

Brief Curriculum Vitae

Giora Rytwo- August 2025

Date of birth: July, 14th 1958

Country of birth: Argentina

Nationality: Israeli, Argentina

Family status: Married+2

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Academic Education and Appointments

- 1985 B.Sc.Agr. Cum Laude, HUJI, Dept. of Soil and Water Sciences.
 1989 M.Sc.Agr. Cum Laude, HUJI, Dept. of Soil and Water Sciences
 1994 Ph.D. HUJI (Instructors: Prof. Shlomo Nir and Prof. Leon Margulies).
 1995 – present Lecturer (till 2001), Senior Lecturer (till 2005), Associate Professor (till 2012) and Full Professor, Faculty of Sciences and Technology, Tel Hai College, Israel.
 1996 Post-doctoral fellowship at ASWCRL –USDA, Beckley, WV (4 months)
 1997/8 Post-doctoral fellowship CRMD- CNRS Orléans, France (4 months during two years).
 2000-2005 Secretary of the Israeli Clay Society.
 2001-2025 MIGAL Head of Laboratory in Environmental Physical Chemistry (retired in 2025)
 2001-2005 Senior Lecturer, Tel Hai Academic College.
 2003-2006 Dean, Faculty of Sciences and Technology, Tel Hai College
 2006-2009 Head, Environmental Sciences Department, Tel Hai College.
 2007-2009 Inventor, Co-Founder and R&D manager of "ToxSorb", an industrial enterprise aiming at water treatment and purification <http://www.toxsorb.net>
 2009-2013 Chair, Teaching Clay Minerals Committee, International Association for the Study of Clays
 2012-2016 Member, Environmental Sciences Committee at the Israeli Council for Higher Education.
 2012- Co-founder, advisor, and lecturer in "Town Square Academia" in Kiryat Shemona.
 2013-2016 Active participation in HINT- COST European Action
 2016-2020 Head, Environmental Sciences Department, Tel Hai College
 2016-2019 Head, Israel Society for Clay Research
 2017-2019 Member of the Water Standardization Committee at The Standards Institution of Israel.
 2019-2021 Head, Research Authority, Tel Hai College
 2023 Serving as Acting Head, Environmental Sciences Department, Tel Hai College.
 2022-2025 Participation in "PRIORITY" COST Action (Plastics monitoRIng detectiOn RemediaTion recovery)

Invited presentations at conferences and advanced schools;

Since 2006 delivered more than 60 presentations in conferences. About 50 of them in International Conferences held outside my country, in six cases as "Invited" or "Keynote" lecturer (2008, 2010, 2013, 2014 two occasions during 2015, 2017 twice during 2018, twice in 2021). Some of those meetings are among the most important conferences in my field of research (2010-Trilateral USA-Japan-Spain Meeting on Clays, 2014 & 2021 Clay Mineral Society Workshop, 2015 EUROCLAY15, European Conference in Clay Sciences; 2017 and 2018 Clay Mineral Society Annual Meeting). I was also invited to deliver an M.Sc. Course in Environmental Remediation at the International Master in Clay Sciences Program (IMACS), supported by the International Association of Clay Minerals Research (AIPEA) in 2016. As a result of the course's success, I was asked by IMACS to do it (as "Remote Learning") in 2017 and 2018. Planned an International Online Workshop on "Practical applications of UV-Visible and FTIR spectroscopy in life sciences". During November 2023 delivered lectures in an International E-Course on by REWA EU project. During May 2025 delivered lectures and laboratory experiments in a Membrane Technologies M.Sc. Course at the Warsaw University of Life Sciences (SGGW) as part of the European Erasmus Mobility Project.

Organization of conferences and congresses:

Since 2006 I have participated in the organization of several international conferences: (a) Initiator and Organizer of the "Chemistry in Water Treatment and Purification Symposium", held at the 243rd American Chemical Society National Meeting & Exposition, in San Diego, California, March 2012; (b) Symposium Organizer of the "Water-Related Medical Geology Issues" held at MEDGEO 2013, 5th International Conference in Medical Geology, Arlington, VA Aug. 25-29, 2013, and (c), Initiator and convener of the symposium on "Environmental Applications of Modified and Natural Clays," during the 16th International Clay Conference, Granada, Spain 2017, and of "Clays and the Environment" session at The 4th Asian Clay Conference (ACC-2020). Member of the steering committee of several conferences in Israel, among them the Ann. Meeting Israel Society of Clay Research, October 2011, and several Annual National Water Conferences in Tel Hai College (2012-2019).

Teaching Activities- International:

- 2016-2018 M.Sc. course in "Environmental Remediation" at IMACS- International Master Degree in Clay Sciences, University of Poitiers, France
- 2023 M.Sc. and Ph.D E-course in "Water quality physico-chemical parameters" module in "Reduction and assessment of antimicrobial resistance and emerging pollutants in water and wastewater treatment systems" as part of REWA project, AquaticPollutants ERA-NET Cofund (GA No 869178), University of Oulu, Finland.
- 2025- Delivered lectures and laboratory experiments in a Membrane Technologies M.Sc. Course at the Warsaw University of Life Sciences (SGGW) as part of the European Erasmus Mobility Project

Local:

- 1994-present Developed and teaches more than 15 Physics, Chemistry, Thermodynamics, and Meteorology courses at several departments at the Faculty of Sciences and Technology, Tel Hai College, Israel. Actual courses: First Environmental Sciences Seminar, Thermodynamics and Physical Chemistry at the B.Sc. programs in several departments in the Faculty of Sciences and Technology, and Advanced Chapters in Physical Chemistry, Introduction to Analytical Spectroscopy and Physico-Chemical Methods in several M.Sc. programs in Tel Hai College.
- 2012-present **Courses at "Town-Square Academia" Community Project:** "The Modern Physics' Revolution", "Understanding Weather Parameters", "Understanding Water Pollution", and during the last year- "Machines, Heat Pumps and Daily Thermodynamics", and "Alternative Energy Sources". The project is an education initiative in The Upper Galilee Region offering academic-level courses accessible to the general public at a symbolic fee of NIS 20 (less than \$5) per course, used to support the organizational costs. Additional details can be found in this [TEDx lecture](#).

Supervision of graduate students and postdoctoral fellows

- 1997-2012 Co-supervisor of 10 M.Sc. and a Ph.D. Fac. Agriculture Hebrew University of Jerusalem.
- 2011-2014 Co-supervisor, Ph.D. student at the Marine Biology Dept. University of Haifa, Israel.
- 2002-2022 Tutorial Committee Ph.D. and M.Sc, students at the Hebrew University of Jerusalem, Tel Aviv University, Technion Institute, Instituto Politecnico Nacional, Durango, Mexico,
- 2012-2022 Supervisor of 7 M.Sc. students at the Biotechnology Dept. of Tel Hai College, Israel.
- 2016-today Supervisor or co-supervisor of 25 M.Sc. theses at the Water Sciences Dept. and the Biotechnology Dept. Tel Hai College, Israel, an M.Sc. from IMACS program, University of Poitiers, and co-supervisor of an M.Sc. student at the Environmental Engineering Department, Technion Institute, Haifa, Israel.
- 2015-2016 Supervisor, Post-Doc (Dr. Yaniv Olshansky) at MIGAL Institute (CEREHA EU project).
- 2018-2019 Supervisor of Post-Doc (Dr. Peter Rendel) at MIGAL Institute
- 2022-2024 Supervisor of Post-Doc (Dr. Ilil Levakov) at MIGAL Institute and Tel Hai College
- 2022-2024 Supervisor of Post-Doc (Dr. Lior Levi) at MIGAL Institute and Tel Hai College

Research Interests

- Removal of contaminants of emerging concern (CECs) and pathogens from waters by means of (a) organo-clays, nanocomposites or other sorbents by filtration techniques, (b) Use of tailor-made nanocomposites for the removal of suspended materials and pathogens in all kinds of water and effluents (c) advances oxidation processes and photocatalyzed degradation of CECs and inactivation of pathogens
- Thermodynamics and kinetics in sorption and desorption processes.
- Adsorption and kinetic models to interactions with charged and/or neutral surfaces.
- Educational applications of aquatic environmental chemistry techniques
- Advanced applications of spectroscopic techniques (UV-VIS, fluorescence, FTIR, XRF, etc).
- Additional applications of clays, organoclays and nanocomposites as slow-release platforms (herbicides, fragrance, fertilizers, proteins, medications, etc.).
- Photostabilization of chemicals and dyes on colloidal surfaces.
- Eddy correlation latent and sensible heat fluxes, and CO₂ and H₂O fluxes.

Research Grants

- Attracted over 3\$ million of funding over the last 20 years, among them (examples only):
- A grant from the Israel Science Foundation on "Herbicide/ clay- organic complexes prepared in a mixed hydrophobic/hydrophilic phase to reduce ecological hazard" (about 200000\$ 2005-2009).
 - 2007-2009- Industrial support (by "ToxSorb" company) on the use of modified activated carbon for the efficient removal of inorganic pollutants from water and effluent (evaluated as 500000\$)
 - 2011-2014: A grant from the Ministry of Agriculture on "Adaptation of a Gouy-Chapman-Stern adsorption model for the evaluation of wastewater pharmaceuticals in soils" (100000\$)
 - 2011-2014: ECO-INNOVATION 2010 "Mobile Integrated Sustainable System for Treatment of Organic Wastewater" (MISSTOW), a joint project between Israel, Spain, and Greece. The project had a budget of 1.8 million €.
 - 2012-2013: A grant from the Israeli Ministry of Economics on the development of platforms for the removal of organic pollutants via adsorption and photodegradation (200000\$).
 - ICL Ltd. granted 2013- 2017 Industrial support on the test of coagoflocculation processes for the pretreatment of effluents. The total financial support until now is evaluated as 1000000\$.
 - 2015-2016: A grant from the Ministry of Economics on the use of clays and biocomposites for the alleviation of "Metabolic Syndrome" (200000\$).

-2019-2021: A grant from the Ministry of Agriculture on " Clay mineral based formulations for slow release of essential oils, aiming thrips control" (220000\$).

-2021-2024: AquaticPollutants 2020- ERA-NET European "REWA- Reduction and assessment of antimicrobial resistance and emerging pollutants in water and wastewater ". 140000 € for three years to our research group.

-2022-2023: A grant from the Israeli Ministry of Economics and Mekorot (Israel National Water Company) on the development and implementation of a device for the photodegradation of pharmaceuticals. (130000\$ for one year).

List of Publications (partial list- since 2020)

Since 1991 published approximately 100 papers in international, peer-reviewed journals, and approx. Twenty additional publications as book chapters, peer-reviewed compilations, and other publications- that have been cited more than 4600 citations (H index: 41, I10 Index: 72). Most publications as the first or corresponding author, and a large part in a first-rate (Q1) Journals in several disciplines.

1. Rendel, P. and Rytwo, G. (2020) Photodegradation Kinetics of Caffeine, Desalination and Water Treatment, Vol. 173, 231-242 <https://doi.org/10.5004/dwt.2020.24693>
2. Rendel, P.M., Rytwo, G. (2020). The Effect of Electrolytes on the Photodegradation Kinetics of Caffeine. Catal. 2020, Vol. 10, Page 644 10, 644. <https://doi.org/10.3390/CATAL10060644>
3. Argaman, O., Ben-Barak Zelas, Z., Fishman, A., Rytwo, G. & Radian, A. (2021) Immobilization of aldehyde dehydrogenase on montmorillonite clay using polyethyleneimine as a stabilization and bridging agent. Applied Clay Sciences, Vol. 212 <https://doi.org/10.1016/j.clay.2021.106216>
4. Rytwo, G. et al. (2021) Health Protection Using Clay Minerals: A Case Study Based on the Removal of BPA and BPS from Water. *Clays Clay Miner.* 69, 641–653. <https://doi.org/10.1007/s42860-021-00166-1>
5. Haramati, R.; Rytwo, G. et al. (2022) Mining Marine Metagenomes Revealed a Quorum-Quenching Lactonase with Improved Biochemical Properties That Inhibits the Food Spoilage Bacterium *Pseudomonas fluorescens*. *Appl. Environ. Microbiol.* 88. <https://doi.org/10.1128/AEM.01680-21>
6. Cattani, Y.; Rytwo, G. et al. (2022) Characterization of Moringa oleifera leaf and seed protein extract functionality in emulsion model system. *Innov. Food Sci. Emerg. Technol.*, 75 <https://doi.org/10.1016/j.ifset.2021.102903>
7. Rytwo, G., Zelkind, A.L., (2022). Evaluation of kinetic pseudo-order in the photocatalytic degradation of ofloxacin. *Catalysts* 12, 24. <https://doi.org/10.3390/catal12010024>
8. Levakov I, Shahar Y, Rytwo G (2022) Carbamazepine Removal by Clay-Based Materials Using Adsorption and Photodegradation. *Water* 14:2047. <https://doi.org/10.3390/w14132047>
9. Shaltiel-Harpaz, L., Kreimer, T., Dudai, N., Kaspi, R., Ben-Yakir, D., & Rytwo, G. (2023). Sepiolite- rosemary oil combination as an environmentally oriented insecticide. *Appl. Clay Sci.*, 234, 106838. <https://doi.org/10.1016/J.CLAY.2023.106838>
10. Kumar, A., Klumpp, K., Barak, C., Rytwo, G., Plötze, M., Peter, T., Marcolli, C. (2023). Ice nucleation by smectites: The role of edges. *Atmos. Chem. Phys.* 23, 4881–4902. <https://doi.org/10.5194/acp-23-4881-2023>
11. Rytwo, G., Elyahou, D. (2023). Eddy correlation measurements to visualize CO2 and water vapor concentrations and fluxes. *J. Agrometeorol.* 25, 239–246. <https://doi.org/10.54386/jam.v25i2.2103>
12. Shahar, Y., Rytwo, G. (2023). Elementary Steps in Steady State Kinetic Model Approximation for the Homogeneous Photocatalysis of Carbamazepine. *Clean Technol.* 5, 866–880. <https://doi.org/10.3390/cleantechnol5030043>
13. Levakov, I., Maor, I., Barak, C., Kirshenbaum, Y., Rytwo, G. (2023). Colorimetric Quantification for Residual Poly-DADMAC in Water Treatment. *Water* 15, 3352. <https://doi.org/10.3390/w15193352>
14. Zhang, R.; Rytwo, G. et al. Removal of per- and polyfluoroalkyl substances (PFAS) from water using magnetic cetyltrimethylammonium bromide (CTAB)-modified pine bark. *J. Environ. Chem. Eng.* 114006 (2024). <https://doi.org/10.1016/j.jece.2024.114006>
15. Niv, D., Rytwo, G. et al. (2024). Sepiolite–Chitosan–Acetic Acid Biocomposite Attenuates the Development of Obesity and Nonalcoholic Fatty Liver Disease in Mice Fed a High-Fat Diet. *Nutr.* 2024, Vol. 16, Page 3958 16, 3958. <https://doi.org/10.3390/NU16223958>
16. Segev, S., Rytwo, G., et al. (2025) Effect of quinoa protein concentrate in particulate and fibrillar form on the physico-chemical properties of quinoa starch gels. *Food Bioprocess Technol.* 1–16. <https://doi.org/10.1007/s11947-025-03873-y>

Additional highly quoted publications (quotes in parenthesis, based on Google Scholar August 2025)

1. Ruiz-Hitzky, E.; Rytwo G. et al (2010). *J. Mater. Chem.*, 2010, 20, 9306-9321 (360).
2. Rytwo G., Serban, C. and D. Tropp. (2002) *Appl. Clay Sci.*, 20/6, 273-282. (300)
3. Nir, S.; Rytwo, G. et al. (2000). *Environ. Sci. & Technol.*, 34: 1269-1274 (195)
4. Rytwo, G.; Serban, C.; Nir, S.; Margulies, L. (1991) *Clays Clay Miner.* 39, 551-555. (168)
5. Rytwo, G.; et al. (1998) *Clays Clay Miner.*, 46: 340-348. (162)

Patents

Submitted 9 different patents in more than 25 applications. Attached is a list of granted patents and PCT (4 provisional applications that did not mature to PCT are not presented).

1. Rytwo, G. (2017) US954610B2, 13/[967644](#) based on WO2012176190 No. PCT/IL2012/000245 on “Method for Pretreatment of Wastewater and Recreational Water with Nanocomposites”, granted 17/1/2017
2. Rytwo, G. (2017) IL[230108](#) based on WO2012176190 No. PCT/IL2012/000245 on “Method for Pretreatment of Wastewater and Recreational Water with Nanocomposites”, granted 24/12/2017
3. Rytwo, G. (2019) AU[2014307558](#) on WIPO WO2015022695 PCT/IL2014/050738, "Method for Pretreatment of Wastewater and Recreational Water with Nanocomposites and Bridging Polymers", granted 21/3/2019
4. Rytwo, G. (2019) US[10273169](#) based on WIPO WO2015022695 PCT/IL2014/050738, "Method for Pretreatment of Wastewater and Recreational Water with Nanocomposites and Bridging Polymers", granted 30/4/2019
5. Rytwo, G. (2020) IL[244020](#) based on WIPO WO2015022695 PCT/IL2014/050738, "Method for Pretreatment of Wastewater and Recreational Water with Nanocomposites and Bridging Polymers", granted 1/5/2020
6. Rytwo, G., Daskal, G. (2020) EP15842324.4 [EP3194342](#) based on PCT/IL2015/050944, WO2016042558A1 priority based on UK Application No.1416495.8, “A system for treatment of polluted effluents” granted 4/11/2020.
7. Rytwo, G. (2021) 12802734.9, [EP 2723690 B1](#) based on WO2012176190 No. PCT/IL2012/000245 on “Method for Pretreatment of Wastewater and Recreational Water with Nanocomposites”, granted 24/2/2021
8. Rytwo, G. (2021) [14836529.9](#) EP3033305 on WO2015022695 PCT/IL2014/050738 "Method for Pretreatment of Wastewater and Recreational Water with Nanocomposites and Bridging Polymers", granted 24/3/2021
9. Rytwo, G., Daskal, G. (2021) IL[251146](#) based on PCT/IL2015/050944, WO2016042558A1 priority based on UK Application No.1416495.8, “A system for treatment of polluted effluents” granted 25/5/2021.
10. Rytwo, G., Daskal, G. (2021) US[15/512,516](#) based on PCT/IL2015/050944, WO2016042558A1 priority based on UK Application No.1416495.8, “A system for treatment of polluted effluents” granted 15/6/2021.
11. Rytwo, G. (2021) IN[201847034847](#), 369352 based on PCT/IL2016/050700 WO/2017/158581 "Methods for Production of Potable Water" granted 18/6/2021
12. Rytwo, G. (2021) NZ [717972](#) based on WIPO WO2015022695 PCT/IL2014/050738, "Method for Pretreatment of Wastewater and Recreational Water with Nanocomposites and Bridging Polymers", granted 4/11/2021
13. Rytwo, G. (2021) US20190152813 Appl. No [16/085,085](#), based on PCT/IL2016/050700 WO/2017/158581 "Methods for Production of Potable Water", allowed 2/8/2021
14. Rytwo, G., Daskal, G. (2022) IL[284089](#) based on PCT/IL2015/050944, WO2016042558A1 priority based on UK Application No.1416495.8, “A System for Treatment of Polluted Effluents by Photocatalysis” granted 1/2/2022
15. Rytwo, G. (2022) CA [2927610](#) based on WIPO WO2015022695 PCT/IL2014/050738, "Method for Pretreatment of Wastewater and Recreational Water with Nanocomposites and Bridging Polymers", allowed 3//6/2022
16. Rytwo, G. (2022) BR 11 2018 068812 6 based on PCT/IL2016/050700 WO/2017/158581 "Methods for Production of Potable Water" granted 5/4/2022
17. Rytwo, G. and Y. Gonen (2009) WO/2009/053972 PCT/IL2008/001370 “Modified activated carbon as adsorbent for anionic and cationic inorganic pollutants”, [WIPO website](#), *Technology purchased by Toxsorb Ltd*

Fellowships and awards

2009 – 2012, 2016-2019 Head of “The Cherie and Aaron Raznick Chair for the Study of Sustainable Relations Between People and the Environment in the Upper Galilee.”

2012, 2015 Award for Excellence in Applicative Research, MIGAL Galilee Research Institute.

2000, 2005, 2010, 2014, 2020, 2021 Excellence in Teaching, Faculty of Sciences & Technology, Tel Hai College.

2011 Presented effluent purification at an event held by Israeli’s President (2011), Mr. Shimon Peres.

2011 At the Nobel Prize Ceremony in Stockholm (2011), Mrs. Maya Samuels presented a project performed under my supervision and mentoring (Additional information: [Israeli newspaper](#) , [Interlochen website](#)).

1999-2002 Sacta-Rashi Foundation Guastella Scholarship (\$60000) for excellence in research in colleges

1991-1994 Additional prizes: Bona Terra Prize, Fishman-Nadel Prize, Upper Galilee Prize.

1982-1984 Dean B.Sc. List, Faculty of Agriculture, Hebrew University of Jerusalem, Israel.

Recognized leadership in water treatment industrial innovation:

Three significant industrial contributions can be ascribed directly to Prof. Rytwo's research: (a) Senior inventor of a technology that uses modified activated carbon for the removal of heavy metals and oxyanions in industrial and potable is applied by ToxSorb Co., a water technology "Cleantech" company that works since 2008 ([company website](#)), with clients in Israel, Italy, and the USA. (b) Sole inventor of a technology based on the development of specifically designed clay-polymer nanocomposites for the clarification of water is the basis of several patents (see above, patents based on PCT/IL2016/050700, PCT/IL2014/050738 and PCT/IL2012/000245), most of them already granted in US, Europe, and other places. The license for using the technology in wastewater and effluents was assigned to ICL Haifa, and since 2017 to Decco Safepack, and starting at 2020- by BlueGen Ltd (formerly GES Israel- <https://bluegencorp.com/>). Commercial companies were responsible for introducing the product known as "NC" to industrial and domestic wastewater treatment in Israel (additional information is in the following advertising movies: [1](#), [2](#)). (c) Senior inventor of a photodegradation device (granted patent based on PCT/IL2015/050944). A Channel 10 television [report](#) on the technology (in Hebrew) was broadcasted on October 3rd, 2017. A research grant with Israel National Water Company ("Mekorot") for its development and implementation in a pilot plant was tested. Such achievements in water treatment and technology have made Prof. Rytwo a known lecturer and consultant in the field and led the Israel Standards Institute to invite him to participate as an academic representative in the Water Quality Standards Committee between 2018 and 2020.