Ephrath Solel Moroshko

Curriculum Vitae

✉ *ephrath.solel@ed.ac.uk*
ORCID: 0000-0002-0513-8995

Position

since 2023 **Lecturer in Computational Organic Chemistry**, University of Edinburgh, UK.

2019-2022 **Postdoctoral Researcher**, Justus Liebig University Giessen, Germany.
Advisor: Prof. Dr. Peter R. Schreiner

2016-2019 **Postdoctoral Researcher**, Department of Chemistry, Ben-Gurion University of the Negev, Israel.
Advisor: Prof. Sebastian Kozuch

Career Breaks

08/2022 - 05/2023 **Maternity leave**.

Education

2009–2016 **Ph.D. in Chemistry**, Technion, Israel, *(97.7)*.
Supervisor: Prof. Ehud Keinan
Thesis: Components for Supramolecular Architecture

2006–2009 **M.Sc. in Chemistry** *(summa cum laude)*, Technion, Israel, *(97)*.
Supervisor: Prof. Ehud Keinan
Thesis: Chemical Capsids

2003–2006 **B.A. in Chemistry** *(summa cum laude)*, Technion, Israel, *(95.4)*.

Honors and Awards

2019–2022 Alexander von Humboldt Research Fellowship for Postdoctoral Researchers.

2019–2021 VATAT (Israeli Council for Higher Education) Fellowship for Excellent Female Postdoctoral Scholars.

2019–2021 Minerva Stiftung Fellowship (declined in favor of the AvH fellowship).

2017–2019 MOST Shulamit Aloni Fellowship for Promoting Women in Science.

2016–2018 Kreitman Foundation Post-Doctoral Fellowship.

2015 Schulich Prize for Excellence in Teaching.

2014 Schulich Prize for Excellence in Teaching.

2012–2013 Irwin and Joan Jacobs Fellowship.

2009–2010 Fine Scholarship for Ph.D Students.

2007–2008 Irwin and Joan Jacobs Fellowship.

2006–2007 Excellence Scholarship from the Technion Graduate School.

2005–2006 Ruth Scholarship, for B.A Students Working in Research Laboratories.

2004–2005 President List for Scholastic Achievements (top 3%, two semesters).

2003–2004 Excellence Award from the Technion, for new students.

2003–2004 President List for Scholastic Achievements (top 3%, one semester) .

2003–2004 Dean List for Scholastic Achievements (one semester).

Conference Proceedings

5. Dispersion vs. steric hindrance: reinvestigating classic steric factors, *Scottish Computational Chemistry Symposium 2023* – Glasgow **2023**.
4. London Dispersion in Small Organic Systems, *6th Summer School Online of the SPP 1807 "Control of London dispersion interactions in molecular chemistry"* – Germany **2022**.
3. London Dispersion vs. Steric Hindrance, *5th Summer School Online of the SPP 1807 "Control of London dispersion interactions in molecular chemistry"* – Germany **2021**.
2. Aromaticity Tuning and Tunneling in Fulvalene: a Computational Study, *3rd Israeli Conference on Computational Modeling of Molecules and Solids (ICCMMS)* – Ben-Gurion University of the Negev, Beer-Sheva, Israel **2019**.
1. Fulvalene: Aromaticity, Tunneling, and Half the Physical Organic Chemistry Lexicon in a Simple Molecule, *Chemistry and Beyond- Conference in Honor of Prof. Ehud Keinan's 70th Birthday* – Technion, Haifa, Israel **2017**.

Publications

24. Q. Zhong, A. Mardyukov, **E. Solel (equally contributed to previous two authors)**, D. Ebeling, A. Schirmeisen, P. R. Schreiner, On-Surface Synthesis and Real-Space Visualization of Aromatic P_3N_3, *Angew. Chem. Int. Ed.*, **2023**, e202310121.
23. B. Bernhardt, M. Schauermann, **E. Solel**, A. K. Eckhardt, P. R. Schreiner, Equilibrating parent aminomercaptocarbene and CO_2 with 2-amino-2-thioxoacetic acid via heavyatom quantum tunneling, *Chem. Sci.*, **2023**, *14*, 130-135.
22. J. Schoening, C. Ganesamoorthy, C. Wölper, **E. Solel**, P. R. Schreiner, S. Schulz, Synthesis, Electronic Nature, and Reactivity of Selected Silylene Carbonyl Complexes, *Dalton Trans.*, **2022**, *51*, 8249-8257.
21. **E. Solel**, M. Ruth, P. R. Schreiner, London Dispersion Helps Refine Steric A-Values: Dispersion Energy Donor Scales, *J. Am. Chem. Soc.*, **2021**, *143*, 20837-20848.
20. **E. Solel**, M. Ruth, P. R. Schreiner, London Dispersion Helps Refine Steric A-Values: The Halogens, *J. Org. Chem.*, **2021**, *86*, 7701-7713.
19. K. Feng, **E. Solel**, P. R. Schreiner, H. Fuchs, H.-Y. Gao, Diamantanethiols on Metal Surfaces: Spatial Configurations, Bond Dissociations, and Polymerization, *J. Phys. Chem. Lett.*, **2021**, *12*, 3468-3475.
18. **E. Solel***, D. Pappo, O. Reany, T. Mejuch, R. Gershoni-Poranne, M. Botoshansky, A. Stanger, E. Keinan,* Flat Corannulene: When a Transition State Becomes a Stable Molecule, *Chem. Sci.*, **2020**, *11*, 13015-13025 **(* Corresponding Author)**.
17. S. Sarkar, **E. Solel (equally contributed)**, S. Kozuch, M. Abe, Heavy-Atom Tunneling Processes During Denitrogenation of a Diazabicycloheptene and Ring Closure of Cyclopentane-1,3-diyl Diradical. Stereoselectivity in Tunneling and Matrix Effect, *J. Org. Chem.*, **2020**, *85*, 8881-8892.
16. P. Mondal, **E. Solel**, S. Mitra, E. Keinan, O. Reany, Equatorial Sulfur Atoms in Bambusurils Spawn Cavity Collapse, *Org. Lett.*, **2020**, *22*, 204-208.
15. A. Nandi, **E. Solel**, S. Kozuch, Carbon Tunneling in the Automerization of Cyclo[18]carbon, *Chem. Eur. J.*, **2020**, *26*, 625-628.
14. Y.-S. Chen, **E. Solel**, Y.-F. Huang, C.-L. Wang, T.-H. Tu, E. Keinan, Y.-T. Chan, Chemical Mimicry of Viral Capsid Self-assembly via Corannulene-based Pentatopic Tectons, *Nature Commun.*, **2019**, *10*, 3443.
13. P. Mondal, **E. Solel**, N. Fridman, E. Keinan, O. Reany, Intramolecular vdW Interactions Challenge Anion Binding in perthio-Bambusurils, *Chem. Eur. J.*, **2019**, *25*, 13336-13343.

12. M. D. Wodrich, B. Sawatlon, **E. Solel**, S. Kozuch, C. Corminboeuf, Activity-Based Screening of Homogeneous Catalysts through the Rapid Assessment of Theoretically Derived Turnover Frequencies, *ACS Catal.*, **2019**, *9*, 5719-5725.
11. **E. Solel**, N. Tarannam, S. Kozuch, Catalysis: Energy is the measure of all things, *Chem. Commun.*, **2019**, *55*, 5306-5322.
10. **E. Solel**, S. Kozuch, On the Power of Geometry over Tetrel Bonds, *Molecules*, **2018**, *23*, 2742.
9. **E. Solel**, S. Kozuch, Tuning the Spin, Aromaticity, and Quantum Tunneling in Computationally Designed Fulvalenes, *J. Org. Chem.*, **2018**, *83*, 10826-10834.
8. C. A. P. Swamy, **E. Solel**, O. Reany, E. Keinan, Synthetic Evolution of the Multifarene Cavity from Planar Predecessors, *Chem. Eur. J.*, **2018**, *24*, 15319-15328.
7. M. Singh, **E. Solel**, E. Keinan, O. Reany, Aza-Bambusurils En Route to Anion Transporters, *Chem. Eur. J.*, **2016**, *22*, 8848-8854.
6. **E. Solel**, M. Singh, O. Reany, E. Keinan, Enhanced Anion Binding by Heteroatom Replacement in Bambusurils, *Phys. Chem. Chem. Phys.*, **2016**, *18*, 13180-13185.
5. M. Singh, **E. Solel**, E. Keinan, O. Reany, Dual-Functional Semithiobambusurils, *Chem. Eur. J.*, **2015**, *21*, 536-540.
4. P. Angelova, **E. Solel**, G. Parvari, A. Turchanin, M. Botoshansky, A. Gölzhäuser, E. Keinan, Chemisorbed Monolayers of Corannulene Penta-Thioethers on Gold, *Langmuir*, **2013**, *29*, 2217-2223.
3. A. Pogoreltsev, **E. Solel (equally contributed)**, D. Pappo, E. Keinan, Deca-heterosubstituted Corannulenes, *Chem. Commun.*, **2012**, *48*, 5425-5427.
2. R. Gershoni-Poranne, D. Pappo, **E. Solel**, E. Keinan, Corannulene Ethers via Ullmann Condensation, *Org. Lett.*, **2009**, *11*, 5146-5149.
1. D. Pappo, T. Mejuch, O. Reany, **E. Solel**, M. Gurram, E. Keinan, Diverse Functionalization of Corannulene: Easy Access to Pentagonal Superstructure, *Org. Lett.*, **2009**, *11*, 1063-1066.

Poster Presentations

12. E. Solel, M. Ruth, P. R. Schreiner, Dispersion vs. Steric Hindrance: Reinvestigating Classic Steric Factors, *57th Symposium on Theoretical Chemistry (STC)* – Online Event, **2021**.
11. E. Solel, S. Kozuch, Tunneling and Aromaticity Tuning in Fulvalene: a Computational Study, *84th Meeting of the Israel Chemical Society* – Tel-Aviv, Israel **2019**.
10. E. Solel, S. Kozuch, Fulvalene: Computationally Tuning Aromaticity and Tunneling, *24th IUPAC International Conference on Physical Organic Chemistry (ICPOC)* – Faro, Portugal **2018**.
9. E. Solel, S. Kozuch, Carbon Atom Tunneling in an Aromatic System: Is [18]Annulene Alternating?*2nd Israeli Conference on Computational Modeling of Molecules and Solids* – Tel-Aviv, Israel **2017**.
8. E. Solel, O. Reany, M. Botoshansky, A. Stanger, E. Keinan, The Bowl Depth of Corannulene, *80th Meeting of the Israel Chemical Society* – Tel-Aviv, Israel **2015**.
7. E. Solel, D. Pappo, A. Stanger, E. Keinan, Flat Corannulene- Bond Stretch Isomerism? *77th Meeting of the Israel Chemical Society* – Tel-Aviv, Israel **2012**.
6. E. Solel, D. Pappo, A. Stanger, E. Keinan, Flat Corannulene, *12th European Symposium on Organic Reactivity* – Haifa, Israel **2009**.
5. E. Solel, D. Pappo, T. Mejuch, O. Reany, E. Keinan, Supramolecular Structures with Polymercapto-Corannulene Derivatives, *74th Meeting of the Israel Chemical Society* – Tel-Aviv, Israel **2009**.
4. E. Solel, T. Mejuch, O. Reany, D. Pappo, A. Olson, Y. Hu, E. Keinan, Chemical Capsids, *43rd Bürgenstock Conference on Stereochemistry* – Brunnen, Switzerland **2008**.

3. E. Solel, O. Reany, T. Mejuch, A. Olson, Y. Hu, E. Keinan, Chemical Capsids, *73rd Meeting of the Israel Chemical Society* – Tel-Aviv, Israel **2008**.
2. E. Solel, O. Reany, T. Mejuch, A. Olson, Y. Hu, E. Keinan, Chemical Capsids, *The Schulich Faculty of Chemistry Mini-Symposium* – Haifa, Israel **2007**.
1. E. Solel, O. Reany, T. Mejuch, A. Olson, Y. Hu, E. Keinan, Chemical Capsids, *2nd International Symposium on Bio-Inspired Engineering (ISBIE)* – Dead Sea, Israel **2007**.

Teaching Experience

2018 Teacher at the Science and Technology Youth Center – Technion, Israel.
Subjects: *Mathematics workshop, Geometry workshop, Fingerprints laboratory*

Summer 2015 Teaching Assistant at Oranim – Academic College of Education, Israel.
Course: *Organic Chemistry Lab*

2007–2015 Teaching Assistant at the Technion, Israel.
Courses:

General Chemistry	5 semesters, 1 semester as Managing T.A
Principles of Chemistry	1 semester
Organic Chemistry 1, Expanded	3 semesters
Organic Chemistry 2, Expanded	1 semester
Organic Chemistry Lab 1	4 semesters
Organic Chemistry Lab 2	1 semester
Advanced Organic Chemistry Lab	2 semesters

Mentoring Experience

Spring 2022 Mentor for Victoria Öhler, student assistant.
Current status: *Master student at Prof. Peter R. Schreiner's Lab*

Winter 2020 Mentor for Marcel Ruth, student assistant.
Current status: *Graduate student at Prof. Peter R. Schreiner's Lab*

Academic Activities

2010–2013 Member of the Organizing Committee of the 4th, 5th, 6th and 7th Schulich Graduate Symposium, Technion, Israel.

Additional Research Experience

Spring 2006 **Summer Research Project**, Schulich Faculty of Chemistry, Technion, Israel.
Project in Organic Chemistry on "Corannulene Synthesis and Derivatives".
Supervisors: Prof. Ehud Keinan and Dr. Ofer Reany

Summer 2005 **Summer Student**, Chemistry Department of Chemistry, Weizmann Institute, Israel.
As part of the Emma and Oscar Gets Foundation Summer Program for Israeli students.
Supervisor: Prof. Michael Bendikov