

CURRICULUM VITAE – INES ZUCKER

PERSONAL DETAILS

Full Name: **Ines Zucker, Ph.D.**
ID: 066530734
Faculty/department: School of Engineering and Applied Science, Department of Chemical and Environmental Engineering (Yale University)
Phone: +1(203)5835299
Israeli phone number: +972(50)3549876
Home Address: 94 Wakefield St, Hamden, CT
Date and place of birth: Oct 07, 1984 (Israel)
Email Address: ines.zucker@yale.edu
Marital status: Married +2



A. EDUCATION

2006 – 2010: **B.Sc. in Mechanical Engineering (Cum Laude, 1st in my class – 76 students)**
Tel Aviv University, Tel Aviv, Israel
Date awarded: July 2010

2009 – 2011: **M.Sc. in Materials and Nanotechnologies Engineering (Cum Laude)**
Tel Aviv University, Tel Aviv, Israel
Direct-route M.Sc. program on the basis of outstanding undergraduate academic record
Title of master's thesis: Photocatalytic activity of nitrogen doped TiO₂ filtered-vacuum-arc deposited thin films
Name of supervisor: Prof. Boxman, head of Electrical Discharge and Plasma Laboratory
Date awarded: Oct 2011

2012 – 2016: **Ph.D. in Materials and Science Engineering (expertise in Environmental Engineering)**
Tel Aviv University, Tel Aviv, Israel
Title of doctoral dissertation: Elimination of trace organic compounds in wastewater effluent via multi-stage ozonation pilot followed by soil aquifer treatment
Name of supervisors: Prof. Hadas Mamane and Prof. Dror Avisar
Date awarded: Nov 2017

B. FURTHER STUDIES

Oct 2016 – Present: **Postdoctoral Studies in Environmental Engineering**
Yale University, New Haven, USA
Nanotechnology-enabled environmental applications and processes
Name of supervisor: Prof. Menachem Elimelech

C. ACADEMIC AND PROFESSIONAL EXPERIENCE

Feb 2003 – Feb 2005: Military Service, Israeli Defense Forces, Israel
Army Medical Services main office manager

Aug 2009 – Oct 2011: **Thin-Film Synthesis and Material Characterization**
Integration of expertise in many diverse fields such as plasma, vacuum arcs, high current technology, vacuum technology, solid state physics, catalysis, nanotechnology, water treatment, absorption spectroscopy, thin films, and materials characterization
Materials and Nanotechnologies Program
Master's Research in the Electrical Discharge and Plasma Laboratory, Tel Aviv University

Oct 2013 – Nov 2013: **Advanced Techniques for Kinetics Research**
Tel Aviv University, Tel Aviv, Israel
Technical University of Berlin, Berlin, Germany
Kinetic study on quench flow system of wastewater ozonation including further research on prediction of pharmaceutical oxidation rates

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Water Quality Control Department

Visiting scholar

- Dec 2014 – Jun 2015: **Consultation, Ozone-based Water Treatment Technologies**
Ozone-based water treatment technologies for biodiesel plant wastewater in Italy and drinking water systems start-up in Israel
Project managing and advising for "Triple T, water fund investments group Ltd" and "Woosh Water Systems Ltd"
- Feb 2012 – Aug 2016: **Elimination of Trace Organic Compounds Through Advanced Wastewater Treatments**
Tel Aviv University, Tel Aviv, Israel
Integration of expertise in many diverse fields such as ozone systems, soil aquifer treatment, aquatic chemistry, pollutant transport, and oxidation kinetics. Advanced knowledge in analytical chemistry (HPLC-MS/MS), SEM, zeta potential, water quality analysis, and advanced oxidation processes
Department of Materials Science and Engineering
Doctoral research in the Water Technologies Laboratory
- Oct 2016 – Present: **Nanotechnology for Environmental Applications and Implications**
Yale University, New Haven, USA
Advanced knowledge in nanoparticle characterization (charge density, surface functionality, DLS, PSD, BET), vesicle synthesis and modifications, electrochemical sensing, and surface modifications
Department of Chemical and Environmental Engineering
Postdoctoral Research in Prof. Elimelech's Laboratory

D. ACTIVE PARTICIPATION IN SCIENTIFIC MEETINGS

- Jan 2011: NATIONEM meeting, EU 7th program, Tel Aviv, Israel (participant)
- Feb 2011: The 13th Israeli conference on plasma science and its applications (IPSTA), Israel (Lecture)
- Feb 2011: The 7th TAU Nano-center convention, HaGoshrim, Israel (Poster)
- Mar 2011: Israeli water association conference, HaMaccabia, Israel (Poster)
- Oct 2011: M.Sc. thesis presentation in a faculty seminar, Tel Aviv University, Tel Aviv, Israel (Lecture)
- Oct 2012: BMBF-MOST cooperation in water technology research, 12th Status Seminar, Haifa, Israel (Lecture)
- Jan 2013: Israeli water research students' conference, Haifa, Israel (Lecture)
- Apr 2013: Wasser Berlin conference, Berlin, Germany (Lecture)
- May 2013: CARESS 9th conference, environmental sciences students, Weizmann Institute of Science, Israel (Lecture)
- Nov 2013: BMBF-MOST cooperation in water technology research, 13th Status Seminar, Tel Aviv, Israel (Lecture)
- Jun 2013: The annual conference of Israeli water authority, Tel Aviv, Israel (Lecture)
- Jan 2014: DEMOWARE kick-off scientific meeting, Tel Aviv, Israel (Lecture)
- Dec 2014: SAT – MAR workshop, Tel Aviv, Israel (participant)
- Mar 2015: Israeli water association conference, Ramat-Gan, Israel (Poster)
- May 2015: Water Research Center Opening at Tel Aviv University, Israel (Lecture)
- Jun 2015: IOA world congress and exhibition, Barcelona, Spain (Lecture)
- Oct 2015: Unique Topics in Desalination workshop, WATEC conference, Tel Aviv Convention Center, Israel (participant)
- Oct 2015: Annual Conference for Science and Environment (Israel Society of Ecology and Environmental Sciences), The Hebrew University of Jerusalem, Jerusalem, Israel (Lecture)
- Apr 2016: Ph.D. thesis presentation in a faculty seminar, Tel Aviv University, Tel Aviv, Israel (Lecture)
- Sep 2016: Invited Seminar, Zuckerberg Institute for Water Research, Sede Boqer Campus, Israel (Lecture)
- Sep 2016: Invited Seminar, Faculty of Civil and Environmental Engineering, Technion, Haifa, Israel (Lecture)
- May 2017: Equity in the Job Search Symposium, Yale University, USA (participant)

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Aug 2017:	Invited Seminar, Faculty of Engineering, Ben Gurion University, Beer Sheva, Israel (Lecture)
Aug 2017:	IOA world congress. Washington DC, USA (Lecture)
Nov 2017:	MRS Fall meeting, Boston, USA (Lecture)
Feb 2017:	Equity in the Job Search Symposium, New Haven, USA (Panelist)

E. ACADEMIC AND PROFESSIONAL AWARDS

E.1. FELLOWSHIPS

Dec 2015:	YIBS Gaylord Donnelley Environmental Postdoctoral Fellowship – Yale Institute for Biospheric Studies, 52K\$ (two years), Postdoctoral fellowship
Apr 2016:	TAU Presidential Postdoctoral Fellowship – Tel Aviv University, 20K\$ (two years), Postdoctoral fellowship
May 2016:	BARD Postdoctoral Fellowship – Binational Agricultural Research & Development Fund, 37K\$ (not actualized), Postdoctoral fellowship

E.2. HONORS AND AWARDS

Oct 2006 – Aug 2010:	Dean's Honor for the academic year of 2007, 2009 and 2010
Oct 2009 – Oct 2011:	Graduate scholarship, Tel Aviv University Aug
2015:	Rieger Award (2 nd) - Jewish National Fund program, U.S.A. for environmental studies
Oct 2010:	Certificate of excellence in the Materials and Nanotechnologies Program
Feb 2011:	Prize of the student oral presentation competition of the Israeli conference on plasma science
Mar 2011:	2011 Intel award for excellence in master studies
Mar 2012:	Certificate of excellence in teaching assistance
Jul 2012:	The Benin fund in partnership with the UJA federation of New York & the Jewish agency scholarship
Oct 2013:	Rieger Award - Jewish National Fund program, U.S.A. for environmental studies
Dec 2013:	Eshkol women promoting in science scholarship, the ministry of science, technology and space
Feb 2013 – Mar 2015:	Six initiative and research excellence awards for supervising research students
Dec 2012 – Dec 2015:	Water Authority scholarship (for three years)
Feb 2012 – Aug 2016:	Ph.D. scholarship, Tel Aviv University

F. MEMBERSHIP IN PROFESSIONAL ASSOCIATIONS

2013 – Present:	International Ozone Association (IOA)
2014 – Present:	International Water Association (IWA)
2015 – Present:	Israel Society of Ecology and Environmental Sciences
2017 - Present:	Materials Research Society (MRS)

G. STUDENTS CO-SUPERVISED BY CANDIDATE (MENTORING EXPERIENCE)

Ph.D. STUDENTS (unofficial co-supervision with Prof Elimelech, Yale University)

1. 2017: Camrynn Fausey, "Oxidation of arsenic with reduced graphene oxide-tio₂-decorated nanofibrous mats"

M.Sc. THESIS STUDENTS (unofficial co-supervision with Prof H. Mamane and Prof. D. Avisar, TAU)

2. 2015: Alon Riani, School of Mechanical Engineering, "Elimination of trace organic compounds via ozonation before and after effluent filtration" (Faculty excellence for academic MSc record)

M.Sc. PROJECT STUDENTS (co-supervision with Prof H. Mamane and Prof. D. Avisar, TAU) – received six initiative and research excellence awards for supervising the following research students:

3. 2013: Saar Mezuman, "Ozone as a disinfectant and his treatment effects on wastewater quality parameters"
4. 2013: Igor Chirksky, "Solid phase extraction method development of selected pharmaceuticals from Shafdan wastewater treatment plant"
5. 2013: Miri Frank, "Introduction to main mechanisms for trace organic contaminant degradation"

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- 2014: Shlomi Amran, "Preliminary study of n-oxide venlafaxine transformation product kinetics during ozonation"
- 2015: Roman devorkin, "Shape analysis for wastewater particles following ozone treatment"]
- 2015: Ruth Ben-Ari, "Impact of colloidal particles in water on advanced oxidation processes"

UNDERGRADUATE PROJECT STUDENTS (co-supervision with Prof Elimelech, Yale University)

- 2017: Jason Yang, "New insights into the physical mechanism of interaction between MnO₂ nanomaterials of different shapes and model cell membranes"

H. TEACHING EXPERIENCE

"Introduction to Materials Science and Engineering", *Frontal teaching Assistant*, graduate course, Material and Nanotechnologies Eng., TAU, Fall 2010, Fall 2011 (**Dean's excellence award**)

"Advanced Topics in design of mechanical systems", *Teaching Assistant and project manager*, undergraduate course, Mechanical Eng., TAU, Spring 2010, Spring 2011

"Statics and Strength of materials", *Teaching Assistant*, undergraduate course, Architecture, TAU, Spring 2010, Spring 2011

"Materials and nanotechnologies advanced laboratory", *Teaching Assistant*, undergraduate course, Material and Nanotechnologies Eng., TAU, Fall 2014, Spring 2015

"Materials and nanotechnologies laboratory for mechanical engineers", *Course manager*, undergraduate course, Material and Nanotechnologies Eng., TAU, Spring 2015/6

"Material Selection", *Course developer*, undergraduate course, Material and Nanotechnologies Eng., TAU, Spring 2016

I. COMMUNITY SERVICE

Nov 2017-Feb 2018: Equity in the Job Search Symposium Organizer - Keynote address coordinator

Jun 2014-Jun 2016: Engineering faculty representative at the junior staff panel (Elected)

Jun 2015-Aug 2015: Science Oriented Youth workshops during summer break

2013: Tutor, Social services division, Central-North Tel Aviv

SCIENTIFIC PUBLICATIONS

A. ORIGINAL ARTICLES

- E. Çetinörgü-Goldenberg, L. Burstein, **I. Chayun-Zucker**, R. Avni, R.L. Boxman; Structural and optical characteristics of filtered vacuum arc deposited N:TiO_x thin films – pp. 28-35, 2013, *Thin Solid Films*.
(ISI citations: 3, google scholar citations: 5) IF= 1.879, ranked 135 of 275 Multidisciplinary materials science journals (Q2).
- Y. Lester, H. Mamane, **I. Zucker**, D. Avisar; Treating wastewater from a pharmaceutical formulation facility by biological process and ozone – pp. 4349-4356, 2013, *Water Research*.
(ISI citations: 29, google scholar citations: 43) IF= 6.942, ranked 2 of 49 Environmental engineering journals (Q1).
- U. Hübner, **I. Zucker**, and M. Jekel; Options and limitations of hydrogen peroxide addition to enhance radical formation during ozonation of secondary effluents – pp. 8-16, 2015, *Journal of Water Reuse and Desalination*.
(ISI citations: 2, google scholar citations: 4) IF= 0.686, ranked 43 of 49 Environmental engineering journals (Q4).
- I. Zucker**, Y. Lester, D. Avisar, Y. Weinberger, U. Hübner, M. Jekel, H. Mamane; Influence of wastewater particles on ozone degradation of trace organic contaminants – pp. 301-308, 2015, *Environmental Science & Technology*.
(ISI citations: 10, google scholar citations: 13) IF= 6.198, ranked 4 of 49 Environmental engineering journals (Q1).
- I. Zucker**, H. Mamane, H. Cikurel, M. Jekel, U. Hübner, D. Avisar; A hybrid process of biofiltration of secondary effluent followed by ozonation and short soil aquifer treatment for water reuse – pp. 315-322, 2015, *Water Research*.
(ISI citations: 9, google scholar citations: 14) IF= 6.942, ranked 2 of 49 Environmental engineering journals (Q1).
- I. Zucker**, H. Mamane, D. Avisar, M. Jekel, U. Hübner; Determination of oxidant exposure to predict contaminant removal – pp. 508-516, 2016, *Water Research*.
(ISI citations: 3, google scholar citations: 7) IF= 6.942, ranked 2 of 49 Environmental engineering journals (Q1).

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7. A. Lakretz, H. Mamane, H. Cikurel, D. Avisar, E. Gelman, **I. Zucker**; The role of soil aquifer treatment (sat) for effective removal of organic matter, trace organic compounds and microorganisms from secondary effluents pre-treated by ozone – pp. 1-10, 2017, *Ozone: Science & Engineering*.
(ISI citations: 0, google scholar citations: 1) IF= 0.892, ranked 41 of 49 Environmental engineering journals (Q4).
8. **I. Zucker**, J.R. Werber, Z.S. Fishman, S.M. Hashmi, U.R. Gabinet, X. Lu, C.O. Osuji, L.D. Pfeifferle, M. Elimelech; Loss of phospholipid membrane integrity induced by two-dimensional nanomaterials – pp. 404–409, 2017, *Environmental Science & Technology Letters*.
(ISI citations: 0, google scholar citations: 3) IF= 5.308, ranked 7 of 49 Environmental engineering journals (Q1).
9. X. Lu, X. Feng, J.R. Werber, C. Chu, **I. Zucker**, J. Kim, C. Osuji, M. Elimelech; Enhanced antimicrobial activity through the controlled alignment of graphene nanosheets – pp. E9793–E9801, 2017, *Proceedings of the National Academy of Sciences*.
(ISI citations: 0, google scholar citations: 1) IF= 9.372, ranked 4 of 64 Multidisciplinary science journals (Q1).
10. **I. Zucker**, A. Riani, I. Gozlan, D. Avisar, H. Mamane; Formation and degradation of n-oxide venlafaxine during ozonation and post-biological treatment – pp. 578–586, 2018, *Science of the Total Environment*.
(ISI citations: 0, google scholar citations: 0) IF= 4.900, ranked 22 of 229 environmental sciences journals (Q1).

B. REVIEW ARTICLES – Submitted for Publication

1. M. Mauter, **I. Zucker**, F. Perreault, J.R. Werber, J. Kim, M. Elimelech; Addressing global water challenges through nanotechnology – Submitted to *Nature Sustainability*.
(New journal, IF not published yet, Q1).

C. PAPERS PRESENTED AT SCIENTIFIC MEETINGS

C.1. PUBLISHED AS PROCEEDINGS

1. **I. Chayun-Zucker**, E. Çetinörgü-Goldenberg, R. Avni, R.L. Boxman: The effect of nitrogen partial pressure and substrate temperature on the nitrogen concentration in filtered vacuum arc deposited N:TiO₂ thin films. Israeli conference on plasma science and applications. Ariel, Israel, 10 February 2011.
2. **E. Goldenberg**, L. Burstein, **I. Zucker**, R. Avni, R.L. Boxman: The effect of nitrogen partial pressure and substrate temperature on the characteristics of filtered vacuum arc deposited N:TiO₂ thin films. 13th International Conference on Plasma Surface Engineering. Garmisch-Partenkirchen, Germany, 10-14 September 2012.
3. **I. Zucker**, D. Avisar, Y. Weinberger, H. Mamane: The relation between particles filtration and ozonation of wastewaters. Wasser Berlin, Safe water along its cycle - Ozone and Related Oxidants. Berlin, Germany, 23-26 April 2013.
4. **H. Mamane**, **I. Zucker**, Y. Lester, Y. Weinberger, D. Avisar: The Interaction between particle filtration and ozonation of wastewaters. International Ozone Association & International Ultraviolet Association. Las-Vegas, USA, 22-26 September 2013.
5. Y. Lester, H. Mamane, **I. Zucker**, **D. Avisar**: Treating wastewater from a pharmaceutical formulation facility by biological process and ozone. International Ozone Association & International Ultraviolet Association. Las-Vegas, USA, 22-26 September 2013.
6. **U. Hübner**, **I. Zucker**, M. Jekel: Options and limitations of hydrogen peroxide addition to enhance radical formation during ozonation of secondary effluents. IWA Water Reuse Conference. Namibia, 18-19 November 2013.
7. **I. Zucker**, **H. Mamane**, H. Cikurel, M. Jekel, U. Hübner, A. Aharoni, D. Avisar: Manganese dissolution and micropollutant removal by ozone and soil aquifer treatment of effluents. IWA World Water Congress. Lisbon, Portugal, 21-26 September 2014.
8. **I. Zucker**, Y. Lester, D. Avisar, U. Hübner, M. Jekel, Y. Weinberger, **H. Mamane**: The interaction between ozonation and wastewater particles. IWA World Water Congress. Lisbon, Portugal, 21-26 September 2014.
9. **I. Zucker**, H. Mamane, H. Cikurel, M. Jekel, U. Hübner, D. Avisar: A hybrid process of ozonation and short soil aquifer treatment for water reuse. Barcelona, Spain, 28 June-01 July 2015.
10. **I. Zucker**, A. Riani, D. Avisar, H. Mamane: Evaluation of n-oxide venlafaxine transformation product kinetics during ozonation. IOA world congress. Barcelona, Spain, 28 June-01 July 2015.
11. **I. Zucker**, A. Riani, D. Avisar, H. Mamane: Formation and degradation of transformation products during ozonation and post-biological treatment. IOA world congress. Washington DC, USA, 13-17 August 2017.

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C.2. PUBLISHED AS ABSTRACTS

1. **I. Chayun-Zucker**, E. Çetinörgü-Goldenberg, R. Avni, and R.L. Boxman: The effect of nitrogen partial pressure and substrate temperature on the nitrogen concentration in filtered vacuum arc deposited N:TiO₂ thin films. Israeli water association conference, HaMaccabia, Israel, March 2011.
2. **I. Chayun-Zucker**, E. Çetinörgü-Goldenberg, R. Avni, and R.L. Boxman: The effect of nitrogen partial pressure and substrate temperature on the nitrogen concentration in filtered vacuum arc deposited N:TiO₂ thin films. The 7th TAU Nano-center convention, HaGoshrim, Israel, February 2011.
3. **I. Zucker**, D. Avisar, and H. Mamane: Improved micropollutant removal by ozonation treatment of shafdan secondary effluents, BMBF-MOST cooperation in water technology research, 12th Status Seminar, October 2012.
4. **I. Zucker**, D. Avisar, Y. Weinberger, and H. Mamane: The relation between particle filtration and ozonation of wastewaters. CARESS 9th Conference on Active Research by Environmental Sciences Students, Weizmann Institute of Science, Israel, May 2013.
5. **Y. Lester**, H. Mamane, **I. Zucker** and D. Avisar: Treating wastewater from a pharmaceutical formulation facility by biological process and ozone. Israel Water Association, March 2013.
6. **I. Zucker**, H. Mamane, and D. Avisar: Can we drink water originated from waste? Israel Water Association, March 2015.
7. **I. Zucker**, H. Mamane, and D. Avisar: A hybrid process of ozonation and short aquifer treatment for water reuse, Water Research Center at Tel Aviv University, May 2015.
8. **I. Zucker**, J. Werber, M. Elimelech: Loss of phospholipid membrane integrity induced by two-dimensional nanomaterials. MRS Fall meeting, Boston, USA, November 2017.