

July 2025

## CURRICULUM VITAE AND LIST OF PUBLICATIONS

### Personal Details

---

Name: **Flavio Grynszpan, Ph.D.**

Date and place of birth: 14 November 1964. Buenos Aires, Argentina.

Date of immigration: 15 March 1987

Regular military service: May 1994

Telephone number at work: +972-3-975-5861

Telephone number (mobile): +972-54-6364842

### Education

---

#### Undergraduate and Graduate Studies

Ph.D. 1991-1995 - The Hebrew University of Jerusalem – Department: Chemistry

Name of advisor: Prof. Silvio E. Biali. Title of thesis: Chemical Modifications of Calixarenes

M.Sc. 1989-1991 - The Hebrew University of Jerusalem – Department: Chemistry

Name of advisor: Prof. Silvio E. Biali. Title of thesis: OH Depleted Calixarenes.

B.Sc. 1987-1989 - The Hebrew University of Jerusalem – Department: Major in Chemistry and Biochemistry.

#### Post-Doctoral Studies

1997 - 1998 - Senior Research Associate. The Scripps Research Institute, San Diego, CA, USA.

Prof. Richard A. Lerner and Prof. Ehud Keinan.

1995 - 1997 –Research Associate. The Scripps Research Institute, San Diego, CA, USA. Prof.

Richard A. Lerner and Prof. Ehud Keinan.

### Academic Ranks and Tenure in Institutes of Higher Education

---

January 2020 – Present - Ariel University, Israel. Associate Professor (Tenured).

2012 – 2019 - Ariel University, Israel. Senior Lecturer (Lab inaugurated in Sept. 2013. Tenured in 2016).

1998 – 2002 - The Scripps Research Institute, San Diego, CA, USA. Assistant Professor (Tenure track)

### Professional Activities

---

#### Positions in academic administration (Departmental, Faculty and University)

April 3<sup>rd</sup>, 2024 – Co-Chairman of the organizing committee. The 87th Annual Meeting of the Israel Chemical Society (ICS).

Oct 2023 – Present – Director of the Graduate Studies Program. Dept. of Chemical Sciences, Ariel University.

Oct 2023 – Jan 2024 - Acting Head of the Dept. of Chemical Sciences, Ariel University during the war “Swords of Iron” while Prof. Szpilman served in reserve duty.

2013 – Present - Member of the Committee for the Graduate Studies Program. Dept. of Chemical Sciences, Ariel University.

2013 – Present - Supervisor of the Dept. of Chemical Sciences Web Site, Ariel University.

2014 – Present - Elected Member of the Internet Committee of the Senate of Ariel University.  
 2020 – Member of the academic organizing committee of the 17th Annual Meeting of the Medicinal Chemistry Section of the Israel Chemical Society.  
 2015 – 2021 - Head of the Teaching Committee. Dept. of Chem. Sci., Ariel University.  
 2014 – Present – Member of the Graduate Studies Committee. Dept. of Chem. Sci., Ariel University.  
 2013 – 2021 - Member of the Teaching Committee. Dept. of Chem. Sci., Ariel University.  
 June 6th, 2018 - Chairman of the second morning session of the 15th Annual Meeting of the Medicinal Chemistry Section of the Israel Chemical Society. WIS.  
 October 3<sup>rd</sup>, 2018 - Member of the Organizing Committee of the International Conference in Honor of Prof. Dan Meyerstein's 80th Birthday. Ariel University.  
 December 17<sup>th</sup>, 2015 - Chairman of the Organizing Committee. The 7th National Graduate Students Symposium in Organic Chemistry. Ariel University.  
 2014 – Member of the organizing committee and chairman of the first afternoon session of the 12th Annual Meeting of the Medicinal Chemistry Section of the Israel Chemical Society.  
 2013 – Chairman of the second afternoon session of the 11<sup>th</sup> Annual Meeting of the Medicinal Chemistry Section of the Israel Chemical Society. WIS.  
 2014 – 15 - Member of the Conferences and Publishing Committee of the Faculty of Natural Sciences. Ariel University.  
 2013 – 14 - Organizer of the Weekly Seminar of the Dept. of Biological Chemistry (Now: Dept. of Chemical Sciences), Ariel U.

#### **Professional functions outside universities/institutions (inter-university, national, international)**

2011 – 2007 - Salio Nanotechnologies Ltd, Nes Ziona, Israel. Director of R&D  
 2004 – 2007 - Pharmos Ltd, Rehovot, Israel. Associate Director of Chemistry  
 2003 – 2002 - Compugen Ltd., Ashqelon/Tel-Aviv, Israel. Head of Innovative Medicinal Chemistry

#### **Significant professional consulting**

2004 – 2005 - Scientific advisor at Semorex Technologies Ltd., Nes Ziona, Israel. Molecularly Imprinted Polymers.  
 2004 – 2010 - Member of the scientific advisory board at MiNeueT Therapeutics Ltd, Israel. Medicinal Chemistry.

#### **Membership in professional/scientific societies**

1989 – Present – The Israel Chemical Society.  
 1991– 2002 –The American Chemical Society.  
 2023 – Present – The American Chemical Society.

### **Educational activities**

---

#### **Courses taught in Recent Years at Ariel U.**

2024 – Present – Organic Chemistry (3 credits) Chemical Sciences and Chemical Engineering.  
 2022 – 2024 - Fundamentals of Organic Chemistry (2 credits) Chemical Sciences.  
 2022 – Present - Organic Chemistry I (2 credits; 2-7211810-1) Chemical Sciences.  
 2020 – 2021 - Organic Chemistry Lab (2 credits; 2-4012531/2-1) Nutrition Sciences.  
 2014 – Present - Selected Topics Seminar (2 credits; 2-7232810-1) Biological Chemistry-Chemical Sciences.  
 2015 – 2016 - Total Synthesis, Targets, Strategies and Methods. Chemistry MSc and PhD Programs (2 credits; 2-7290110-1, course given in English).  
 2014 - Organic Chemistry (5 credits; 2-7112110-1) Molecular Biology.  
 2013 – Present - Advanced Organic Chemistry (2 credits, 2-7224010-1) Biological Chemistry - Chemical Sciences.

2013 – 2022 - Organic Chemistry I (4 credits; 2-7211810-1) Biological Chemistry-Chemical Sciences.

2013 – Present - Bioorganic Chemistry (2 credits; 2-7223910-1) Biological Chemistry-Chemical Sciences.

2013 – Drug Development Seminar (2 credits; 2-7230810-1) Biological Chemistry.

2013 - Chemistry I (2 credits; 2-4410610-2) Civil Engineering.

2013 - Organic Chemistry (3 credits; 2-4010410-1) Nutrition Sciences.

2013 – 2017 - Analytical Techniques in Chemistry and Biology - Separation Techniques (Chromatography) (2-7280410-1, this course was given in Hebrew and in English). Biological Chemistry: Chemical Sciences and Molecular Biology MSc Programs. Taught jointly with Dr. T. Zidki and Prof. M. Sherman.

2012 – 2017 - Organic Chemistry II (2 credits; 2-4120420-1) Chemical Engineering

2012 – 2013 - Organic Chemistry I (4 credits; 2-4113210-1) Chemical Engineering.

2012 – 2013 - Inorganic Chemistry Lab (4 credits; 2-4111530-3) Chemical Engineering.

2012 – Spectroscopic and Instrumental Techniques in Chemistry (2 credits; 2-7223210-1) Biological Chemistry.

2012 – Present Organic Chemistry Lab (4 credits; 2-4121130-1) Chemical Engineering-Chemical Sciences.

### **Supervision of Research Students at Ariel U.**

#### Postdoctoral fellows:

2016 – 2017 – Ishita Neogi, PhD.

2017 – 2019 – Michal Amar, PhD. Jointly with Dr. Michael. Montag.

2022 – 2022 – Prabu Samikannu, PhD. Jointly with Prof. Mindy Levine.

2023 – 2023 – Ankita Gangopadhyay, PhD. Jointly with Prof. Mindy Levine.

#### PhD degree:

2015 – 2019 – **Partha Jyoti Das, PhD.** Jointly with Prof. M. Firer.

2016 – 2020 – **Ankana Roy, PhD.** Jointly with Prof. M. Firer and Dr. M. Montag.

2018 – 2022 – **Joy Karmakar, PhD.** Jointly with Prof. Alex Szpilman.

2019 – 2021 – **Jince Thomas, PhD.** Visiting PhD candidate. Jointly with Prof. Alex Schechter.

2019 – 2023 – **Sara Amer, PhD.** Jointly with Prof. Michael Firer.

2022 – Present – Mr. Nathaniel C. Roy, PhD candidate.

2022 – Present – Ms. Neelima Chacko, PhD candidate. Jointly with Dr. Rinat Sela, Physics Dept.

2023 – Present – Ms. Aleena M. Baby, PhD candidate.

2024 – Present – Ms. Anjali Soniwal, PhD candidate.

#### MSc degree

2018 - 2021 – **Mr. Oleg Szumski, MSc.**

2020 - 2022 – **Mr. Dan Vermeer, MSc.**

2020 – 2022 – **Ms. Bat-El Oded, MSc.**

2024 – Present – Mr. Anatoly Petrovich, MSc candidate.

2024 – Present – Ms. Shira Glasberg, MSc candidate.

2024 - Present – Ms. Orly Abramov, MSc candidate.

2024 - Present – Ms. Reut Hagbi, MSc candidate.

#### Research Assistants

2024 – Present – Ms. Noy Sherman.

2023 - 2024 – Mr. Amit Ashurov.

2023 – 2024 – Ms. Shira Glasberg.

2021 - 2022 – Mr. Uri Miles.

2018 - 2019 – Mr. Vijay Patil. Jointly with Prof. Alex Schechter.

2016 – 2017 – Ms. Shira Hazan-Fhima.

2014 – 2015 – Ms. Omer Goldstein.

2013 - 2017 – Ms. Orit Ben Zazon. Jointly with Prof. A. Schechter.

## Supervision of Research Students at The Scripps Research Institute.

### Postdoctoral fellows:

1999 - 2001 – **Lawrence DeSouza, PhD.**

1998 – 2000 – **Haihong Huang, PhD**

2000 - 2002 – **Yinong Xie, PhD.**

## Awards, Citations, Honors, Fellowships

---

### Honors, Citation Awards (including during studies)

2021– 2022 - Ariel University award for academic teaching excellence.

2018 – 2019 - Ariel University award for academic teaching excellence.

2016 – Present. Incumbent of the Pamela and Bard Cosman Endowment for Organic Chemistry Research .

2015 – 2016 - Ariel University award for academic teaching excellence.

2017 – The Michael Landau Young Scientist Prize. Awarded by The Mif'al Hapais Foundation. Given to young scientists holding an outstanding PhD thesis for excellence in research in natural sciences, technology, political sciences, mathematics, environmental sciences, and agriculture.

1995 – The Professor Aharon Katzir Award. Granted annually by the Hebrew University of Jerusalem to one outstanding thesis among all fields of the experimental sciences.

1995 – PhD Summa Cum Laude, the Hebrew University of Jerusalem.

1991 – MSc Cum Laude, the Hebrew University of Jerusalem.

### Fellowships

1999 – 2000. Named Fellow of the John Simon Guggenheim Memorial Foundation. \$30,000. Awarded to selected scientists and artists who have demonstrated an exceptional capacity for productive scholarship or creative ability in the arts and science.

1995 – 1997. Research Associate Fellowship. \$25,000 per year. The Scripps Research Institute.

1995 – 1996. The Lady Davis Foundation Postdoctoral Fellowship. \$17,000. “Selected on the basis of demonstrated excellence in their studies and promise of distinction in their chosen fields of specialization, as well as on qualities of mind, intellect and character.”

## Scientific Publications

### Citation Index

---

**H-index** (ISI / Google Scholar): **19/21**

**Total number of citations of all articles** (ISI / Google Scholar): **???? / 2372**

**Total number of citations without self-citations** (ISI / Google Scholar): **???? / ????**

### Authored books

---

#### Scientific Books (Monographs)

**1. J. Thomas, A. Schechter, F. Grynszpan, B. Francis, and S. Thomas.** Alkaline Anion Exchange Membranes for Fuel Cells: From Tailored Materials to Novel Applications. February 2024. John Wiley & Sons, Limited. ISBN: 978-3-527-83759-5.

## Books Chapter (which are not Conference Proceedings)

---

1. O. Aleksiuk, **F. Grynszpan** and S.E. Biali. (1995) Preparation, Structure and Stereodynamics of Phosphorus Bridged Calixarenes. "Calixarenes 50th Anniversary". J. Vicens, Z. Asfari, J. M. Harrowfield, Ed., Kluwer Academic Publishers; Dordrecht/Boston/London. 199-221.
2. J. Thomas, P. Velayudham, R.K. Singh, S. Thomas, A. Schechter, **F. Grynszpan\***. (2024) Research Challenges and Future Directions on Anion Exchange Membranes for Fuel Cells. *Alkaline Anion Exchange Membranes for Fuel Cells: From Tailored Materials to Novel Applications*. J. Thomas, A. Schechter, F. Grynszpan, B. Francis, and S. Thomas, Ed., John Wiley & Sons, 393.
3. **F. Grynszpan\***, A. Roy, B. Oded, and N.C. Roy. (2025) Bimanes in Retrospect: An In-Depth Analysis of Their Chemical Evolution and Applications of Derivatives Over the Last Half Century. Invited review chapter for *Advances in Heterocyclic Chemistry – ScienceDirect*, 1st Ed. Vol. 146. In Press. June 1, 2025 Editors: Eric F.V. Scriven, Christopher A. Ramsden. **IF: 3.6**.

## Articles

---

### Refereed articles and refereed letters in scientific journals.

#### Papers published after joining Ariel University (March 2012-Present).

1. V. Joseph, J.J. Peter, T. Bachu, J. Hilewitz, **F. Grynszpan**, and M. Levine. (2024). A commercially available dye as a highly versatile colorimetric fluoride sensor. *Microchemical Journal*. **207**, 111944. **Citations: -; IF: 4.9; SJR: 0.74; Q1**. <https://doi.org/10.1016/j.microc.2024.111944>
2. J.J. Peter, N.Ch. Roy, **F. Grynszpan\***, and M. Levine. (2024) Ultrasensitive and versatile hydrogen peroxide sensing via fluorescence quenching. *Chemical Communications* **60**, 10152-10155. **Citations: -; IF: 4.3; SJR: 1.13; Q1**. <https://doi.org/10.1039/D4CC03020F>
3. S. Amer, U. Miles, M. Firer, and **F. Grynszpan\***. (2024) Turn-On coumarin precursor: from hydrazine sensor to covalent inhibition and fluorescence detection of rabbit muscle aldolase. *Molecules*, **29**, 2175. **Citations: -; IF: 4.6; SJR: 0.74; Q2**. Invited paper including full waiver of OA fees. <https://doi.org/10.3390/molecules29102175>
4. J. Thomas, M.E. Thomas, S. Thomas, A. Schechter and **F. Grynszpan\***. (2024) A perspective into recent progress on the tailored cationic group-based polymeric anion exchange membranes intended for electrochemical energy applications. *Materials Today Chemistry* **35** 101866. **Citations: -; IF: 7.3; SJR: 1.23; Q1**. <https://doi.org/10.1016/j.mtchem.2023.101866>
5. S. Amer, V. Joseph, B. Oded, V. Marks, **F. Grynszpan\***, and M. Levine. (2023) Shining light on fluoride detection: a comprehensive study exploring the potential of coumarin precursors as selective turn-on fluorescent chemosensors. *Organic and Biomolecular Chemistry* **21**, 9410–9415. **Citations: -; IF: 3.89; SJR: 0.779; Q2**. <https://doi.org/10.1039/D3OB01563G>
6. B. Oded, Y. Diskin-Posner, V. Marks, H. Kornweitz and **F. Grynszpan\***. (2023). DFT calculations and synthesis reveal: key intermediates, omitted mechanisms, and unsymmetrical bimanane products. *European Journal of Organic Chemistry*. **26**, e202300697, **Citations: -; IF: 2.8; SJR: 0.682; Q2**. <https://doi.org/10.1002/ejoc.202300697>
7. P.J. Das, A. Roy, I. Neogi, Y. Diskin-Posner, S. Amer, V. Marks, I. Pinkas, A. Nandi, S. Kozuch, M. Firer, M. Montag, and **F. Grynszpan\***. (2023). Thioxobimanes. *Journal of Organic Chemistry* **88(19)**, 13475–13489. **IF: 4.19; SJR: 0.89; Q1**. <https://doi.org/10.1021/acs.joc.3c00873>
8. I. Neogi, V. Darshan, A. Linet, A. Sebastian, Sh. Yagi, **F. Grynszpan\***, and N. Unni. (2022). Tröger's base tethered boomerang-shaped host materials for phosphorescent organic light-emitting diodes. *Synthetic Metals*. **291**, 117185. **Citations: 0; IF: 4.4; SJR: 0.67; Q1**. <https://doi.org/10.1016/j.synthmet.2022.117185>

9. J. Karmakar, A. Pramanik, V. Joseph, V. Marks, **F. Grynszpan\***, and M. Levine. (2022). A dipodal bimane–diazole–diCu(II) complex serves as an ultrasensitive water sensor. *Chemical Communications*. **58** (6), 2690–2693. Citations: 9; IF: 6.22; SJR: 1.34; Q1. <https://doi.org/10.1039/D1CC07138F>
  10. A. Pramanik, J. Karmakar, **F. Grynszpan\***, and M. Levine. (2022). Highly sensitive water detection through reversible fluorescence changes in a *syn*-bimane based boronic acid derivative. *Frontiers in Chemistry*. **9**, 782481. Citations: 5; IF: 4.87; SJR: 0.95; Q1. <https://doi.org/10.3389/fchem.2021.782481>
  11. J. Thomas, B. Francis, S. Thomas, A. Schechter, and **F. Grynszpan\***. (2021) Effective hydroxide transport through dependable polysulfone based membranes negotiated by a triazatriangulenium cation. *Solid State Ionics*, **370**, article 115731. Citations: 12; IF: 3.69; SJR: 0.69; Q2. <https://doi.org/10.1016/j.ssi.2021.115731>
  12. O. Szumski, J. Karmakar and **F. Grynszpan\***. (2021). Re-enter the *syn*-(Me,I)bimane: a gateway to bimane derivatives with extended  $\pi$ -systems. *Synlett* **32**, 1141-1145. Citations: 4; IF: 2.45; SJR: 0.6; Q2. DOI: [10.1055/s-0040-1706045](https://doi.org/10.1055/s-0040-1706045)
  13. A. Pramanik, J. Karmakar, **F. Grynszpan\***, and M. Levine. (2020) Facile iodine detection via fluorescence quenching of  $\beta$ -cyclodextrin: bimane-diazole inclusion complexes. *Israel Journal of Chemistry*. **61**:3-4, 253-260. Citations: 9; IF: 3.03; SJR: 1.03; Q1. <https://doi.org/10.1002/ijch.202000092>
  14. A. Pramanik, S. Amer, **F. Grynszpan\***, and M. Levine. (2020) Highly sensitive detection of cobalt through fluorescence changes in  $\beta$ -cyclodextrin-bimane complexes. *Chemical Communications*, **56**, 12126-12129. Citations: 18; IF: 6.22; SJR: 1.34; Q1. Featured on the inside cover of the journal. <https://doi.org/10.1039/D0CC05812B>
  15. D. Walunj, K. Egarmina, H. Tuchinsky, O. Shpilberg, O. Hershkovitz-Rokah, **F. Grynszpan\***, and G. Gellerman. (2020) Expedient synthesis and anticancer evaluation of dual-action 9-anilinoacridine methyl triazene chimeras. *Chemical Biology and Drug Design*. **00**, 1–16. Citations: 4; IF: 2.55; SJR: 0.51; Q3. <https://doi.org/10.1111/cbdd.13776>
- Papers published before being promoted to Associate Professor at Ariel University.*
16. M. Kovaliov, G. Zats-Mor, I. Lapidot, R. Krieger, **F. Grynszpan**, G. Gellerman, A. Albeck, and Sh. Shatzmiller. (2019). Antimicrobial peptide surrogates based on freidger lactam. *Drug Design Development and Delivery Journal*. **2**(1) 107-112. Citations: 0; IF: -; SJR: -; Q-. DOI: [10.31021/dddd.20192108](https://doi.org/10.31021/dddd.20192108)
  17. Y. Diskin-Posner, S. Amer, A. Roy, P. J. Das, **F. Grynszpan\***, and M. Montag. (2019) *syn*-(Me,Me)Bimane as a structural building block in metal coordination architectures. *Crystal Growth & Design*, **19**(8), 4358-4368. Citations: 8; IF: 3.97; SJR: 0.71; Q2. <https://doi.org/10.1021/acs.cgd.9b00089>
  18. A. Roy, P.J. Das, Y. Diskin-Posner, M. Firer, **F. Grynszpan\***, and M. Montag. (2018). Quenching of *syn*-bimane fluorescence by Na<sup>+</sup> complexation. *New Journal of Chemistry*, **42**, 15541 – 15545. Citations: 3; IF: 3.277; SJR: 0.6; Q2. <https://doi.org/10.1039/C8NJ01945B>
  19. I. Neogi, P.J. Das and **F. Grynszpan\***. (2018) Dihalogen and solvent free preparation of *syn*-bimane. *Synlett*, **29**(08), 1043-1046. Citations: 13; IF: 2.151; SJR: 0.6; Q2. DOI: [10.1055/s-0036-1591964](https://doi.org/10.1055/s-0036-1591964)
  20. A. Brandis, E. Partouche, T. Yechezkel, Y. Salitra, V. Shkoulev, A. Scherz, and **F. Grynszpan\***. (2017) A two-step strategy to visually identify molecularly imprinted polymers for tagged proteins. *Journal of Separation Science*. **40**(16). 3358-3367. Citations: 6; IF: 2.741; SJR: 0.55; Q2. DOI: [10.1002/jssc.201700269](https://doi.org/10.1002/jssc.201700269)
  21. P.J. Das, Y. Diskin-Posner, M. Firer, M. Montag, and **F. Grynszpan\***. (2016). *syn*-Bimane as a chelating O-donor ligand for Palladium(II). *Dalton Transactions*. **45**, 17123-17131. Citations: 11; IF: 4.57; SJR: 0.79; Q1; Featured on the cover of the journal. <https://doi.org/10.1039/C6DT02141G>
  22. E. Ragozin, B. Redko, E. Tuchinsky, A. Rozovsky, A. Albeck, **F. Grynszpan\*** and G. Gellerman. (2016). Bio-labile peptidyl delivery systems towards sequential drug release.

*Biopolymers: Peptide Synthesis*. **106**(1), 119–132. Citations: 15; IF: 2.38; SJR: 0.492; Q2. DOI: [10.1002/bip.22794](https://doi.org/10.1002/bip.22794)

23. T. Brider, B. Redko, M. Oron-Herman, A. Cohen-Matzlich, G. Gerlitz, G. Gellerman, and F. Grynszpan\*. (2016) Synthesis and in-vitro anticancer evaluation of 1,8-naphthalimide N(4) and S(4)-derivatives combining DNA intercalation and alkylation capabilities. *Research on Chemical Intermediates*. 1-17. Citations: 11; IF: 3.13; SJR: 0.49; Q2. <https://doi.org/10.1007/s11164-015-2115-1>
24. I. Lapidot, D. Baranes, A. Pinhasov, G. Gellerman, A. Albeck, F. Grynszpan\*, and Sh.E. Shatzmiller. (2016)  $\alpha$ -Aminoisobutyric acid leads a fluorescent *syn*-bimane LASER probe across the blood-brain barrier. *Medicinal Chemistry* **12**(1), 48-53. Citations: 8; IF: 1.387; SJR: 0.32; Q3. DOI: [10.2174/1573406411666150518105010](https://doi.org/10.2174/1573406411666150518105010)
25. I. Lapidot, A. Albeck, G. Gellerman, Sh.E. Shatzmiller and F. Grynszpan\*. (2015) 1,4-Dihydropyridine Cationic Peptidomimetics with Antibacterial Activity. *International Journal of Peptide Research and Therapeutics*. **21**(3), 243-247. Citations: 13 IF: 0.825; SJR: 0.4; Q3. <https://doi.org/10.1007/s10989-015-9460-1>
26. T. Brider, B. Redko, F. Grynszpan\* and G. Gellerman. (2014) Three overlooked chemical approaches toward 3-naphthalimide amonafide N-derivatives. *Tetrahedron Letters*. **55**, 6675–6679. Citations: 10; IF: 2.397; SJR: 0.39; Q2. <https://doi.org/10.1016/j.tetlet.2014.10.059>
27. G.M. Morris, L.G. Green, Z. Radić, P.Taylor, K.B.Sharpless, A.J. Olson, and F. Grynszpan\*. (2013). Automated Docking with Protein Flexibility in the Design of Femtomolar “Click Chemistry” Inhibitors of Acetylcholinesterase. *Journal of Chemical Information and Modelling*, **53** (4), 898–906. Citations: 45; IF: 4.675; SJR: 1.36; Q1. <https://doi.org/10.1021/ci300545a>

#### **Papers published before joining Ariel University**

28. F. Grynszpan and S. E. Biali. (2003). The Reaction of a Bis(spirodienone Calix[4]arene Derivative with Hydrazine. *Arkivok*, **2**, 38-48. Citations: 2; IF: 1.25; SJR: 0.18; Q4. ISSN [1551-7012](https://doi.org/10.1551-7012)
29. A. Brik, L.J. D’Souza, E. Keinan, F. Grynszpan\* and P.E. Dawson. (2002). Mutants of 4-Oxalocrotonate Tautomerase Catalyze the Decarboxylation of Oxaloacetate through an Imine Mechanism. *ChemBioChem*, **3**, 845-85. Citations: 17; IF: 3.740; SJR: 0.98; Q1. Featured on the cover of the journal. [https://doi.org/10.1002/1439-7633\(20020902\)3:9<845::AID-CBIC845>3.0.CO;2-2](https://doi.org/10.1002/1439-7633(20020902)3:9<845::AID-CBIC845>3.0.CO;2-2)
30. W.G. Lewis, L.G. Green, F. Grynszpan, Z. Radic, P.R. Carlier, P. Taylor, M.G. Finn, and K.B. Sharpless. (2002). Click Chemistry In Situ: Acetylcholinesterase as a Reaction Vessel for the Selective Assembly of a Femtomolar Inhibitor from an Array of Building Blocks. *Angewandte Chemie*. **114**, 1095-1099, *Angewandte Chemie International Edition*, **41**, 1053 -1057. Citations: 1066 IF: 13.734. SJR: 5.57; Q1. Highlighted in *Chemical & Engineering News*, Feb. 2002 p. 29-34, Cover Story. Highlighted in *The Union Tribune*, San Diego, City Edition, B1. Highlighted in *Nature*, *Drug Discovery Reviews*, **1**, 254, (2002), among others. Considered as seminal work behind the Nobel Prize awarded to Prof. Barry Sharpless in 2022. DOI: [10.1002/1521-3773\(20020315\)41:6<1053::aid-anie1053>3.0.co;2-4](https://doi.org/10.1002/1521-3773(20020315)41:6<1053::aid-anie1053>3.0.co;2-4)
31. G.B. Legge, G.M. Morris, M.F. Sanner, Y. Takada, A.J. Olson and F. Grynszpan\*. (2002) Prediction of the Protein-Protein Interaction in the LFA-1 I-Domain / ICAM-1 D1-D2 Complex. *Proteins, Structure, Function and Genetics* **48**, 151-160. Citations: 27; IF: 4.088; SJR: 1.5; Q1. DOI: [10.1073/pnas.95.8.4140](https://doi.org/10.1073/pnas.95.8.4140)
32. H. Huang, W.-G. Han, L. Noodleman and F. Grynszpan\*. (2001). Multiple Reactive Immunization Towards the Hydrolysis of Organophosphorous Nerve Agents: Hapten Design and Synthesis. *Bioorg. Med. Chem.* **9**, 3185-3195. Citations: 17; IF: 2.903; SJR: 0.57; Q2. [https://doi.org/10.1016/S0968-0896\(01\)00231-0](https://doi.org/10.1016/S0968-0896(01)00231-0)
33. K. Agbaria, S.E. Biali, V. Böhmer, J. Brenn, Sh. Cohen, M. Frings, F. Grynszpan, J.McB. Harrowfield, A.N. Sobolev and I. Thondorf. (2001). Stereochemistry of a Spherand-Type Calixarene. *Journal of Organic Chemistry* **66**, 2900-2906. Citations: 8; IF: 4.564; SJR: 0.89; Q1. <https://doi.org/10.1021/jo0016576>

34. **F. Grynszpan** and E. Keinan. Opsin Shift in an Aldolase Antibody. (1999). *Bioorganic and Medicinal Chemistry Letters* **9**, 2419-2425. Citations: 8; IF: 2.338; SJR: 0.51; Q2. DOI: [10.1016/S0960-894X\(99\)00406-0](https://doi.org/10.1016/S0960-894X(99)00406-0)
35. S.E. Biali, V. Böhmer, I. Columbus, G. Fergusson, C. Grüttner, **F. Grynszpan**, E. F. Paulus and I. Thondorf. (1998). Conformational Studies of Calix[5]arenes Containing a Single Alkanediyl Bridge. *Journal of the Chemical Society. Perkin Transactions.* **2**, 2261-1170 Citations: 15; IF: 1.799; SJR: N/A; Q N/A. <https://doi.org/10.1039/A803470B>
36. **F. Grynszpan** and E. Keinan. (1998). Use of Antibodies to Dissect the Components of a Catalytic Event. The Cyclopropenone Hapten. *Chemical Communications*. 865-866. Citations: 4; IF: 6.378; SJR: 1.34; Q1. <https://doi.org/10.1039/A800274F>
37. J. Wöhnert, J. Brenn, M. Stoldt, O. Aleksuk, **F. Grynszpan**, I. Thondorf and S. E. Biali. (1998). Conformation and stereodynamics of monodioxamethylene calix[4]arene derivatives. *Journal of Organic Chemistry*, **63**, 3866-3874. Citations: 15; IF: 4.564; SJR: 0.89; Q1. <https://doi.org/10.1021/jo9720602>
38. D. Shabat, **F. Grynszpan**, S. Saphier, A. Turniansky, D. Avnir and E. Keinan. (1997). An efficient sol-gel reactor for antibody catalyzed transformations. *Chemistry of Materials.*, **9**, 2258-2260. Citations: 81; IF: 8.238; SJR: 2.87; Q1. <https://doi.org/10.1021/cm970193y>
39. **F. Grynszpan** and S. E. Biali. (1996). Structure and equilibration studies of bis – and tris(spirodienone) derivatives of medium - sized calixarenes. *Journal of Organic Chemistry*, **61**, 9512-9521. Citations: 9; IF: 4.564; SJR: 0.89; Q1. <https://doi.org/10.1021/jo961358+>
40. P. Ghosh, D. Shabat, S. Kumar, S. C. Sinha, **F. Grynszpan**, J. Li, L. Noodelman and E. Keinan. (1996). Using Antibodies to Perturb the Coordination Sphere of a Transition Metal Complex. *Nature*, **382**, 339-341. Summarized in *Chemical & Engineering News*, July 29, 1996; p. 40 Science/Tech. Concentrates). Citations: 30; IF: 38.597; SJR: 20.96.; Q1. DOI: [10.1038/382339a0](https://doi.org/10.1038/382339a0)
41. S.E. Biali, V. Böhmer, Sh. Cohen, G. Ferguson, C. Grüttner, **F. Grynszpan**, E. Paulus, I. Thondorf and W. Vogt. (1996). Alkanediyl Bridged Calix[4]arenes: Synthesis, Conformational Analysis and Rotational Barriers. *Journal of the American Chemical Society*, **118**, 12938-12949. Citations: 78; IF: 10.677; SJR: 5.95.; Q1. <https://doi.org/10.1021/ja960883n>
42. **F. Grynszpan** and S. E. Biali. (1996). From calixarenes to macrocyclic polyethers. *Journal of the Chemical Society., Chemical Communications*, 195-196. Citations: 4; IF: 6.378; SJR: 1.34; Q1. <https://doi.org/10.1039/CC9960000195>
43. **F. Grynszpan**, O. Aleksuk, and S.E. Biali. (1996). Synthesis and Reactions of Large - Ring Spirodienone Calixarene Derivatives. *Pure and Appl. Chem.*, **68** (6), 1249-1254. Citations: 6; IF: 2.32; SJR: 0.41; Q2. <https://doi.org/10.1351/pac199668061249>
44. O. Aleksuk, **F. Grynszpan**, A.M. Litwak, and S.E. Biali. (1996). Spirodienone calixarene derivatives. *New Journal of Chemistry*, **20**, 473-482. Citations: 14; IF: 2.966; SJR: 0.6.; Q2. DOI: N/A.
45. O. Mayzel, O. Aleksuk, **F. Grynszpan** and S.E. Biali, Y. Cohen. (1995). NMR diffusion coefficients of *p*-tert-butylcalix[n]arene systems. *Journal of the Chemical Society., Chemical Communications*, 1183-1184. Citations: 27; IF: 6.378; SJR: 1.34; Q1. <https://doi.org/10.1039/C39950001183>
46. **F. Grynszpan** and S.E. Biali. (1994). Large macrocyclic rings with complex architectures: polyspirodienone calix[6]arene derivatives. *Journal of the Chemical Society, Chemical Communications*, 2545-2546. Citations: 20; IF: 6.378; SJR: 1.34; Q1. <https://doi.org/10.1039/C39940002545>
47. C. Grüttner, V. Böhmer, W. Vogt, I. Thondorf, S.E. Biali and **F. Grynszpan**. (1994). Calix[4]arenes with Alkylidene Bridges, Synthesis and Conformational Properties. *Tetrahedron Letters*, **35**, 6267-6270. Citations: 20; IF: 2.032; SJR: 0.39; Q3. [https://doi.org/10.1016/S0040-4039\(00\)73408-3](https://doi.org/10.1016/S0040-4039(00)73408-3)
48. O. Aleksuk, **F. Grynszpan** and S.E. Biali. (1994). Preparation, structure and stereodynamics of phosphorus bridged calixarenes. *Journal of Inclusion Phenomena*, **19**, 237-256. Citations: 43; IF: 1.4; SJR: 0.33; Q3. <https://doi.org/10.1007/BF00708985>

49. **F. Grynszpan**, O. Aleksyuk and S.E. Biali. (1994). Cyclization and reductive cleavage of monospirodienone calix[4]arene derivatives. Trihydroxy-*p-tert*-butylcalixarene revisited. *Journal of Organic Chemistry*, **59**, 2070-2074. **Citations: 41; IF: 4.564; SJR: 0.89; Q1.**  
<https://doi.org/10.1021/jo00087a022>
50. A.B. Lindner, **F. Grynszpan** and S.E. Biali. (1993). Transmission of internal rotations: correlated, uncorrelated and localized disrotatory rotation in propeller chains. *Journal of Organic Chemistry* **58**, 6662-6670 **Citations: 9; IF: 4.564; SJR: 0.89; Q1.**  
<https://doi.org/10.1021/jo00076a027>
51. O. Aleksyuk, **F. Grynszpan** and S. E. Biali. (1993). The spirodienone route for aminodehydroxylation: monoaminotrihydroxy-*p-tert*-butylcalix[4]arene. *Journal of Organic Chemistry* **58**, 1994-1996 **Citations: 38; IF: 4.564; SJR: 0.89; Q1.**  
<https://doi.org/10.1021/jo00060a005>
52. A.M. Litwak, **F. Grynszpan**, O. Aleksyuk, Sh. Cohen and S.E. Biali. (1993). Preparation, Stereochemistry and Reactions of the Bis(spirodienone) Derivatives of *p-tert*-Butylcalix[4]arene. *Journal of Organic Chemistry*, **58**, 393-402 **Citations: 54; IF: 4.564; SJR: 0.89; Q1.**  
<https://doi.org/10.1021/jo00054a023>
53. **F. Grynszpan**, O. Aleksyuk and S.E. Biali. (1993). Phosphorus polybridged calixarenes. *Journal of the Chemical Society, Chemical Communications* 13-16. **Citations: 32; IF: 6.378; SJR: 1.34; Q1.** <https://doi.org/10.1039/C39930000013>
54. O. Aleksyuk, **F. Grynszpan** and S.E. Biali. (1993) Proximal intraannular modifications of calix[4]arene via its spirodienone derivative. *Journal of the Chemical Society, Chemical Communications*, 11-13. **Citations: 30; IF: 6.378; SJR: 1.34; Q1.**  
<https://doi.org/10.1039/C39930000011>
55. **F. Grynszpan** and S.E. Biali. (1992). Source of the intraannular hydrogens in the dehydroxylation of calix [4] arene diethyl phosphate ester derivatives. *Journal of Physical Organic Chemistry*, **5**, 155-159 **Citations: 15; IF: 1.578; SJR: 0.32; Q3.**  
<https://doi.org/10.1002/poc.610050307>
56. **F. Grynszpan** and S.E. Biali. (1991) Solution conformation and inversion barrier in *p-tert*-butyl-25,27-dihydroxycalix[4]arene. *Tetrahedron Letters.*, **32**, 5155-5158. **Citations: 29; IF: 2.032; SJR: 0.39; Q3.** [https://doi.org/10.1016/S0040-4039\(00\)93454-3](https://doi.org/10.1016/S0040-4039(00)93454-3)
57. **F. Grynszpan**, N. Dinor and S.E. Biali. (1991). Reductive and oxidative reactions of calix[4]arene derivatives. *Tetrahedron Letters.*, **32**, 1909-1912. **Citations: 14; IF: 2.032; SJR: 0.39; Q3.** [https://doi.org/10.1016/S0040-4039\(00\)85995-X](https://doi.org/10.1016/S0040-4039(00)85995-X)
58. **F. Grynszpan**, Z. Goren and S. E. Biali. (1990) Partially OH-depleted calixarenes. *Journal of Organic Chemistry*, **56**, 532-536. **Citations: 72; IF: 4.564; SJR: 0.89; Q1.**  
<https://doi.org/10.1021/jo00002a010>

#### Unrefereed professional articles and publications

1. H. Katz, E. Ragozin, and **F. Grynszpan\***. The 7<sup>th</sup> National Graduate Student Symposium in Organic Chemistry. (2016). *Isr. Chem. Eng.* (**2**), 77-80. <http://ice.digitaler.co.il/ice2/>.
2. J. Thomas, M. E. Thomas, V. Patil, S. Thomas, A. Schechter and **F. Grynszpan\***. The role of 4,8,12-tris(4-bromophenyl)-4,8,12-triazatriangulenium tetrafluoroborate cation in the development of stable polymeric electrolytes for electrochemical applications. (ICSEST, 19-21 Sept, 2022). Springer Lecture notes series. Proceedings of the International Conference on Synergy in Engineering, Science and Technology Selangor, Malaysia.

#### Other Publications

---

The 2<sup>nd</sup> edition of the Organic Chemistry Lab – Book. Ariel University. B. Redko and **F. Grynszpan\***. 2017.

## Patents

---

1. Publication date: 2006-12-07. BENZOFURAN DERIVATIVES WITH THERAPEUTIC ACTIVITIES  
Inventors: YACOVAN, AVIHAI (IL); **GRYNSZPAN, FLAVIO** (IL); AIZIKOVICH, ALEXANDER (IL); BRODY, MARCUS STEPHEN (US); BAR-JOSEPH, AVI (IL); MEILIN, SIGAL (IL). Publication number: WO2006129318.
2. Publication date: 2007-02-22. TETRACYCLIC BENZOFURAN DERIVATIVES WITH THERAPEUTIC ACTIVITIES  
Inventors: YACOVAN, AVIHAI (IL); GARZON, AARON (IL); **GRYNSZPAN, FLAVIO** (IL); BAR-JOSEPH, AVI (IL); MEILIN, SIGAL (IL).  
Publication number: WO200702063
3. Publication date: 2007-07. BENZOXAZINE DERIVATIVES WITH THERAPEUTIC INDICATIONS  
Inventors: YACOVAN, AVIHAI (IL); GRYNSZPAN, FLAVIO (IL); BRODY, MARCUS, STEPHEN (US); BAR-JOSEPH, AVI (IL); MEILIN, SIGAL (IL).
4. Filing date: 2007-12-19. SULFONAMIDE DERIVATIVES WITH THERAPEUTIC INDICATIONS.  
Inventors: YACOVAN, AVIHAI (IL); ALROY, IRIS (IL); AIZIKOVICH, ALEXANDER (IL); MIRILASHVILI, SIMA (IL); **GRYNSZPAN, FLAVIO** (IL).  
International patent application WO/2008/075353.
5. Filing date: 2009-09-09. MOLECULARLY IMPRINTED SMART POLYMERS (MISPs).  
Inventors: **GRYNSZPAN, FLAVIO** (IL); PARTOUCHE, ERAN (IL); SHKOULEV, VLADIMIR (IL); NAKASH-OZERI, RACHEL (IL); ZIGELBOIM, ISAAC (IL), GAZAL, SHARON (IL) AND AIZIKOVICH, ALEXANDER (IL).  
US patent application No 61/136,487.

### Ariel University (2012-Present).

6. UK patent application GB 2018-8695, May 29, 2018. PREPARATION OF BIMANES AND CHLORINATION OF PYRAZOLINONES.  
Inventors: NEOGI, ISHITA (IN); DAS, PARTHA JYOTI (IN); **GRYNSZPAN, FLAVIO** (IL).  
UK patent GB2553527, January 22, 2020.

## Research Grants

---

2022-24 - Co-Recipient of a Research Grant to support a non-funded ISF proposal with excellent reviews from the Authority for Research & Development, Ariel U. in collaboration w/Prof. M. Levine. ILS 100,000.

2016- Present - Incumbent of the Pamela and Bard Cosman Endowment for Organic Chemistry Research. \$ 90,000.

2018 - Co-Recipient of an ISF Grant in collaboration w/Dr. M. Montag and Dr. A. Szpilman. Institutional Equipment: HR-MS. ILS 924,000.

2018-19 - Co-Recipient of a Research Grant from the Authority for Research & Development, Ariel U. in collaboration w/Dr. M. Montag. ILS 20,000.

2016-17 - Co-Recipient of a Research Grant from the Authority for Research & Development, Ariel U. in collaboration w/Dr. Michael Montag. ILS 20,000.

2016-2017 - Co-Recipient of the Riva Koschitzky Cancer Research Award (ACACR), in collaboration w/Dr. Oshrat Rokah and Dr. Ifat Abadi-Kurk. ILS 30,000.

2014-15; 2015-16 and 2016-17 - Maf'at's (Israel Min. of Def. and IDF) Research Grant in collaboration w/Prof. A. Schechter. ILS 200,000.

2015-2016 - Co-Recipient of the Riva Koschitzky Cancer Research Award (ACACR), in collaboration w/Dr. Galia Luboshits. ILS 20,000.

2010-2011 - Maximum support awarded for original R&D plan (III) from the OCS, Israel. ILS 1,000,000.

2008-2009 - Maximum support awarded for original R&D plan (II) from the OCS, Israel. The R&D plan received an extension until 2010. ILS 1,000,000.

2007-2008 - Maximum support awarded for original R&D plan (I) from the OCS, Israel. ILS 1,000,000.

2002-2003 - Co-Recipient of an IDEA award from the California Breast Cancer Research Program in collaboration w/Prof. Vito Quaranta. \$140,000.

## Lectures and Presentations at Meetings and Invited Seminars not Followed by Published Proceedings (last six years)

---

### Presentation of lectures and posters at conferences/meetings

43. A. Roy, P.J. Das, Y. Diskin-Posner, M. Firer, **F. Grynszpan**, M. Montag. February 13-14, 2018. *syn*-(Me,Me)Bimane: A Fluorescent ligand for Na<sup>+</sup>. The 83<sup>rd</sup> Annual Meeting of the Israel Chem. Soc. David InterContinental Hotel, Tel-Aviv, Israel. P-51.
44. P.J. Das, I. Neogi, M. Firer, **F. Grynszpan**. February 13-14, 2018. Cl<sub>2</sub> (g) Free Synthesis of *syn*-(Me,Me)Bimane. The 83<sup>rd</sup> Annual Meeting of the Israel Chem. Soc. David InterContinental Hotel, Tel-Aviv, Israel. P-101.
45. I. Neogi, P.J. Das, **F. Grynszpan**. February 13-14, 2018. Tröger's Base Decorated Arylketones for Application in PhOLEDs. The 83<sup>rd</sup> Annual Meeting of the Israel Chem. Soc. David InterContinental Hotel, Tel-Aviv, Israel. P-125.
46. A. Roy, P. J. Das, S. Amer, A. Nandi, J. Karmakar, T. Burg, Y. Diskin-Posner, S. Kozuch, M. Firer, **F. Grynszpan**, M. Montag. June 17<sup>th</sup>–22<sup>th</sup> 2018. *syn*-Bimanes as Ligands: A New Role for Old Fluorescent Dyes. Inorganic Chemistry, Gordon Research Conference. Biddeford, ME.
47. A. Roy, P.J. Das, Y. Diskin-Posner, M. Firer, **F. Grynszpan**, and M. Montag. June 16<sup>th</sup>-17<sup>th</sup> 2018. *syn*-(Me,Me)Bimane: A Fluorescent Ligand for Na<sup>+</sup>. Inorganic Chemistry, Gordon Research Conference. Biddeford, ME. Oral presentation by A.R.
48. P. J. Das, A. Roy, J. Karmakar, A. Nandi, S. Kozuch, Y. Diskin-Posner, M. Firer, M. Montag and **Flavio Grynszpan**. October 21<sup>st</sup>-25<sup>th</sup> 2018. Thioxobimanes: New Ligands for Coinage Metals Frontiers in Chemistry, Armenia (2<sup>nd</sup> Prize Poster award).
49. S. Amer, A. Roy, P. J. Das, J. Karmakar, Y. Diskin-Posner, **F. Grynszpan**, M. Montag. February 12<sup>th</sup>-13<sup>th</sup>, 2019. (Me,Me)Bimane as a metal-binding ligand: Complexation and photophysical effects. The 84<sup>th</sup> Annual Meeting of the Israel Chem. Soc. David InterContinental Hotel, Tel-Aviv, Israel. T-37.
50. A. Roy, T. Burg, P. J. Das, Y. Diskin-Posner, M. Firer, **F. Grynszpan**, M. Montag. February 12<sup>th</sup>-13<sup>th</sup>, 2019. Complexes of *syn*-(Me,Me)bimane with biorelevant metals: Crystal structures and metal-ion-induced fluorescence quenching. The 84<sup>th</sup> Annual Meeting of the Israel Chem. Soc. David InterContinental Hotel, Tel-Aviv, Israel. T-60.
51. P. J. Das, A. Roy, S. Amer, J. Karmakar, T. Burg, Y. Diskin-Posner, M. Firer, **F. Grynszpan**, and M. Montag. February 12<sup>th</sup>-13<sup>th</sup>, 2019. Bimanes reconsidered: From fluorescent dyes to ligands. The 84<sup>th</sup> Annual Meeting of the Israel Chem. Soc. David InterContinental Hotel, Tel-Aviv, Israel. Oral presentation by MM.
52. J. Karmakar, M. Montag and **F. Grynszpan**. June 19<sup>th</sup>, 2019. *syn*-[Tetrazole,Me][Me,Me] Bimane: A Potential pH-Sensitive Probe for Tumor Cell Imaging. The 16<sup>th</sup> Annual Meeting of the Medicinal Chemistry Section of the Israel Chemical Society. WIS, Rehovot, Israel. P#14.
53. J. Karmakar and **F. Grynszpan**. January 19<sup>th</sup>-23<sup>rd</sup>, 2020. Toward a Selective *syn*-Bimane Fluorescent Probe for Aldolase Class-1. 2<sup>nd</sup> Alpine Winter Conference on Medicinal and Synthetic Chemistry. St. Anton, Austria. P-008.
54. O. Szumski, J. Karmakar and **F. Grynszpan**. February 18<sup>th</sup>-19<sup>th</sup>, 2020. A practical approach towards  $\alpha$ -iodobimane reactive intermediates. The 85<sup>th</sup> Annual Meeting of the Israel Chem. Soc. Binyanei Hauma, Jerusalem, Israel. T-20.

55. J. Thomas, B. Francis, S. Thomas, A. Schechter and **F. Grynszpan**. February 18<sup>th</sup>-19<sup>th</sup>, 2020. Novel triazatriangulenium cationic membranes for fuel cell applications. The 85<sup>th</sup> Annual Meeting of the Israel Chem. Soc. Binyanei Hauma, Jerusalem, Israel. W-79.
56. J. Karmakar and **F. Grynszpan**. July 5-6, 2021. Turn-on fluorescent acidic pH probe with a bimane core. European Symposium on Organic Chemistry (virtual mini symposium) P-006.
57. A. Pramanik; S. Amer; J. Kamarkar; **F. Grynszpan**; and M. Levine. August 25, 2021. Cyclodextrin-bimane supramolecular complexes: New applications of old structures. ACS Natl. Meeting Fall 2021. Oral presentation by ML.
58. J. Karmakar and **F. Grynszpan**. January 19<sup>th</sup>-22<sup>nd</sup>, 2022. Hydrogen Peroxide and Water Sensing using a *syn*-Bimane Fluorescent Probe. EYChem 2022, University of Fribourg, Switzerland (Special Sponsor – Bio Inspired Materials – Award). Oral presentation by JK.
59. S. Amer, M. Firer and **F. Grynszpan**. Toward phage derived metallopeptides with phosphatase activity. September 12-13<sup>th</sup>, 2022. The 86<sup>th</sup> Annual Meeting of the Israel Chem. Soc. David Intercontinental Hotel, Tel-Aviv, Israel. P#35.
60. J. Karmakar, U. Miles and **F. Grynszpan**. September 12-13<sup>th</sup>, 2022. First *syn*-bimane pH-responsive molecular switch. The 86<sup>th</sup> Annual Meeting of the Israel Chem. Soc. David Intercontinental Hotel, Tel-Aviv, Israel. P#7.
61. B. Oded, H. Kornweitz, and **F. Grynszpan**. Investigation of an Alternative Mechanism in Bimane Cyclization. September 12-13<sup>th</sup>, 2022. The 86<sup>th</sup> Annual Meeting of the Israel Chem. Soc. David Intercontinental Hotel, Tel-Aviv, Israel. P#132.
62. **F. Grynszpan** and M. Levine. June 27<sup>th</sup>, 2022. Bimanes: Small Fluorophores with Expanding Sensing Applications. Israel-Italy Workshop on Advanced Materials. Bar-Ilan U. Oral presentation.
63. S. Amer, M. Firer and **F. Grynszpan**. July 31<sup>st</sup>, 2022. Theranostic Inhibition and Fluorescence Detection of Rabbit Muscle Aldolase Using a TURN-ON Coumarin Precursor. The 18<sup>th</sup> Annual Meeting of the Medicinal Chemistry Section of the Israel Chemical Society. WIS, Rehovot, Israel. P#11.
64. J. Thomas, M. E. Thomas, V. Patil, S. Thomas, A. Schechter and **F. Grynszpan**. September 19-21, 2022. The role of 4,8,12-tris(4-bromophenyl)-4,8,12-triazatriangulenium tetrafluoroborate cation in the development of stable polymeric electrolytes for electrochemical applications. International Conference on Synergy in Engineering, Science and Technology, Selangor, Malaysia. Oral presentation by JT.
65. S. Amer, M. Firer, and **F. Grynszpan**. Toward phage derived metallopeptides with phosphatase activity. Feb. 14<sup>th</sup>, 2023. The IUPAC Global Women's Breakfast (#GWB2023). Ben Gurion University. Oral presentation by SA.
66. V. Joseph, N. C. Roy, J. John, **F. Grynszpan**, and M. Levine. July 16-23, 2023. Colorimetric differentiation of solid-state supramolecular complexes of coumarin and bimane fluorophores. The Joint Conference on Calixarenes and Cucurbiturils. Tel Aviv, Israel. Oral presentation by ML.
67. J. Karmakar, N.C. Roy, and **F. Grynszpan**. August 12-17, 2023. Bright and Bold: Exploring the Photophysical Properties of Push-Pull Bimanes. ACS Fall Meeting. Heterocycles & Aromatics: 3904922. Oral presentation
68. M. Levine; **F. Grynszpan**; S. Amer; and V. Joseph. March 17-21<sup>st</sup>, 2024. Supramolecular complexes with organic fluorophores: Using complexation as a tool to manipulate photophysical properties. ACS Spring Meeting. Organic Chemistry. 3995586. Oral presentation.
69. N.C. Roy, J. Karmakar and **F. Grynszpan**. Push-Pull Bimanes: Bright Opportunities for Fluorescent Sensors. April 3<sup>rd</sup>, 2024. The 87<sup>th</sup> Annual Meeting of the Israel Chem. Soc. Smolarz Auditorium, TAU, Tel-Aviv, Israel. P\_OOC\_21.
70. J.J. Peter, V. Joseph, T. Bachu, **F. Grynszpan**, and M. Levine. A highly practical, metal-free colorimetric fluoride sensor. April 3<sup>rd</sup>, 2024. The 87<sup>th</sup> Annual Meeting of the Israel Chem. Soc. Smolarz Auditorium, TAU, Tel-Aviv, Israel. P\_IAC\_03.
71. V. Joseph, S. Amer, B. Oded, V. Marks, **F. Grynszpan**, and Mindy Levine. Shining light on fluoride detection: a comprehensive study exploring the potential of coumarin precursors as

- selective turn-on fluorescent chemosensors. April 3<sup>rd</sup>, 2024. The 87th Annual Meeting of the Israel Chem. Soc. Smolarz Auditorium, TAU, Tel-Aviv, Israel. P\_IAC\_04.
72. M. Levine, V. Joseph, J.J. Peter, Sh.M. Karyadath, J. Liu, and **F. Grynszpan**. Solid-State Smart Supramolecular Sensing. October 28<sup>th</sup>, 2024. IVS-IPSTA-2024-4<sup>th</sup>-Annual Meeting. TAU, Israel. Oral Presentation by ML.
  73. Sh.M. Karyadath, N.Ch. Roy, **F. Grynszpan** and M. Levine. A Rationally Designed Fluorescent Probe for Selective Detection and Quantification of Hydrazine. October 28<sup>th</sup>, 2024. IVS-IPSTA-2024-4<sup>th</sup>-Annual Meeting. TAU, Israel. P30.
  74. J. Liu, N. C. Roy, **F. Grynszpan** and Mindy Levine. Development of a Novel Water-Soluble Bimane-Based Sensor for the Detection of In<sup>3+</sup> Ions. October 28<sup>th</sup>, 2024. IVS-IPSTA-2024-4<sup>th</sup>-Annual Meeting. TAU, Israel. P0.
  75. **F. Grynszpan**, N.Ch. Roy, V. Joseph, J. Liu, J.J. Peter, J. Karmakar, and M. Levine. Bimanes as emerging tools for chemical sensing and molecular detection. February 18-19<sup>th</sup>, 2025. The 88<sup>th</sup> Annual Meeting of the Israel Chem. Soc. Bynianei HaUma, Jerusalem, Israel. O:A-3.
  76. M. Levine, **F. Grynszpan**, V. Joseph, J.J. Peter, J. Liu, Sh.M. Karyadath. Supramolecular Paper-Based Sensors: From Fundamental Chemistry to Solving Real-World Challenges. February 18-19<sup>th</sup>, 2025. The 88<sup>th</sup> Annual Meeting of the Israel Chem. Soc. Bynianei HaUma, Jerusalem, Israel. O:F-10.
  77. Sh. Levy-Glasberg, R. Hagbi, U. Miles, V. Joseph, M. Levine, and **F. Grynszpan**. Disrupting tryptophan quenched bimane fluorescence: new tactic for developing molecular sensors. February 18-19<sup>th</sup>, 2025. The 88<sup>th</sup> Annual Meeting of the Israel Chem. Soc. Bynianei HaUma, Jerusalem, Israel. P:A-45.
  78. A.M. Baby, U. Miles, and **F. Grynszpan**. Synthesis and characterization of *syn*-ethenyl bimanenes. February 18-19<sup>th</sup>, 2025. The 88<sup>th</sup> Annual Meeting of the Israel Chem. Soc. Bynianei HaUma, Jerusalem, Israel. P:A-46.
  79. M. Levine, **F. Grynszpan**, V. Joseph, J.J. Peter, J. Liu, Sh.M. Karyadath. Supramolecular Paper-Based Sensors: From Fundamental Chemistry to Solving Real-World Challenges. February 18-19<sup>th</sup>, 2025. The 88<sup>th</sup> Annual Meeting of the Israel Chem. Soc. Bynianei HaUma, Jerusalem, Israel. P:B-5.
  80. N.Ch. Roy, Sh.M. Karyadath, M. Levine, and **F. Grynszpan**. Development of a push-pull bimane-based fluorescent probe for selective cyanide detection. February 18-19<sup>th</sup>, 2025. The 88<sup>th</sup> Annual Meeting of the Israel Chem. Soc. Bynianei HaUma, Jerusalem, Israel. P:B-46.
  81. J.J. Peter, N.Ch. Roy, **F. Grynszpan**, and M. Levine. A highly sensitive and portable hydrogen peroxide sensor for real-world applications. February 18-19<sup>th</sup>, 2025. The 88<sup>th</sup> Annual Meeting of the Israel Chem. Soc. Bynianei HaUma, Jerusalem, Israel. P:B-48.
  82. J. Liu, N.Ch. Roy, **F. Grynszpan**, and M. Levine. Development of a Novel Water-Soluble Bimane-Based Sensor for the Detection of In<sup>3+</sup> Ions. February 18-19<sup>th</sup>, 2025. The 88<sup>th</sup> Annual Meeting of the Israel Chem. Soc. Bynianei HaUma, Jerusalem, Israel. P:B-51.
  83. Sh.M. Karyadath, N.Ch. Roy, M. Levine, and **F. Grynszpan**. A Novel Fluorescent Probe for Selective Detection and Quantification of Hydrazine. February 18-19<sup>th</sup>, 2025. The 88<sup>th</sup> Annual Meeting of the Israel Chem. Soc. Bynianei HaUma, Jerusalem, Israel. P:B-57.
  84. N.Ch. Roy, Sh.M. Karyadath, J. Karmakar, M. Levine, and **F. Grynszpan**. Bright and Selective: Development of Bimane Based Sensors for Hydrazine and Cyanide at the ppb Level. June 29 - July 3, 2025. 23<sup>rd</sup> European Symposium on Organic Chemistry. Copenhagen, Denmark. PO-02-061.

## Summary of oral presentations:

**Over 45** Lectures and posters presented in meetings and symposia since I joined Ariel U. (2012-Present). **18** Oral presentations given either by me or by another member of the group (items: 27, 28, 36, 38, 42, 47, 51, 57, 58, 61, 64, 65, 66, 67, 68, 72, 75 and 76). **6** Invited lectures (items: 27, 38, 42, 57, 65, 72 and 75). During the last three years I have declined over ten personal invitations to deliver talks in different international conferences, unfortunately, my active in-person participation in international meetings during these last four years has naturally decreased due to the COVID-19 pandemic and due to the “Swords of Iron” war.

## Synopsis of research,

---

I pursued my PhD studies at the Hebrew University of Jerusalem under the supervision of Prof. Silvio E. Biali. In 1995, my PhD thesis entitled: “Chemical Modifications of Calix[n]arenes” was awarded Summa Cum Laude. For that thesis I was honored with the Prof. Aharon Katzir Prize (granted annually to one single outstanding thesis in all fields of the experimental sciences). I received the Lady Davis Fellowship in 1995 which allowed me to re-focus my research as a postdoctoral fellow on several key aspects of bioorganic chemistry and catalytic antibodies under the supervision of Prof. E. Keinan in Prof. R.A. Lerner’s group at The Scripps Research Institute (TSRI), La Jolla, CA. In March 1997 I was promoted to Senior Research Associate at TSRI which enabled me to conduct independent research. Later in 1997, I received the Michael Landau Prize for young promising scientists holding an outstanding PhD thesis. In March 1998 I was appointed Assistant Prof. (tenure track) in the Dept. of Molecular Biology at TSRI. My group at TSRI counted three postdoctoral fellows. For our work at TSRI, I received the prestigious J.S. Guggenheim Memorial Foundation Fellowship (1999-2000). At the beginning of the year 2000 I started a very fruitful collaboration with Prof. K. Barry Sharpless (2001 and 2022 Nobel Prize awardee) which resulted in the development of “*In-Situ Click Chemistry*”. In 2002 my collaboration project with Prof. V. Quaranta received an IDEA award from the California Breast Cancer Research Program. Before leaving TSRI I received grants from Novartis and NIH on behalf of my TSRI scientific collaborators. I returned to Israel with my family in Dec. 2002 to become Head of Innovative Med. Chem. at Compugen. In 2004, I joined the Chemistry team at Pharmos Ltd. As Associate Director, and later, in 2007, I assumed the direction of all scientific responsibilities at Salio Nanotech. My inventions and developments at Salio in the field of molecularly imprinted smart materials toward diagnostic applications received full support from the Office of the Israeli Chief Scientist (OCS) for three consecutive years. In March 2012 I joined the Dept. of Chemical Sciences at Ariel U. (then, Dept. of Biological Chemistry at Ariel U. Center) as Senior Lecturer. Three MSc and five PhDs students already graduated under my supervision (including a visiting student). Currently, I supervise three PhD students and two MSc students. One of these PhD students works in collaboration with Dr. Rinat Sela from the Dept. of Physics. Of note, the visiting PhD student worked in collaboration with Prof. A. Schechter on “Advanced Anion-Conducting Membranes for Electrochemical Cells”, this last project received three consecutive grants from the Office of Defense. Although my Lab. was inaugurated only in Sept. 2013, we have already successfully published over 25 ISI peer-reviewed papers from Ariel U. To date, I have authored 58 scientific peer reviewed papers (ISI), presented over 70 papers in International Meetings and Symposia and I am an inventor in 6 international patents, the last patent application is from Ariel U. In 2018, I was Co-Recipient of an ISF Grant (Institutional Equipment: HR-MS) prepared in collaboration with Dr. M. Montag and Prof. A. Szpilman. For the seventh consecutive year, I have received a generous research endowment from the Cosman Family.

## ❖ Research Focus:

The projects in my Lab at Ariel U. are multidisciplinary in nature encompassing the areas of Organic Chemistry, Application of Computational Chemistry tools, and Bioorganic/Medicinal Chemistry.

### **In the past my research focused on the following areas:**

- a) As an undergraduate I participated in the SPSS of Substance-P analogs including the synthesis of non-natural amino acids. Later I synthesized OH-depleted calix[4]arenes and analyzed their stereochemistry and complexation properties as part of my MSc project.
- b) During my PhD studies I further investigated chemical modifications and the stereochemistry of novel calix[n]arenes. I also investigated their host-guest interaction with small molecules.
- c) At TSRI, as a postdoctoral fellow, I was part of the group that first applied antibodies to perturb the coordination sphere of a transition metal complex. Our results were published in the journal NATURE. Then, we designed an efficient sol-gel reactor loaded with entrapped catalytic antibodies and later I performed the total synthesis of retinoic acid analogs and haptens for catalytic antibodies and I described the aldolase antibody-Rhodopsin analogy through molecular modeling and experimental characterization. In addition, I developed hydrolytic catalytic antibodies elicited by a novel cyclopropanone transition state analog which underlined the importance of electrostatic interactions in the mechanism of that catalytic event.
- d) As an independent young faculty member at TSRI, I continued my work with catalytic antibodies developing a multiple reactive immunization technique aimed at eliciting catalytic antibodies for the neutralization of organo-phosphorous nerve gases.
- e) In collaboration with Prof. P.E. Dawson and Prof. E. Keinan I generated an original approach to design and prepare artificial enzymes through native chemical ligation.
- f) In my Lab at TSRI we computationally studied the integrin  $\alpha$ L I-domain / ICAM-1 D1-domain complex.
- g) We participated in the development of a new concept in drug design: *in situ* enzymatic assembly of inhibitors from fragment libraries via “click chemistry”, in collaboration with Prof. K.B. Sharpless (Nobel Prize Awardee 2001 and 2022). This work, among other early reports, provided the basis for the wide expansion of “click chemistry” which eventually led to the 2022 Nobel Prize in Chemistry.
- h) At Pharmos Ltd. I was involved in the rational design and total synthesis of cannabinoid modulators for drug development which resulted in several candidates for clinical trials.
- i) At Salio Nanotechnologies I concentrated on molecularly imprinted polymers (MIPs) for biomedical applications, sensors and diagnostics. This project attracted the attention of two large international corporations: ThermoFisher and Life Technologies with whom we started the implementation of our materials towards practical applications.

### **Present Academic Activities**

In collaboration with the Schechter Lab, I have been involved in the development of innovative monomer cations for membranes to become the heart of anionic fuel cells.

In collaboration with Prof. M. Firer, we continue developing a phage display approach towards neutralization of organophosphate toxicants.

Another aspect of our work centered on coumarin precursors as fluorescent chemosensors. Jointly with Prof. M. Levine, our team developed and investigated the selective turn-on fluorescence response of coumarin precursors to fluoride ions, which are crucial for environmental and health-related applications. Later, we used a different turn-on coumarin precursor for hydrazine sensing and also applied it in the covalent inhibition and fluorescence detection of rabbit muscle aldolase, an enzyme that is overexpressed in cancer cells.

Our lab primarily focuses on advancing the chemistry of novel bimeane fluorophores. We synthesize, analyze, and characterize their physicochemical properties. Additionally, we explore their applications as sensors and investigate their inclusion complexes with calix[n]arenes and cyclodextrins, in collaboration with Prof. Mindy Levine. This research focuses on the development and application of novel fluorescent sensors for detecting various analytes, with significant contributions to the fields of chemical sensing and detection. As part of our research,

we optimized a method for the facile and safe preparation of *syn*-bimane without the use of hazardous chlorine gas. This environmentally friendly approach simplifies the synthesis process and makes it available for all to use. In addition to experimental studies, the research included theoretical investigations in collaboration with Prof. Haya Kornweitz, using density functional theory (DFT) calculations to elucidate key intermediates, omitted mechanisms, and the formation of unsymmetrical bimane products. The synthesis and characterization of thioxobimanes are another aspect of our research. We reported the synthesis of thioxobimanes, and their metal complexes. In our investigations we explored the use of oxobimanes as ligands for Palladium, Sodium and Lithium and we extended this binding concept to the detection of other analytes, such as iodine, using fluorescence quenching of  $\beta$ -cyclodextrin:bimane-ditriazole inclusion complexes and cobalt through fluorescence changes in  $\beta$ -cyclodextrin-bimane complexes. These studies demonstrate the versatility of bimane-based host-guest sensors in detecting different analytes with high sensitivity.

Water sensing is another interesting area addressed in this research, as highlighted by the development of a dipodal bimane-diTriazole-diCu(II) complex as an ultrasensitive water sensor. This sensor exhibits high sensitivity and selectivity, making it suitable for detecting trace amounts of water in various environments.

We have also used bimanes in the development of an ultrasensitive hydrogen peroxide sensor based on fluorescence quenching. This sensor exhibits high sensitivity and selectivity, making it a valuable tool for analytical applications in environmental and biological contexts.

Our progress during recent years has positioned us at the forefront of the development and applications of bimane chemistry.

We also collaborate with Dr. Tamar Yulzari, Dept. of Molecular Biology, Ariel U. and with Dr. Rinat Sela, Dept. of Physics, Ariel U., and we have scientific ties with Prof. A. Lippert, Southern Methodist U. TX, USA and Prof. G. Morris, U. of Oxford, UK.

#### Articles to be published, in preparation, submitted for publication.

1. J. Liu, N.C. Roy, **F. Grynszpan** and Mindy Levine. Development of a novel water-soluble bimane-based sensor for the detection of  $\text{In}^{3+}$  ions. In preparation.
2. N.C. Roy, Sh.M. Karyadath, O. Shumski, J. Karmakar, M. Levine and **F. Grynszpan**. From bimanes with expanded  $\pi$  systems to highly sensitive hydrazine and cyanide sensors. In preparation.