster Prize**, The 5th International Conference on CDI&E, Virtual, May 9th-13th.
9. 2019, The Baruch Zinger Award for Best Student Poster Presentation, Israel Electrochemistry Meeting (Presenter: Eilon Miara).
10. 2019, Technion Graduate School Daniel Citation for Academic Excellence and Outstanding Research Achievement in Ph.D. Studies, Technion, Haifa, Israel.
11. 2019, **Nature Nanotechnology Poster Prize**, Dead Sea Water: Nanomaterials at the water-energy nexus, Dead Sea, Israel.
12. 2015, Israeli Conference on Mechanical Engineering Award for Outstanding B.Sc. project.
13. 2015, Award for Outstanding Undergraduate Studies by "Brakim" Excellence Program Graduate from the Sidney and Beatrice Wolberg scholarship fund.

Publications

1. Z. Sahray, **A.N. Shocron**, R. Uwayid, C.E. Diesendruck, M.E. Suss, ["Extreme Monovalent Ion Selectivity via Capacitive Ion Exchange"](#), *Water Res.*, **246**, 120684, 2023 [**Q1, Impact Factor (IF): 12.8**].
2. K. Amini, **A.N. Shocron**, M.E. Suss, M. Aziz, ["Pathways to High-Power-Density Redox Flow Batteries"](#), *ACS Energy Lett.*, **8 (8)**, 3526-3535, 2023 (**Q1, IF: 22.0**).
3. **A.N. Shocron**, R. Uwayid, E.N. Guyes, J.E. Dykstra, M.E. Suss, ["Order-of-magnitude enhancement in boron removal by membrane-free capacitive deionization"](#), *Chem. Eng. J.*, **466**, 142722, 2023 (**Q1, IF: 16.744**).
4. **A.N. Shocron**, R.S. Roth, E.N. Guyes, R. Epsztein, M.E. Suss, ["Comparison of ion selectivity in electrodialysis and capacitive deionization"](#), *Environ. Sci. Technol. Lett.*, **9 (11)**, 889-899, 2022 (**Q1, IF: 11.558**).

5. D. Alfisi, **A.N. Shocron**, R. Gloukhovski, D.A. Vermaas, M.E. Suss, "[Resistance breakdown of a membraneless hydrogen-bromine redox flow battery](#)", *ACS Sustainable Chem. Eng.*, **10** (39), 12985-12992, 2022 (Q1, IF: 9.224).
6. M.A. Alkhadra, X. Su, M.E. Suss, H. Tian, E.N. Guyes, **A.N. Shocron**, K.M. Conforti, J.P. de Souza, N. Kim, M. Tedesco, K. Khoiruddin, I.G. Wenten, J.G. Santiago, T.A. Hatton, M.Z. Bazant, "[Electrochemical Methods for Water Purification, Ion Separations, and Energy Conversion](#)", *Chem. Rev.*, **122** (16), 13547-13635, 2022 (Q1, IF: 72.087).
7. **A.N. Shocron**, I. Atlas, M.E. Suss, "[Predicting ion selectivity in water purification by capacitive deionization: electric double layer models](#)", *Curr. Opin. Colloid Interface Sci.*, **60**, 101602, 2022 (Q1, IF: 8.209).
8. I. Atlas, J. Wu, **A.N. Shocron**, M.E. Suss, "[Spatial variations of pH in electro dialysis stacks: Theory](#)", *Electrochim. Acta*, **413**, 140151, 2022 (Q1, IF: 7.336).
9. R. Uwayid, E.N. Guyes, **A.N. Shocron**, J. Gilron, M. Elimelech, M.E. Suss, "[Perfect divalent cation selectivity with capacitive deionization](#)", *Water Res.*, **210**, 117959, 2022 (Q1, IF: 13.4).
10. **A.N. Shocron**, E.N. Guyes, P.M. Biesheuvel, H.H.M. Rijnaarts, M.E. Suss J.E. Dykstra, "[Electrochemical removal of amphoteric ions](#)", *PNAS*, **118** (40), e2108240118, 2021 (Q1, IF: 12.779).
11. E.N. Guyes, **A.N. Shocron**, Y. Chen, C.E. Diesendruck, M.E. Suss, "[Long-lasting, monovalent-selective capacitive deionization electrodes](#)", *npj Clean Water*, **4**, 22, 2021 (Q1, IF: 12.190).
12. **A.N. Shocron**, M.E. Suss, "[Should we pose a closure problem for capacitive charging of porous electrodes?](#)", *Europhysics Lett.*, **130**, 34003, 2020.
13. E.M. Remillard, **A.N. Shocron**, J. Rahill, M.E. Suss, C.D. Vecitis, "[A direct comparison of flow-by and flow-through capacitive deionization](#)", *Desalination*, **444**, 169-177, 2018 (Q1, IF: 11.211).
14. E.N. Guyes, **A.N. Shocron**, A. Simanovski, P.M. Biesheuvel, M.E. Suss, "[A one-dimensional model for water desalination by flow-through electrode capacitive deionization](#)", *Desalination*, **415**, 8-13, 2017 (Q1, IF: 11.211).

15. **A.N. Shocron**, M.E. Suss, "[The effect of surface transport on water desalination by porous electrodes undergoing capacitive deionization](#)", *J. Phys. Condens. Matter*, **29**, 0844003, 2017.

Teaching Experience

2022 – 2023: Teaching Assistant in Thermodynamics 2 (Undergraduate level, Mechanical Engineering, Technion).

Students Mentoring

1. 2021-Present: Mentor of M.Sc. student, Eilon Miara: presentations [#30](#), and [#33](#).
2. 2020-2023: Mentor of M.Sc. student, Zohar Sahray: presentations [#5](#), [#11](#), [#18](#), [#31](#), [#34](#), and [#37](#).
3. 2018-2019: Project mentor of an undergraduate research project, Eilon Miara: award [#10](#) for poster presentation [#39](#).
4. 2018-2019: Project mentor of an undergraduate research project, Zohar Sahray: poster presentation [#40](#).

Presentations

(the presenter is underlined)

Conference Lectures

1. **A.N. Shocron**, R. Epsztein, M.E. Suss, "Comparing the ion selectivity achieved in electro dialysis and capacitive deionization", **The 6th International Conference on Battery Deionization & Electrochemical Separation**, July 2nd-6th, 2023.
2. M.E. Suss, Z. Sahray, R. Uwayid, **A.N. Shocron**, "Numerical modeling is crucial to exploring possible selective separations with capacitive deionization", **The 6th International Conference on Battery Deionization & Electrochemical Separation**, July 2nd-6th, 2023.
3. R. Uwayid, E.N. Guyes, **A.N. Shocron**, J. Gilron, M. Elimelech, M.E. Suss, "Towards high water recovery brackish water desalination: extremely selective removal of divalent cations", **The 6th International Conference on Battery Deionization & Electrochemical Separation**, July 2nd-6th, 2023.
4. **A.N. Shocron**, I. Atlas, J. Wu, J.E. Dykstra, M.E. Suss, "Towards removal of pH-dependent species by capacitive deionization and electro dialysis", **5th International Symposium on**

- Physics of Membrane Processes (PMP2022)**, Wageningen, The Netherlands, October 13th-14th, 2022.
5. Z. Sahray, **A.N. Shocron**, R. Uwayid, M.E. Suss, "Theory of monovalent ion selectivity by capacitive deionization", **PMP2022**, Wageningen, The Netherlands, October 13th-14th, 2022.
 6. J. Wu, I. Atlas, **A.N. Shocron**, M.E. Suss, "Spatial variations of pH in electro dialysis stacks: Theory", **PMP2022**, Wageningen, The Netherlands, October 13th-14th, 2022.
 7. **A.N. Shocron**, E.N. Guyes, J.E. Dykstra, M.E. Suss, "Analysis of boron removal by capacitive deionization", **The 242nd Electrochemical Society (ECS) Meeting**, Atlanta, GA, USA, October 9th-13th, 2022.
 8. M.E. Suss, **A.N. Shocron**, E.N. Guyes, R. Uwayid, "Numerical modeling unlocks remarkable ion selectivity of capacitive deionization", **The 242nd ECS Meeting**, Atlanta, GA, USA, October 9th-13th, 2022.
 9. **A.N. Shocron**, A. Asokan, D. Alfisi, R. Gloukhovski, M.E. Suss, "Ex-situ characterization of high density flow battery electrodes via impedance spectroscopy", **The 73rd Annual Meeting of the International Society of Electrochemistry (ISE)**, September 12th-16th, 2022 (delivered remotely due to pandemic).
 10. R. Uwayid, E.N. Guyes, **A.N. Shocron**, J. Gilron, M. Elimelech, M.E. Suss, "Perfect divalent cation selectivity with capacitive deionization", **The 73rd Annual Meeting of the ISE**, September 12th-16th, 2022 (delivered remotely due to pandemic).
 11. Z. Sahray, **A.N. Shocron**, R. Uwayid, M.E. Suss, "Theory of monovalent ion selectivity by capacitive deionization", **The 73rd Annual Meeting of the ISE**, September 12th-16th, 2022 (delivered remotely due to pandemic).
 12. M.E. Suss, R. Uwayid, Z. Sahray, **A.N. Shocron**, E.N. Guyes, "Numerical Modeling Unlocks Remarkable Ion Selectivity of Capacitive Deionization", **1st Meeting of the International Electrokinetics Society, 14th International Symposium on Electrokinetics**, Tel-Aviv University, Tel-Aviv, Israel, July 4th-6th, 2022.
 13. R. Uwayid, E.N. Guyes, **A.N. Shocron**, J. Gilron, M. Elimelech, M.E. Suss, "Perfect divalent cation selectivity with capacitive deionization", **1st Meeting of the International**

- Electrokinetics Society, 14th International Symposium on Electrokinetics**, Tel-Aviv University, Tel-Aviv, Israel, July 4th-6th, 2022.
14. [A.N. Shocron](#), E.N. Guyes, P.M. Biesheuvel, H.H.M. Rijnaartz, J.E. Dykstra, M.E. Suss, "Enhanced Boron Removal by Capacitive Deionization", **The 31st Topical Meeting of the ISE**, Aachen, Germany, May 15th-19th, 2022.
 15. [M.E. Suss](#), E.N. Guyes, Z. Sahray, [A.N. Shocron](#), R. Uwayid, "Numerical Modeling Unlocks Remarkable Ion Selectivity of Capacitive Deionization", **The 31st Topical Meeting of the ISE**, Aachen, Germany, May 15th-19th, 2022.
 16. [A.N. Shocron](#), E.N. Guyes, P.M. Biesheuvel, H.H.M. Rijnaartz, M.E. Suss, J.E. Dykstra, "Electrochemical removal of amphoteric ions", **The 12th European Symposium on Electrochemical Engineering (ESEE)**, June 14th-17th, 2021 (delivered remotely due to pandemic).
 17. [E.N. Guyes](#), [A.N. Shocron](#), Y. Chen, C.E. Diesendruck, M.E. Suss. "Long-lasting, monovalent-selective capacitive deionization electrodes" **The 12th ESEE**, June 14th-17th, 2021 (delivered remotely due to pandemic).
 18. [Z. Sahray](#), [A.N. Shocron](#), E.N. Guyes, M.E. Suss, "Theory of monovalent ion selectivity using porous carbon capacitive deionization electrodes", **The 12th ESEE**, June 14th-17th, 2021 (delivered remotely due to pandemic).
 19. [E.N. Guyes](#), [A.N. Shocron](#), Y. Chen, C.E. Diesendruck, M.E. Suss. "Long-lasting, monovalent-selective capacitive deionization electrodes", **The 5th International Conference on CDI&E 2021**, May 9th-13th, 2021 (delivered remotely due to pandemic).
 20. [A.N. Shocron](#), E.N. Guyes, P.M. Biesheuvel, H.H.M. Rijnaartz, M.E. Suss, J.E. Dykstra, "Electrochemical removal of amphoteric ions", **The 29th Topical Meeting of the ISE**, April 19th-21st, 2021 (delivered remotely due to pandemic).
 21. [E.N. Guyes](#), [A.N. Shocron](#), Y.Chen, C.E. Diesendruck, M.E. Suss. "Sulfonated nanoporous carbon electrodes for long-lasting, monovalent-selective, capacitive deionization." **The 71st Annual Meeting of the ISE**, September 2nd, 2020 (delivered remotely due to pandemic).
 22. [A.N. Shocron](#), M.E. Suss, "Do We Need to Pose a Closure Problem to Capture the Dynamics of the Capacitive Charging of Porous Electrodes?", **The 35th Israeli Conference on**

- Mechanical Engineering**, Ben-Gurion University of the Negev, Beer-Sheva, Israel, October 9th-10th, 2018.
23. **A.N. Shocron**, M.E. Suss, "Do We Need to Pose a Closure Problem to Capture the Dynamics of the Capacitive Charging of Porous Electrodes?", **69th Annual Meeting of the ISE**, Bologna, Italy, September 2nd-7th, 2018.
24. **A.N. Shocron**, M.E. Suss, "Effects of Surface Transport on Water Desalination by Capacitive Deionization", **CDI&E Conference**, Saarbrücken, Germany, October 26th-29th, 2015.
25. **E.N. Guyes**, **A.N. Shocron**, M.E. Suss, "Flow-Through Capacitive Deionization Theory and Experiments", **CDI&E Conference**, Saarbrücken, Germany, October 26th-29th, 2015.
26. **A.N. Shocron**, M.E. Suss, "Effects of Surface Transport on Water Desalination by Capacitive Deionization", **Israel Electrochemical Annual Meeting**, Ben-Gurion University of the Negev, Beer Sheva, Israel, October 15th, 2015.

Seminar Lectures

27. **A.N. Shocron**, "Is electrochemistry relevant for seawater desalination?", at the **Colloquium of the Environmental Technology Department**, Wageningen University, The Netherlands, September 6th, 2022.

Posters

28. **A.N. Shocron**, E.N. Guyes, J.E. Dykstra, M.E. Suss, "Improved electrochemical boron removal using capacitive deionization", **The 73rd Annual Meeting of the ISE**, September 12th-16th, 2022 (delivered remotely due to pandemic).
29. **A.N. Shocron**, R. Uwayid, P.M. Biesheuvel, J.E. Dykstra, M.E. Suss, "The development of shock-like pH fronts during boron removal by capacitive deionization", **1st Meeting of the International Electrokinetics Society, 14th International Symposium on Electrokinetics**, Tel-Aviv University, Tel-Aviv, Israel, July 4th-6th, 2022 ([a winning poster](#)).
30. **E. Miara**, **A.N. Shocron**, M.E. Suss, "Theory of Nutrients Recovery by Capacitive Deionization", **1st Meeting of the International Electrokinetics Society, 14th International Symposium on Electrokinetics**, Tel-Aviv University, Tel-Aviv, Israel, July 4th-6th, 2022.

31. Z. Sahray, **A.N. Shocron**, R. Uwayid, M.E. Suss, "Theory of Monovalent Ion Selectivity by Capacitive Deionization", **1st Meeting of the International Electrokinetics Society, 14th International Symposium on Electrokinetics**, Tel-Aviv University, Tel-Aviv, Israel, July 4th-6th, 2022.
32. J. Wu, I. Atlas, **A.N. Shocron**, M.E. Suss, "Spatial Variations of pH in Electrodialysis Stacks: Theory", **1st Meeting of the International Electrokinetics Society, 14th International Symposium on Electrokinetics**, Tel-Aviv University, Tel-Aviv, Israel, July 4th-6th, 2022.
33. E. Miara, **A.N. Shocron**, M.E. Suss, "Theory of Nutrients Recovery by Capacitive Deionization", **Water Summit 2022**, The Zuckerberg Institute for Water Research, Ben-Gurion University of the Negev, Sde-Boker, Israel, May 22nd-23rd, 2022.
34. Z. Sahray, **A.N. Shocron**, R. Uwayid, E.N. Guyes, M.E. Suss, "Theory of Monovalent Ion Selectivity using Porous Carbon Capacitive Deionization Electrodes", **Water Summit 2022**, The Zuckerberg Institute for Water Research, Ben-Gurion University of the Negev, Sde-Boker, Israel, May 22nd-23rd, 2022.
35. **A.N. Shocron**, A. Asokan, D. Alfisi, R. Gloukhovski, M.E. Suss, "Characterizing High Power Density Flow Battery Electrodes via Impedance Spectroscopy", **The 31st Topical Meeting of the ISE**, Aachen, Germany, May 15th-19th, 2022.
36. **A.N. Shocron**, E.N. Guyes, P.M. Biesheuvel, M.E. Suss, J.E. Dykstra, "Electrochemical removal of amphoteric species", **The 5th International Conference on CDI&E 2021**, May 9th-13th, 2021 (delivered remotely due to pandemic, [a winning poster](#)).
37. Z. Sahray, **A.N. Shocron**, M.E. Suss, "Theory of monovalent ion selectivity using porous carbon capacitive deionization electrodes", **The 5th International Conference on CDI&E 2021**, May 9th-13th, 2021 (delivered remotely due to pandemic).
38. **A.N. Shocron**, M.E. Suss, "Do we Need to Pose a Closure Problem to Capture the Dynamics of the Capacitive Charging of Porous Electrodes?", **Israel Electrochemistry Meeting**, Ben-Gurion University of the Negev, Beer-Sheva, Israel, September 23rd, 2019.
39. E. Miara, Z. Sahray, **A.N. Shocron**, M.E. Suss, "Water Softening using Capacitive Deionization", **Israel Electrochemistry Meeting**, Ben-Gurion University of the Negev, Beer-Sheva, Israel, September 23rd, 2019 ([a winning poster](#)).

40. Z. Sahray, E. Miara, **A.N. Shocron**, M.E. Suss, "Agricultural Desalination using Capacitive Deionization", **Israel Electrochemistry Meeting**, Ben-Gurion University of the Negev, Beer-Sheva, Israel, September 23rd, 2019.
41. **A.N. Shocron**, M.E. Suss, " Do We Need to Pose a Closure Problem to Capture the Dynamics of the Capacitive Charging of Porous Electrodes?", **13th International Symposium on Electrokinetics**, MIT, Massachusetts, USA, June 12th-14th, 2019.
42. **A.N. Shocron**, M.E. Suss, "Advanced Modeling of Capacitive Deionization", **Dead Sea Water 2019 Workshop: Nanomaterials at the water-energy nexus**, Ein Gedi, Israel, February 4th-7th, 2019 ([a winning poster](#)).

Affiliations ("Member" -status)

International Society of Electrochemistry (ISE).

Professional Services

Journal reviewer: Journal of Colloid and Interface Science.