

GALIA MAAYAN

Assistant Professor, Schulich Faculty of Chemistry
Technion - Israel Institute of Technology
Technion City, Haifa 32000, Israel
gm92@tx.technion.ac.il 972-4-8293947

Academic Appointments

Jan 2012-current Assistant Professor, Schulich Faculty of Chemistry, Technion, Israel

Postdoctoral Employment

Aug 2009-Jul 2011 Research with Prof. George Christou, Department of Chemistry,
University of Florida, Gainesville, FL.

Jan 2007-Jul 2009 Research in collaboration with Prof. Michael D. Ward and Prof. Kent
Kirshenbaum, Molecular Design Institute, Department of Chemistry,
New York University, New York, NY.

Education

2001-2006 Ph.D. studies in the group of Prof. Ronny Neumann, Department of
Organic Chemistry, Weizmann Institute of Science, Rehovot, Israel.
Topic of research: "New Systems for Oxidation Reactions Catalyzed by
Polyoxometalates".

1998-2000 M.Sc. in the group of Prof. Abraham Shanzer, Department of Organic
Chemistry, Weizmann Institute of Science, Rehovot, Israel.
Topic of research: "Synthesis, Characterization and Utilization of a
New Ligand for the Preparation of Heteronuclear Complexes"

1995-1998 B.Sc. in Chemistry. Tel-Aviv University, Israel (MAGNA CUM
LAUDE)

Awards

2011 National Science Foundation (NSF) scholar in Green Chemistry.
2010 Joseph Breen Memorial Fellowship in Green Chemistry (ACS award).
2009 The Stereochemical Society of Greater New York travel award.
2003 First-place poster award, The VI Summer School on Green Chemistry, Italy.

Publications

At the Technion

Research articles

1. Maria Baskin, Larisa Panz and Galia Maayan “Versatile Ruthenium Complexes Based on 2,2’-Bipyridine Modified Peptoids”, *Chem. Commun.*, **2016**, 52, 10350-10353.
2. Maria Baskin and Galia Maayan “A rationally designed metal-binding helical peptoid for selective recognition processes”, *Chem. Sci.*, **2016**, 7, 2809-2820.
3. Maria Baskin and Galia Maayan “Water Soluble Chiral Metallopeptoids”, *Biopolymers Pept. Sci.* **2015**, 104, 577-584.
4. Prathap Jeya Kaniraj and Galia Maayan “Metallopeptoids as Efficient Biomimetic Catalysts”, *Chem. Commun.* **2015**, 51, 11096-11099.
5. Prathap Jeya Kaniraj and Galia Maayan “A facile strategy for the construction of cyclic peptoids under MW irradiation through a simple substitution reaction”, *Org. Lett.* **2015**, 17, 2110-2113.
6. Tamara Zabrodski, Maria Baskin, Parthap Jeya Kaniraj, Galia Maayan* “Click To Bind: Microwave Assisted Solid-Phase Synthesis of Peptoids Incorporating Pyridine-Triazole Ligands and their Copper(II) Complexes”, *Synlett* **2015**, A1-A17.
7. Galia Maayan*, Yohai Dayagi, Rina Arad-Yellin, Linda JW Shimon and Abraham Shanzer “Stabilization of Unique Valencies of Cobalt, Nickel and Copper by Complexation with the Tridentate Ligand 2-(2’-Pyridyl)-8-Hydroxyquinoline”, *Polyhedron*, **2013**, 64, 365-370.

Book chapters and invited reviews

1. Hagar Tigger-Zaborov and Galia Maayan “Aggregation of inorganic nanoparticles mediated by biomimetic oligomers”, *Org. Biomol. Chem.*, **2015**, 13, 8978-8992.

Prior to the Technion

Research articles

1. **Galia Maayan*** and George Christou, “ ‘Old’ Clusters with New Function: Oxidation Catalysis by High Oxidation State Manganese and Manganese-Cerium Clusters ”, *Inorganic Chemistry*, **2011**, 50 (15), 7015–7021.
2. **Galia Maayan*** and Li-Kai Liu, “Silver Nanoparticles Assemblies Mediated by Functionalized Biomimetic Oligomers”, *Pept. Sci.*, **2011**, 96 (5), 679-687.
3. **Galia Maayan**, Michael D. Ward and Kent Kirshenbaum, “Folded Biomimetic Oligomers for Enantioselective Catalysis”, *Proceedings of the National Academy of Science USA*, **2009**, 106 (33), 13679-13684.
4. **Galia Maayan**, Kent Kirshenbaum and Michael D. Ward, “Metallopeptoids.” *Chemical Communications*, **2009**, 56-58.

5. **Galia Maayan*** and Ronny Neumann, "Direct Aerobic Oxidation of Secondary Alcohols Catalyzed by Pt(0) Nanoparticles Stabilized by $PV_2Mo_{10}O_{40}^{5-}$ Polyoxometalate." *Catalysis Letters*, **2008**, 123 (1-2), 41-45.
6. **Galia Maayan**, Barney Yoo and Kent Kirshenbaum, "Heterocyclic Amines for the Construction of Peptoid Oligomers Bearing Multi-Dentate Ligands." *Tetrahedron Letters*, **2008**, 49 (2), 335-338.
7. Maxym V. Vasylyev, **Galia Maayan**, Yonathan Hovav, Adina Haimov and Ronny Neumann, "Palladium Nanoparticles Stabilized by Alkylated Polyethyleneimine as Aqueous Biphasic Catalysts for the Chemoselective Stereocontrolled Hydrogenation of Alkenes." *Organic Letters*, **2006**, 8(24), 5445-5448.
8. **Galia Maayan**, Benjamin Ganchegui, Walter Leitner and Ronny Neumann, "Selective Aerobic Oxidation in Super Critical CO_2 Catalyzed by $H_5PV_2Mo_{10}O_{40}$." *Chemical Communications*, **2006**, 2230-2232.
9. **Galia Maayan**, Ronit Popovitz-Biro and Ronny Neumann, "Polyoxometalate Nanoparticles and Their Improved Catalytic Activity for the Aerobic Oxidation of Sulfides", *Journal of the American Chemical Society*, **2006**, 128, 4968-4969.
10. Maxym V. Vasylyev, Dorit Sloboda-Rozner, Adina Haimov, **Galia Maayan** and Ronny Neumann, "Strategies for Oxidation Catalyzed by Polyoxometalates at the Interface of Homogeneous and Heterogeneous Catalysis. *Topics in Catalysis* **2005**, 34, 93-99.
11. **Galia Maayan** and Ronny Neumann, "Direct Aerobic Epoxidation of Alkenes Catalyzed by Metal Nanoparticles Stabilized by the $H_5PV_2Mo_{10}O_{40}$ Polyoxometalate." *Chemical Communications*, **2005**, 4595-4597. **Highlighted in Green Chemistry**, **2005**, 7, 763-764.
12. **Galia Maayan**, Richard H. Fish and Ronny Neumann, "Perfluorinated Quaternary Ammonium Salts of Polyoxometalate Anions: Fluorous Biphasic Oxidation Catalysis with and without Fluorous Solvents." *Organic Letters* **2003**, 5, 3547-3550.

Book chapters and invited reviews

1. **Galia Maayan**, "Interaction of Biomimetic Oligomers with Metal Ions", book chapter in "Metallofoldamers: Supramolecular Architectures from Helicates to Biomimetics", **Galia Maayan** and Markus Albrecht, Eds. *John Wiley & Sons, Ltd*, **2013**.
2. **Galia Maayan**, "Conformational Control in Metallofoldamers: Design, synthesis and structural properties" *invited microreview*, *European Journal of Organic Chemistry*, **2009**, 5699-5710.

Patents

1. George Christou, **Galia Maayan**, "Polynuclear Metal Clusters, Methods of Making and Methods of Use Thereof." PCT Int. Appl. No. PCT/US2012/035808, **2012**, 30pp.
2. Kent Kirshenbaum, **Galia Maayan**, Michael Ward, "Preparation of Peptoids for Substrate-Selective Catalysis including Asymmetric Catalysis." PCT Int. Appl. U.S. Serial No. 61/053,958, **2009**, 80pp.

Grant Support

1. PI, Israel Science Foundation (#395/16) “Rationally Designed Metal-Binding Foldamers for Selective Recognition Processes”; \$310,000; 2016-2020.
2. Co-Investigator, Umbrella Cooperation Technion Aachen (# 2022186), “Selective Biomimetic Chelators for Metal ions”, \$15,000; 2015-2017.
3. Co-Investigator, Binational Science Foundation Startup Grant (#2012371) “Tailoring Zeolite Crystallization using De Novo Peptoid Growth Modifiers”; \$150,000; 2013-2015.
4. PI, The Solar Fuels I-CORE (Israeli Center of Research Excellence) New Faculty Grant, “A biomimetic approach for the synthesis of molecular catalysts for electrochemical and photochemical water splitting”; 1,755,000 NIS, 2013-2018.
5. PI, The Solar Fuels I-CORE (Israeli Center of Research Excellence) New Faculty Grant, “A biomimetic approach for the synthesis of molecular catalysts for electrochemical and photochemical water splitting”; 410,300 NIS (equipment).
6. PI, Marie Curie Career Integration Grants (#333034) “Conformational Control in Designed Biomimetic Metallofoldamers: Towards Functional Materials”; 100,000 Euro; 2013-2017
7. PI, Irwin Tauben for Alzheimer & Crohn`s Research “Synthesis and Characterization of Metallopeptoids as Potential Therapeutics for Alzheimer Disease; \$5000; 2012-2013.

Invited Lectures

1. “Biomimetic Utilization of Metal-Binding peptoids for Folding, Recognition and Cooperative Catalysis”, *University of Connecticut, Connecticut, US, Aug 13, 2015.*
2. “Biomimetic Utilization of Metal-Binding peptoids for Cooperative Catalysis, Folding and Recognition”, *ICIQ, Tarragona, Spain, Feb 24-25, 2015.*
3. “Biomimetic Utilization of Metal-Binding peptoids for Cooperative Catalysis, and Recognition”, *80st Annual Meeting of the Israel Chemical Society, Tel Aviv, Isreal, February 9-10, 2015*
4. “Inorganic-Inorganic and Organic-Inorganic Nanomaterials for Catalytic Applications”, *RBNI fall symposium, Zichron Yaakov, Israel, November 26, 2014.*
5. “Biomimetic Utilization of Metal-Binding peptoids for Cooperative Catalysis, Folding and Recognition”, *Peptides & Proteins Molecules of Life, Gennevilliers (Paris), France, October 5-8, 2014.*
6. “Organic Transformations on Peptoid Oligomers in the Solid Phase”, *6th EuCheMs Organic Division Young Investigator Workshop, Larnaka, Cyprus, Aug 28-30, 2014.*
7. “Biomimetic Utilization of Metal-Binding peptoids for Cooperative Catalysis, Folding and Recognition”, *Functional Peptide and Protein Nanostructures, Tzuba, Israel, May 25-28 2014.*
8. “Folded Biomimetic Oligomers: From Structure to Function”, *Autonomous University de Barcelona, Spain, September 25, 2012.*
9. “Inorganic-Inorganic and Organic-Inorganic Nanomaterials for Catalytic Applications”, *ICMAB, Barcelona, Spain, September 26, 2012.*

Oral contributions

1. "Metal binding as a new approach for peptoids folding", *Bordeaux foldamers 2016 symposium, IECB, Bordeaux-Pessac, France, Sept 26-28, 2016.*
2. "A biomimetic approach for the design of water oxidation electrocatalysts", *3rd Solar Fuels I-CORE Workshop, Nahsholim, Israel, Sept 12 -15, 2016.*
3. "Metallopeptoids as Efficient Cooperative Catalysts", *9th Peptoid Summit, Berkeley, California, US, Aug 6-7, 2015.*
4. "A Peptidomimetic Oligomer as a Highly Selective Chelator for Metal Ions", *17th International Conference on Biological Inorganic Chemistry, Beijing, China, July 20-24, 2015.*
5. "Metallopeptoids as Highly Efficient Biomimetic Catalysts", *17th International Symposium on Relations between Homogeneous and Heterogeneous Catalysis, Utrecht, The Netherlands, July 12-15, 2015.*
6. "Biomimetic Utilization of Metal-Binding peptoids for Cooperative Catalysis, and Recognition", *Bordeaux foldamers 2016 symposium, IECB, Bordeaux-Pessac, France, Jan 26-28, 2015.*

Journal Referee Activity

Chemical Science, Chemical Communications, Organic Letters, Inorganic Chemistry, Organic and Biomolecular Chemistry, Polyhedron, Journal of Colloids and Interface Science, Peptide Science.

Courses

1. Organic Chemistry (RBM) 125802
2. Selected Topics In Biomimetic Chemistry 127739
3. Organic Chemistry Lab1 1249111
4. Organic Chemistry (for engineers) 125801
5. General Chemistry Laboratory 125013

Research Supervision

10/2016-current Jana Tatus Portnoy, MSc candidate, Chemistry
10/2016-current Lee Engelberg, MSc candidate, Energy Program
08/2016-current Amit Sol, Undergraduate student, Chemical Engineering.
07/2016-current Katya Stematina, Undergraduate student, Materials Engineering.
07/2016-current Itay Shtainberg, Undergraduate student, Chemical Engineering.
4/2016-9/2016 Louise Plais, Exchange M.Sc. candidate, the University of Montpellier
02/2016-current Chandramohan Drapaneni, Postdoctoral Fellow
2015-current Totan Ghosh, Postdoctoral Fellow
2015 Liav Eliyahu, Undergraduate student, Materials Engineering.
2014-2015 Tamara Yankilevitch, PhD candidate, Chemistry
2014 Achia Livne, Undergraduate student, Materials Engineering.
2014-current Naama Yamin-Gluz, MSc candidate, Chemistry
2014-2015 Marie Correia, Postdoctoral Fellow.

2013-2016	Prathap K Jaya, Postdoctorate Fellow.
2013-2014	Tamara Zabrovski, PhD candidate, Chemistry.
2013-current	Hagar Tigger, PhD candidate, Chemistry.
2012-current	Maria Baskin, PhD student, Chemistry.
2012-current	Alisa Smolyakova, MSc student (started as an undergraduate student), Chemistry.
2012-2013	Vera Kravinkiy, Undergraduate student, Chemistry.
2008-2009	Li-Kai Liu, M.Sc. student, Biology, New York University, USA. Li-Kai is currently a PhD student at the Pharmacy School, University of Minnesota, USA.
2004	Adi Radian, undergraduate student, industrial chemistry program, Faculty of Engineering, Shenkar, Israel. Adi is currently a PhD student at the Faculty of Agriculture, Food and Environment, The Hebrew University, Israel.

Press Reports

Related to: G. Maayan and R. Neumann, "Direct Aerobic Epoxidation of Alkenes Catalyzed by Metal Nanoparticles Stabilized by the $H_5PV_2Mo_{10}O_{40}$ Polyoxometalate." *Chem. Commun.* **2005**, 4595.

- Highlighted in *Green Chemistry*, 2005, 7, 763-764.

Related to: G. Maayan, M. D. Ward and K. Kirshenbaum, "Folded Biomimetic Oligomers for Enantioselective Catalysis", *PNAS USA*, **2009**, 106 (33), 13679.

- Kevin Fallon, "Molecules With A Twist", *NYU Alumni Magazine*, Issue # 14, Spring 2010.
http://www.nyu.edu/alumni.magazine/issue14/14_square_cuttingedge.html
- *Chemical Processing*, "Catalysts Get A New Twist", Sep 17, 2009.
<http://www.chemicalprocessing.com/articles/2009/195/>
- Jenny Leonard, "To Get A Reaction Molecules Do The Twist", *Futurity*, Aug 18, 2009. <http://www.futurity.org/science-technology/to-get-a-reaction-molecules-do-the-twist/>