

## CHARLES E. DIESENDRUCK

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Associate Professor

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### EDUCATION

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- 2007-2011 Ph.D. in Organometallic Chemistry, Ben-Gurion University of the Negev, Israel. Advisor: Prof. N. Gabriel Lemcoff. Thesis: "Ligand-reactivity Relationship in NHC Catalytic Complexes".
- 2008 Visiting Student, Heidelberg University, with Prof. Dr. Bernd F. Straub.
- 2005-2007 M.Sc. in Organic Chemistry, Ben-Gurion University of the Negev, Israel. Advisor: Prof. N. Gabriel Lemcoff. Thesis: "Double Ring-closing Metathesis by Di-N-heterocycle Carbenes (NHCs): An Approach to Linear Polycatenanes".
- 2000-2003 B.Sc. in Analytical and Environmental Chemistry, Ben-Gurion University of the Negev, Israel.

### PROFESSIONAL EXPERIENCE

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- Since 2020 Associate Professor, Schulich Faculty of Chemistry, Technion, Israel.
- Since 2015 Associate Editor – Israel Journal of Chemistry
- 2014 – 2020 Assistant Professor, Schulich Faculty of Chemistry, Technion, Israel.
- 2011 – 2014 Post-Doctoral Researcher with Prof. Jeffrey S. Moore, Beckman Institute for Advanced Science and Technology, University of Illinois, IL, USA.
- 2004 – 2006 Project Manager, Chemada Fine Chemicals, Israel.
- 2003 – 2004 Officer, Materials Department, Israel Navy, Israel.
- 1999 – 2003 Analytical Research Assistant at Chemada Fine Chemicals, Israel.

### GRANTS

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- 2014-2017 Technion Start-up Grant 1980k NIS.
- 2015-2019 Israel Science Foundation: Individual Research Grant 1280k NIS
- 2015-2017 Israel Science Foundation: New Faculty Equip. Grant 1100k NIS
- 2016-2017 Kamin 418k NIS
- 2016-2017 Israel Science Foundation: Instit. Equip. Grant (With Profs. Maayan and Brik) 675k NIS
- 2017 German-Israel Foundation 20k Euro
- 2017-2018 Ministry of Energy (with Prof. Dekel) 700k NIS
- 2017-2020 Ministry of Science (with Prof. Dekel) 1200k NIS
- 2018-2020 Department of Defense (USA) (with Prof. Dekel) 200k USD
- 2019-2021 Ministry of Energy 750k NIS
- 2019-2020 Magnet (CIRCLE) 600k NIS

2019-2023 Israel Science Foundation: Individual Research Grant 1080k NIS

## FELLOWSHIPS AND AWARDS

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- 2018 Austria-Israel Academic Network Innsbruck Lecturer.
- 2018 Krill Prize (Wolf Foundation).
- 2018 JSP Award (Bürgenstock Conference) from the Swiss Chemical Society.
- 2018 Blavatnik Awards for Young Scientists in Israel.
- 2016 Schulich Prize for Excellence in Enhancing the Understanding of Chemistry, Technion, Israel.
- 2014 Women's Division Advancement Chair, American Technion Society.
- 2010 The Ruth and Milton Orchin Prize for excellent graduate student at the ICS meeting, Israel.
- 2010 The Hyman and Irene Kreitman Prize for excellent academic achievements, Israel.
- 2010 Best Poster Award at "Highs in Chemistry", Israel.
- 2008 Minerva Short-term Grant for excellent Israeli Ph.D. students to research in Germany.

## TEACHING

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- 2006 – 2010 Advanced Organic Lab
- 2015, 2017, 2019 Polymers: From synthesis to architectures
- 2015 – 2020 Structure Determination by Physical Methods
- 2016 – 2017 General Chemistry (Non-Chemistry students)
- 2017 – 2020 Principles of Chemistry (Chemistry students)

## SCIENTIFIC PUBLICATIONS

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1. Ben-Asuly, A.; Tzur, E.; Diesendruck, C.E.; Sigalov, M.; Goldberg, I.; Lemcoff, N.G. "A Thermally Switchable Latent Ruthenium Olefin Metathesis Catalyst", *Organometallics*, **2008**, 27, 811-813.
2. Tzur, E.; Ben-Asuly, A.; Diesendruck, C.E.; Goldberg, I.; Lemcoff, N.G. "Homodinuclear Ruthenium Catalysts for Dimer Ring-Closing Metathesis", *Angew. Chem. Int. Ed.*, **2008**, 47, 6422-6425.
3. Diesendruck, C.E.; Vidavsky, Y.; Ben-Asuly, A.; Lemcoff, N.G. "A Latent S-Chelated Ruthenium Benzylidene Initiator for ROMP", *J. Polym. Sci. Part A: Chem.*, **2009**, 47, 4209-4213.
4. Ben-Asuly, A.; Aharoni, A.; Diesendruck, C.E.; Vidavsky, Y.; Goldberg, I.; Straub, B.F.; Lemcoff, N.G. "Photoactivation of Latent Ruthenium Olefin Metathesis Catalysts", *Organometallics*, **2009**, 28, 4652-4655.
5. Diesendruck, C.E.; Tzur, E.; Lemcoff, N.G. "The Versatile Alkylidene Moiety in Ruthenium Olefin Metathesis Catalysts", *Eur. J. Inorg. Chem.*, **2009**, 28, 4185-4203 (Featured Cover Article).
6. Diesendruck, C.E.; Tzur, E.; Ben-Asuly, A.; Goldberg, I.; Straub, B.F.; Lemcoff, N.G. "Predicting the Cis-Trans Dichloro Configuration of Group 15-16 Chelated Ruthenium Olefin Metathesis Complexes: A DFT and Experimental Study", *Inorg.*

- Chem.*, **2009**, 48, 10819-10825.
7. Diesendruck, C.E.; Iliashevsky, O.; Tzur, E.; Vidavsky, Y.; Ben-Asuly, A.; Goldberg, I.; Lemcoff, N.G. "Latent and Switchable Olefin Metathesis Catalysts", *Macr. Symp.*, **2010**, 293, 33-38.
  8. Diesendruck, C.E.; Ben-Asuly, A.; Goldberg, I.; Lemcoff, N.G. "Dimer Ring-Closing Metathesis", *Chimica Oggi*, **2010**, 28, 15-18.
  9. Aharoni, A.; Vidavsky, Y.; Diesendruck, C.E.; Ben-Asuly, A.; Goldberg, I.; Lemcoff, N.G. "Ligand Isomerization in Chelated Ruthenium Benzylidenes: Effects on the Olefin Metathesis Activity", *Organometallics*, **2011**, 30, 1607-1615.
  10. Ginzburg, Y.; Anaby, A.; Vidavsky, Y.; Diesendruck, C.E.; Ben-Asuly, A.; Goldberg, I.; Lemcoff, N.G. "Widening the Latency Gap in Chelated Ruthenium Olefin Metathesis Catalysts", *Organometallics*, **2011**, 30, 3430-3437.
  11. Diesendruck, C.E.; Steinberg, B.D.; Sugai, N.; Silberstein, M.N.; Sottos, N.R.; White, S.R.; Braun, P.V.; Moore, J.S. "Proton-Coupled Mechanochemical Transduction: A Mechanogenerated Acid", *J. Am. Chem. Soc.*, **2012**, 134, 12446-12449 (*Highlighted by JACS highlights, C&EN news, Angew. Chem. Int. Ed. and Synfacts*).
  12. Levin, E.; Anaby, A.; Diesendruck, C.E.; Berkovich-Berger, D.; Fuchs, B.N.; Lemcoff, N.G. "Oligomerisation Reactions of Beta Substituted Thiols in Water", *RSC Advances*, **2013**, 3, 1735-1738.
  13. Sudheendran, M.; Diesendruck, C.E.; Amir, L.; Linde, S.; Shikler, R.; Lemcoff, N.G. "Synthesis and Properties of Organometallic Nanoparticles of Rhodium (I)", *Angew. Chem. Int. Ed.*, **2013**, 52, 5767-5770 (*Featured Inside Cover Article*).
  14. Kaitz, J.A.; Diesendruck, C.E.; Moore, J.S. "End Group Characterization of Poly(phthalaldehyde): Surprising Discovery of a Reversible, Cationic Macrocyclization Mechanism", *J. Am. Chem. Soc.*, **2013**, 135, 12755-12761.
  15. Kaitz, J.A.; Diesendruck, C.E.; Moore, J.S. "Dynamic Covalent Macrocyclic Polymers: Poly(phthalaldehyde) Scrambling to Produce Multi-Block and Random Cyclic Copolymers", *Macromolecules*, **2013**, 46, 8121-8128.
  16. Patrick, J.F.; Hart, K.R.; Krull, B.P.; Diesendruck, C.E.; Moore, J.S.; Sottos, N.R.; White, S.R. "Self-healing in Fibre Reinforced Composites via Bioinspired Microvascular Networks", *Adv. Mater.*, **2014**, 26, 4189-4396 (*Feature Cover Article*).
  17. Diesendruck, C.E.; Peterson, G.I.; Kulik, H.J.; Kaitz, J.A.; Mar, B.D.; May, P.A.; White, S.R.; Martínez, T.J.; Boydston, A.J.; Moore, J.S. "Mechanically-Triggered Heterolytic Unzipping of a Low Ceiling Temperature Polymer", *Nat. Chem.*, **2014**, 6, 623-628.
  18. Kaitz, J.A.; Possanza, C.E.; Song, Y.; Diesendruck, C.E.; Spiering, J.; Meijer, E.W.; Moore, J.S. "Depolymerizable, Adaptive Supramolecular Polymer Nanoparticles and Networks", *Polym. Chem.*, **2014**, 5, 3788-3794.
  19. Shiraki, T.; Diesendruck, C.E.; Moore, J.S. "Mechanochemical Production of Phenyl Cations Through Heterolytic Bond Scission", *RSC Faraday Discussions*, **2014**, 170, 385-394.
  20. Lee, C.K.; Diesendruck, C.E.; Lu, E.; Pickett, A.; May, P.A.; Moore, J.S.; Braun, P.V. "Solvent Swelling Activation of a Mechanophore in a Polymer Network", *Macromolecules*, **2014**, 47, 2690-2694.
  21. Tzur, E.; Ivry, E.; Diesendruck, C.E.; Vidavsky, Y.; Goldberg, I.; Lemcoff, N.G.

- “Stability and Activity of cis-Dichloro Ruthenium Olefin Metathesis Precatalysts Bearing Chelating Sulfur Alkylidenes”, *J. Organomet. Chem.*, **2014**, *769*, 24-28.
22. Kaitz, J.A.; Diesendruck, C.E.; Moore, J.S. “Divergent Macrocyclization Mechanisms in the Cationic Polymerization of Ethyl Glyoxylate”, *Macromolecules*, **2014**, *47*, 3603-3607.
23. Diesendruck, C.E.; Zhu, L.; Moore, J.S. “Alkyne Mechanochemistry: Putative Activation by Transoidal Bending”, *Chem. Commun.*, **2014**, *50*, 13235-13238.
24. Carino, E.V.; Diesendruck, C.E.; Moore, J.S.; Curtiss, L.A.; Assary, R.S.; Brushett, F.R. “BF<sub>3</sub>-promoted Electrochemical Properties of Quinoxaline in Propylene Carbonate”, *RSC Advances*, **2015**, *5*, 18822-18831.
25. Diesendruck, C.E.; Sottos, N.R.; Moore, J.S.; White, S.R. "Biomimetic Self-healing", *Angew. Chem. Int. Ed.*, **2015**, *54*, 10428-10447.
26. Levin, E.; Ivry, E.; Diesendruck, C.E.; Lemcoff, N.G. “N-Heterocyclic Carbene - Metal Catalysts for Reactions in Water”, *Chem. Rev.*, **2015**, *115*, 4607-4692.
27. Jirkovsky, J.S.; Subbaraman, R.; Strmcnik, D.; Harrison, K.L.; Diesendruck, C.E.; Assary, R.; Frank, O.; Kobr, L.; Wiberg, G.K.H.; Genorio, B.; Stamenkovic, V.R.; Curtiss, L.; Moore, J.S.; Zavadil, K.R.; Markovic, N.M. “Water as Promoter and Catalyst in Dioxygen Electrochemistry in Aqueous and Organic Media”, *ACS Catalysis*, **2015**, *5*, 6600-6607 (*ACS Editor's Choice*).
28. Diesendruck, C.E.; Rubin, G.; Bertke, J.A.; Gray, D.L.; Moore, J.S. “Crystal structure of 1,3-bis(2,3-dimethylquinoxalin-6-yl)benzene”, *Acta Crystallogr. Sect. E.*, **2015**, *E71*, 1429-1432.
29. Hirsch, M.; Dhara, S.; Diesendruck, C.E.\* “Arylation of tertiary amines to N-aryl quaternary ammonium salts”, *Org. Lett.*, **2016**, *18*, 980-983.
30. Genorio, B.; Staszak-Jirkovský, J.; Assary, R.S.; Connell, J.D.; Strmcnik, D.; Diesendruck, C.E.; Lopes, P.P.; Stamenkovic, V.R.; Moore, J.S.; Curtiss, L.A.; Markovic, N.M. “Superoxide (electro)chemistry on well-defined surfaces in organic environments”, *J. Phys. Chem. C.*, **2016**, *120*, 15909–15914.
31. Wang, F.; Burck, M.; Diesendruck, C.E.\* “Following Mechanochemical Kinetics with a Pyrenyl Nitron Spin-Trap”, *ACS Macro Letters* **2017**, *6*, 42-45.
32. Dhara, S.; Diesendruck, C.E.\* “Olefination of N-Sulfinylimines under Mild Conditions”, *Eur. J. Org. Chem.* **2017**, 1184-1190.
33. Bae, S.; Galant, O.; Diesendruck, C.E.; Silberstein, M. “Tailoring Single Chain Polymer Nanoparticle Thermo-Mechanical Behavior by Cross-link Density”, *Soft Mater.* **2017**, *13*, 2808-2816.
34. Levy, A.; Wang, F.; Lang, A.; Galant, O.; Diesendruck, C.E.\* “Intramolecular Cross-Linking: Addressing Mechanochemistry with a Bioinspired Approach”, *Angew. Chem. Int. Ed.* **2017**, *56*, 6431-6434.
35. Dekel D. R.; Amar, M.; Willdorf, S.; Kosa, M.; Dhara, S.; Diesendruck, C.E.\* “The effect of water on the stability of quaternary ammonium groups for anion exchange membrane fuel cell applications”, *Chem. Mater.* **2017**, *29*, 4425-4431.
36. Arava, S.; Diesendruck, C.E.\* “Strategies for the Synthesis of N-aryl ammonium salts”, *Synthesis* **2017**, *49*, 3535-3545.
37. Wang, F.; Diesendruck, C.E.\* “Advantages and Limitations of Diisocyanates in Intramolecular Collapse”, *Polym. Chem.* **2017**, *8*, 3712-3720.

38. Galant, O.; Bae, S.; Wang, F.; Levy, A.; Silberstein, M.; Diesendruck, C.E.\*; “Mechanical and thermomechanical characterization of glassy thermoplastics with intrachain cross-links”, *Macromolecules*, **2017**, *50*, 6415-6420.
39. Levy, A.; Gaver, E.; Wang, F.; Galant, O.; Diesendruck, C.E.\* “Effect of Intramolecular Cross Links on the Mechanochemical Fragmentation of Polymers in Solution”, *Chem. Commun.*, **2017**, *53*, 10132-10135.
40. Wang, F.; Diesendruck, C.E.\* “Polyphtalaldehyde: Synthesis, derivatives and applications”, *Macromol. Rapid Commun.*, **2018**, *39*, 1700519.
41. Dekel, D.; Willdorf, S.; Ash, U.; Amar, M.; Pusara, S.; Dhara, S.; Srebnik, S.; Diesendruck, C.E.\* “The critical relation between chemical stability of cations and water in anion exchange membrane fuel cells environment”, *J. Power Sources*, **2018**, *375*, 351-360.
42. Aharonovich, S.; Gjineci, N.; Dekel, D.; Diesendruck, C.E.\* “An effective synthesis for N,N-diphenyl carbazolium salts”, *Synlett*, **2018**, *29*, 1314-1318.
43. Mezhov, A.; Ulka, S.; Diesendruck, C.E.; Gendel, Y.; Kovler, K. “Rheological Behaviour of Cement Pastes with Low Amounts of Polynaphthalene Sulfonate Plasticizer”, *ACI SP*, **2018**, *326*, 13.1-13.10.
44. Diesendruck, C.E.\*; Dekel, D. “Water – a key parameter in the stability of anion exchange membrane fuel cells”, *Curr. Opin. Electrochem.*, **2018**, *9*, 173-178.
45. Galant, O.; Davidovich-Pinhas, M.; Diesendruck, C.E.\* “The effect of intramolecular cross-linking on polymer interactions in solution”, *Macromol. Rapid Commun.*, **2018**, *39*, 1800407.
46. Aharonovich, S.; Diesendruck, C.E.\* “Viscosity modifiers with intramolecular cross-links”, *React. Funct. Polym.*, **2018**, *131*, 237-242.
47. Willdorf-Cohen, S.; Mondal, A.N.; Dekel, D.; Diesendruck, C.E.\* “Chemical stability of poly(phenylene oxide)-based ionomers for anion exchange-membrane fuel cells”, *J. Mater. Chem. A*, **2018**, *6*, 22234-22239.
48. Bae, S.; Galant, O.; Diesendruck, C.E.; Silberstein, M. “The Effect of Intra-chain Crosslinking on the Thermo-mechanical Behavior of Bulk Polymers Assembled Purely from Single Chain Polymer Nanoparticles”, *Macromolecules*, **2018**, *51*, 7160-7168.
49. Fan, J.; Willdorf-Cohen, S.; Schibli, E.; Paula, Z.; Li, W.; Skalski, T.J.G.; Sergeenko, A.T.; Hohenadel, A.; Frisken, B.; Magliocca, E.; Mustain, W.E.; Diesendruck, C.E.; Dekel, D.R.; Holdcroft, S. “Poly(arylimidazoliums) Possessing High Hydroxide Ion Exchange Capacity and High Alkaline Stability”, *Nat. Commun.*, **2019**, *10*, 2306.
50. Levy, A.; Feinstein, R.; Diesendruck, C.E.\* “Mechanical Unfolding and Thermal Refolding of Single-Chain Nanoparticles Using Ligand-Metal Bonds”, *J. Am. Chem. Soc.*, **2019**, *141*, 7256-7260.
51. Galant, O.; Bae, S.; Silberstein, M.; Diesendruck, C.E.\* “Highly Stretchable Polymers: Mechanical Properties Improvement by Balancing Intra- and Intermolecular Interactions”, *Adv. Funct. Mater.*, **2019**, 1901806.
52. Vidavsky, Y.; Yang, S.; Abel, B.; Agami, I.; Diesendruck, C.E.; Coates, G.; Silberstein, M. “Enabling Room Temperature Mechanochromic Activation in a Glassy Polymer: Synthesis and Characterization of Spiropyran Polycarbonate”, *J. Am. Chem. Soc.*, **2019**, *141*, 10060-10067.

53. Wang, F.; Diesendruck, C.E.\* “Effect of disulfide-bond positioning on structural stability”, *Chem. Commun.*, **2020**, *56*, 2143-2146.
54. Mezhov, A.; Ulka, S.; Gendel, Y.; Diesendruck, C.E.; Kovler, K. “The working mechanisms of low molecular weight polynaphthalene sulfonate superplasticizers”, *Constr. Build. Mater.*, **2020**, *240*, 117891.
55. Levy, A.; Goldstein, H.; Brenman, D.; Diesendruck, C.E.\* “Effect of intramolecular crosslinker properties on the mechanochemical fragmentation of covalently folded polymers”, *J. Polym. Sci.*, **2020**, *58*, 692-703. (*front cover article*)
56. Zhegur, A.; Gjineci, N.; Willdorf-Cohen, S.; Mondal, A.; Diesendruck, C.E.; Gavish, N.; Dekel, D.R. “Changes of Anion Exchange Membrane Properties During Chemical Degradation”, *ACS App. Polym. Mater.*, **2020**, *2*, 360-367.
57. Gjineci, N.; Aharonovich, S.; Willdorf-Cohen, S.; Dekel, D.R.; Diesendruck, C.E.\* “The Reaction Mechanism Between Tetraarylammonium Salts and Hydroxide”, *Eur. J. Org. Chem.*, **2020**, *21*, 3161-3168. (*highlighted as VIP*).

## MANUSCRIPTS IN PREPARATION OR SUBMITTED

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58. Gjineci, N.; Aharonovich, S.; Dekel, D.R.; Diesendruck, C.E.\* “Increasing the Alkaline Stability of N,N diaryl-carbazolium salts using substituent Electronic Effects”, *in preparation*.
59. Willdorf-Cohen, S.; Gjineci, N.; Dekel, D.R.; Diesendruck, C.E.\* “Selective Benzylic H/D Exchange Using Unsolvated Hydroxide”, *in preparation*.
60. Kobernik, V.; Berkovich, I.; Levy, A.; Lemcoff, N.G.; Diesendruck, C.E.\* “Chemical Communication Between Organometallic Single-Chain Polymer Nanoparticles”, *in preparation*.
61. Horowitz, Y.; Schmidt, C.; Yoon, D.H.; Rigger, L.M.; Katzenmeier, L.; Bosch, G.M.; Noked, M.; Ein-Eli, Y.; Janek, J.; Zeier, W.G.; Diesendruck, C.E.\*; Golodnitsky, D. “Between liquid and all solid - a prospect on electrolyte future in lithium ion batteries for electric vehicles”, *submitted for publication*.
62. Zhang, X.; Vidavsky, Y.; Aharonovich, S.; Yang, S.J; Buche, M.R.; Diesendruck, C.E.; Silberstein, M.N.; “Bridging Experiments and Theory: Understanding the Viscoelasticity of Metallopolymers via Dynamic Metal-Ligand Interactions”, *submitted for publication*.
63. Galant, O.; Donmez, H.B.; Barner-Kowollik, C.; Diesendruck, C.E.\* “Flow Photochemistry in Single-Chain Polymer Nanoparticle Synthesis”, *in preparation*.

## PATENTS

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1. Diesendruck, C.E. “Mechanochemical resistant intramolecular crosslinked polymers and uses thereof” **2016**, IL 2016-243901; **2017**, WO 2017-134652.
2. Dekel, D.R.; Diesendruck, C.E. “The use of carbazolium salts in anion-exchange membranes” **2018**, US application 62724710.

## BOOK CHAPTERS

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1. Diesendruck, C.E.; Moore, J.S. “Mechanophores for Self-healing Applications”. In *Self-Healing Polymers*, **2013** Ed. W. H. Binder. Wiley-VCH, Weinheim.
2. Diesendruck, C.E. “Enyne Metathesis”. In *N-Heterocyclic Carbenes in Organic*

*Synthesis*, **2016** Ed. S. Nolan. Georg Thieme Verlag.

3. Diesendruck, C.E. "Mechanophores for Chemical Function". In *Mechanochemistry in Materials*, **2017** Ed. Y. Simon, S. Craig. Royal Society of Chemistry.

## ORAL PRESENTATIONS

1. "Double ring-closing metathesis (DRCM) by Di-N-Heterocycle Carbenes (NHCs): An Approach to Linear Polycatenanes", Organic Chemistry Seminar, Ben-Gurion University of the Negev, Israel, 2006.
2. "Theory vs. Experiment: DFT Calculations of Chelated Ruthenium Olefin Metathesis Catalysts", Organic Chemistry Seminar, Ben-Gurion University of the Negev, Israel, 2008.
3. "Dimer Ring-Closing (DRC) Reactions: Controlling the Reactivity of Molecules with Bimetallic Catalysts", Graduate Symposium in Synthetic Organic Chemistry, Technion Israel Institute of Technology, Israel, 2009.
4. "Dimer Ring-Closing (DRC) Reactions: Controlling the Reactivity of Molecules with Bimetallic Catalysts", Chemistry Departmental Seminar, Ben-Gurion University of the Negev, Israel, 2011.
5. "Proton-Coupled Mechanochemical Transduction – Mechanogenerating Acids", Nanohour, Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, USA, 2012.
6. "Proton-Coupled Mechanochemical Transduction – Mechanogenerating Acids", The 78th Meeting of the Israeli Chemical Society, Israel, February 2013.
7. "Proton-Coupled Mechanochemical Transduction – Mechanogenerating Acids", 4<sup>th</sup> International Symposium on Self-Healing Materials, Belgium, June 2013.
8. "New Accounts of Mechanochemistry", University of Cambridge, UK, June 2013.
9. "Mechanically-triggered Depolymerization", ACS 246th National Meeting, Indianapolis, USA, September 2013.
10. "Redox Active Macromolecular Structures for Nonaqueous Flow Cell Batteries", JCESR webinar, USA, October 2013.
11. "New Accounts of Polymer Mechanochemistry", Technion – Israel Institute of Technology, Israel, December 2013.
12. "New Accounts of Polymer Mechanochemistry", Weizmann Institute of Science, Israel, December 2013.
13. "New Accounts of Polymer Mechanochemistry", Tel-Aviv University, Israel, December 2013.
14. "New Accounts of Polymer Mechanochemistry", Ben-Gurion University of the Negev, Israel, December 2013.
15. "New Accounts of Polymer Mechanochemistry", Hebrew University of Jerusalem, Israel, December 2013.
16. "Mechanochemical Production of Phenyl Cations Through Heterolytic Bond Scission", Faraday Discussions on Mechanochemistry, Canada, June 2014.
17. "Mechanochemistry as Means for Recycling Acceleration", Technion-NTU Workshop on Recycling, Israel, November 2014.
18. "Self-Healing Materials", Chemada Fine Chemicals, Israel, January 2015 (invited)

- talk).
19. "Using Polymer Architecture to Increase the Lifespan of Lubricating Oils", NTU-Technion Workshop on Recycling, Singapore, February 2015.
  20. "Recent Advances in Biomimetic Self-healing Polymers", Mat. Sci. Eng. Colloquium, Technion, Israel, April 2015 (invited talk).
  21. "Depolymerizable Polyaldehydes: Dynamic Architecture From Dynamic Chemistry", Electrochemistry and Materials Science Seminar, Tel-Aviv University, Israel, May 2015 (invited talk).
  22. "Recent Advances in Biomimetic Self-healing Polymers", Biotech. and Food Eng. Colloquium, Technion, Israel, May 2015 (invited talk).
  23. "Mechanochemical Pyramidalization of Alkynes", 5<sup>th</sup> International Symposium on Self-Healing Materials, Durham, USA, June 2015 (invited talk).
  24. "Recent Advances in Biomimetic Self-healing Polymers", ICL, Beer-Sheva, Israel, July 2015 (invited talk).
  25. "New Accounts of Polymer Mechanochemistry", Chem. Eng. Faculty Seminar, Technion, Israel, November 2015.
  26. "Intramolecular crosslinks and Mechanics", IMEC17, Israel, February 2016 (invited talk).
  27. "Intramolecular crosslinks and Mechanics", ICS81, Israel, February 2016 (invited talk).
  28. "Intramolecular crosslinks and Mechanics", College of Chemistry, Peking University, China, March 2016.
  29. "Intramolecular crosslinks and Mechanics", School of Chemistry and Environment, Beihang University, China, March 2016.
  30. "Addressing Mechanochemistry in Polymers", Department of Chemistry, Tsinghua University, China, March 2016.
  31. "Addressing Mechanochemistry in Polymers", Department of Chemistry, Jilin University, China, March 2016.
  32. "Intramolecular crosslinks and Mechanics", Technion-Shanghai Jiao Tong University Workshop, China, March 2016.
  33. "Addressing Mechanochemistry in Polymers", Department of Macromolecular Science, Fudan University, China, March 2016.
  34. "Addressing Mechanochemistry in Polymers", Institute of Postharvest & Food Sciences, Volcani Center, Israel, May 2016 (invited talk).
  35. "Addressing Mechanochemistry with Intramolecular Cross-links", Warwick Polymer Conference, UK, July 2016 (invited talk).
  37. "Addressing Mechanochemistry in Polymers", Teva Pharmaceuticals, Israel, August 2016 (invited talk).
  38. "Addressing Mechanochemistry with Intramolecular Cross-links", Dept. of Chemistry and Chemical Biology, Cornell University, USA, September 2016 (invited talk).
  39. "Addressing Mechanochemistry with Intramolecular Cross-links", ExxonMobil Research, USA, September 2016 (invited talk).
  40. "Addressing Mechanochemistry with Intramolecular Cross-links", Faculty of Chemistry, University of Science and Technology of China, China, October 2016



- (invited talk).
41. "Addressing Mechanochemistry with Intramolecular Cross-links", Israeli Polymer and Plastic Society Conference, January 2017 (invited talk).
  42. "Addressing Mechanochemistry with Intramolecular Cross-links", Institute of Polymer Chemistry, University of Stuttgart, Germany, June 2017 (invited talk).
  43. "Addressing Mechanochemistry with Intramolecular Cross-links", Dept. of Organic Chemistry, University of Heidelberg, Germany, July 2017 (invited talk).
  44. "Addressing Mechanochemistry with Intramolecular Cross-links", DWI - Leibniz-Institute for Interactive Materials, University of Aachen, Germany, July 2017 (invited talk).
  45. "Molecular design consideration in the synthesis and decomposition of quaternary ammonium salts", Young Investigator Workshop of the E, Germany, July 2017 (invited talk).
  46. "Addressing Mechanochemistry with Intramolecular Cross-links", ACS 254th National Meeting, Washington DC, USA, August 2017 (invited talk).
  47. "Addressing Mechanochemistry with Intramolecular Cross-links", The Dow Chemical Company (Electronic Materials), Marlborough MA, USA, August 2017 (invited talk).
  48. Chemistry and Mechanics", Blavatnik Award Cerimony, Jerusalem, Israel, January 2018.
  49. "Addressing Mechanochemistry with Intramolecular Cross-links", Multiscale Mechanochemistry & Mechanobiology, Berlin, Germany, October 2017 (invited talk).
  50. "Addressing Mechanochemistry with Intramolecular Cross-links", Dept. of Organic Chemistry, Tel-Aviv University, Israel, March 2018 (invited talk).
  51. "Addressing Mechanochemistry with Intramolecular Cross-links", Institute of Chemistry, University of Sao Paulo, Brazil, April 2018 (invited talk).
  52. "Addressing Mechanochemistry with Intramolecular Cross-links", Institute of Chemistry, University of Campinas, Brazil, April 2018 (invited talk).
  53. "Mechanochemistry of Small Molecules", JSP presenter, Bürgenstock Conference, Switzerland, April 2018 (invited talk).
  54. "Addressing Mechanochemistry with Intramolecular Cross-links", Institute of Chemistry, Hebrew University of Jerusalem, Israel, May 2018 (invited talk).
  55. "Mechanochemistry of Novel Polymeric Materials", Blavatnik-Science Symposium, New York Academy of Sciences, USA, July 2018 (invited talk).
  56. "Mechanochemistry and Frontal Polymerization", Scott R. White Memorial Symposium, University of Illinois at Urbana-Champaign, USA, August 2018 (invited talk).
  57. "Addressing Mechanochemistry with Intramolecular Cross-links", Institute of Applied Physics, Innsbruck University, Austria, October 2018 (invited talk).
  58. "The Mechanochemistry of Folded Polymers", International Symposium on Functional Soft Materials, Tianjin University, China, November 2018 (invited talk).
  59. "Selective benzylic H/D exchange using unsolvated hydroxide", ICS84, Israel, February 2019 (contributed talk).
  60. "Effect of disulfide-bond positioning on structural stability", DESY-GIF Young Scientists' Meeting, DESY-Hamburg, Germany, March 2019 (invited talk).

61. “Chemical decomposition of anion-exchange membranes by unsolvated hydroxide”, Technion- Juelich Umbrella Symposium on Energy Conversion and Storage, Juelich, Germany, May 2019 (invited talk).
62. “Understanding and Inhibiting Polymer Degradation by Molecular Engineering”, Schulich Chemistry Colloquium, Technion, Israel, October 2019.
63. “Understanding and Inhibiting Polymer Degradation by Molecular Engineering”, Chemistry Department Colloquium, Bar-Ilan University, Israel, December 2019 (invited talk).
64. “Chemically Folded Thermoplastics: Providing Function from Structure”, Bowei Research Conference, Taiwan, January 2020 (keynote talk).
65. “Addressing Mechanochemistry with Intramolecular Cross-links”, Chemistry Colloquium, National Chiao Tung University, Taiwan, January 2020 (invited talk).
66. “Addressing Mechanochemistry with Intramolecular Cross-links”, Chemistry Colloquium, National Sun Yat-sen University, Taiwan, January 2020 (invited talk).
67. “Addressing Mechanochemistry with Intramolecular Cross-links”, Organic Chemistry Seminar, Stanford University, USA, March 2020 (invited talk).

## RESEARCH STUDENTS

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1. Maayan Hirsch, “Selective Arylation of Tertiary Amines to N-Aryl Quaternary Ammonium Salts”, M.Sc. in Chemistry 2014-2016.
2. Avishai Levy, “Mechanochemistry of Intramolecular Cross- Linked Polymers”, Ph.D. in Chemistry 2015-2019.
3. Or Galant, “Intramolecular cross-linking: from single chain to bulk materials”, direct Ph.D. in Polymer Engineering 2015-.
4. Iris Agami (Melnik), “Catalytic Mechanochemistry”, M.Sc. in Chemistry 2015-2017, Ph.D. in Chemistry, 2017-.
5. Nansi Gjineci, “New membranes for alkaline fuel cells”, Ph.D. in Chemistry, 2016-.
6. Simon Ulka, “Superplasticizers in the production of cement”, M.Sc. in Civil Engineering, 2017-2018.
7. Sapir Willdorf-Cohen, “Stability of QA salts in alkaline conditions”, Ph.D. in Chem. Engineering, 2018-.
8. Kanika Aggarwal, “Metalopolymers as membranes for alkaline fuel cells”, Ph.D. in Chemistry, 2018-
9. Sally Nijem, “Gas-releasing mechanophores”, Ph.D. in Chemistry, 2019-
10. Oleg Gouli, “Is there (regio) selectivity in polymer mechanochemical C-C bond scission?”, M.Sc. in Polymer Engineering, 2019-
11. Eden Ovadia, “Photoactivated self-healing ROMP”, M.Sc. in Chemistry, 2019-
12. Alisa Bouketov, “SCPNs with hydrogen-bonding side-chains”, M.Sc. in Chemistry, 2019-
13. Hasan Barca Donmez, “Preparation of SCPN using flow-chemistry”, M.Sc. in Chemistry, 2019-
14. Lina Rozental, “Ultra thin, surface bound cross-linked hydrogels”, Ph.D. in Chemical Engineering, 2019-
15. Rony Schwartz, “Mechanochemical activation of strong bonds in small molecules”,

Ph.D. in Chemistry, 2020-

## **POST-DOCTORAL RESEARCHERS**

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1. Feng Wang, China, 2014-2017.
2. Shubhendu Dhara, India, 2015-2017.
3. Sinai Aharonovich, Israel, 2016-.
4. Ying Song, China 2018
5. Alexander Mezhov, Israel, 2019
6. Elisa Ivry, Israel, 2019-