

May 2009



CURRICULUM VITAE Robert Armon

Personal Background

Name: Robert Armon
Identity No.: 069413250
Marital status: Untied, father of five
Web site: URL – <http://www.technion.ac.il/~civil/armon/index.html>

Academic Degrees

1975 – 1978 B.Sc. in Biology, The Hebrew University of Jerusalem, Israel.
1978 – 1981 M.Sc. in Environmental Virology. The Hebrew University of Jerusalem, Human Environmental Sciences, School of Applied Sciences and Technology.
1981 – 1985 D.Sc., Technion – Israel Institute of Technology, Faculty of Food Engineering and Biotechnology.

Academic Appointments

2003 on Associate Professor, Technion, Israel.
1995 – 2003 Senior Lecturer, Technion, Israel.
1993 – 1995 Senior associate teacher, Technion, Israel.
1988 – 1991 Post Doctoral Research Fellow (Lady Davis), Technion, Israel.
1986 – 1988 Post Doctoral Research Fellow, University of Québec, Montreal, Canada.
1985 – 1986 Post Doctoral Research Fellow, University of Rhode Island, RI, USA.
1982 – 1985 Research Assistant, Technion, Israel.
1981 – 1982 Instructor, Oranim College, Tivon, Israel.
1978 – 1981 Research Assistant, The Hebrew University of Jerusalem, Israel.

Professional Experience

2003 – 2004 ESR (Environmental Science & Research Institute), Environmental Molecular Laboratory, Dr. Marion Savill, Christchurch, New Zealand. (Sabbatical).
1992 – 1993 Senior researcher, Environmental Health Laboratory (Abu – Kabir), Ministry of Health, Israel.
1982 – 1985 Clinical laboratory technician, Haematology Lab., Carmel Hospital, Haifa, Israel.
1982 – 1983 Researcher, Food Engineering Dept., Technion, Israel.
1978 – 1981 Clinical laboratory technician, Clinical Lab., Bikur – Holim Hospital, Jerusalem, Israel.

Research Interests

Environmental Microbiology (Bacteriology, Virology and Parasitology)
Bacteriophages as indicators
Sol – gel technology in Microbiology
Photocatalysis as water disinfection process
Biofilms, biofouling and biocorrosion

Teaching experience

– **1982 – 1985** "Environmental Microbiology" (Graduate) Technion, Environmental & Water Resources Engineering Research Eng.

- **1992** "Environmental Microbiology" (Course for new immigrants engineers) Technion, Environmental & Water Resources Engineering.
- **1993** "Water sources quality (Microbiological aspects)" (Undergraduate). Technion, Environmental & Water Resources Engineering (2nd semester).
- **1993** "Laboratory in Environmental Engineering" (Undergraduate), "Environmental Quality" and "Environmental Microbiology" (Graduate) Technion, Environmental & Water Resources Engineering.
- **1994 – 1995** "Laboratory in Environmental Engineering", "Water Resources Quality" "Environmental Microbiology and Epidemiology" (Undergraduate) "Environmental Quality", "Environmental microbiology" (Graduate). Technion, Environmental & Water Resources Engineering.
- **1995 – 2003** "Environmental Microbiology and Epidemiology" (Undergraduate) "Environmental microbiology" (Graduate). Technion, Environmental & Water Resources Engineering.
- **2003 –** "Environmental Microbiology and Epidemiology" (Undergraduate) "Environmental microbiology" and "Biofilms, biofouling and biocorrosion" (New Course, Graduate). Technion, Environmental & Water Resources Engineering.
- **2008 – 2009** "Environmental Microbiology" (Graduate for M.E.), Technion (Evening Studies), Tel – Aviv.

Public Professional Activities

- 1998** – OECD Workshop on "Molecular Technologies for safe drinking water". Hosted by EAWAG, Interlaken, 5 – 8 July, 1998, Switzerland. Member of the Steering Committee.
- 2000** – Ministry of Health, Water Quality Standards (Jerusalem).
- 2004 on**– IWA specialist groups HRWM (Health Related Water Microbiology) Management Committee
- 2007 on** – Environmental Bioindicators Journal, Editorial Board, Associated Editor.
- 2008 on** – Environmental Toxicology Journal, Editorial Board.
- 2008** – Israel Science Foundation, Committee member of Chemical Engineering and Environmental Science proposals evaluation (Jerusalem)

Membership in Professional Societies

- American Society for Microbiology. ASM (1988 – on)
- Canadian Association of Clinical Microbiology and Infectious Diseases (CACMID). (1986 – 1991)
- Israel Society for Microbiology. ISM (1990 – on)
- Israel Society for Ecology. ISE (1990 – on)
- Member of ISO (International Standard Organization), Europe, on bacteriophages indicator of viruses in water. (1994 – on).
- Member of Steering Group – Molecular Technologies for safe drinking water. (OECD)(1998)
- Member of IAWQ (now IWA) (1994 – on).
- Member of Grand Water Research Institute, Israel. (1997 – on).
- Member of IBBS (1999 – on).
- Member of International Society of Environmental Bioindicators & Biomarkers (2007 – on)

Honors

- 1983 – 1984** – Fellowship from Israel Environmental Protection Service. (Technion)
- 1984** – Award Litan Prize (Oil Foundation Research) – For achievements on Ph.D. research.
- 1986 – 1988** –Fellowship from the University of Quebec, Canada Post – Doctoral Fellowship, Institute Armand – Frappier.
- 1989** – Award from Henri Gutwirth Fund for the promotion of research – On enteric viruses survey in Israel after massive vaccination.

1989 – Award from Technion Albert Einstein Research Fund – On *Legionella pneumophila* environmental research.

1988 – 1991 – Post – Doctoral Fellowship from Lady Davis Foundation (at Technion).

1997 – Award Samuel & Esther August Academic Lectureship for distinguished young lecturer.

Graduate Students

A. – studies completed [M.Sc.]

1. Ms. Tamar Arbel (M.Sc.) 1993 – 1995. "Biofilm Development In Water Systems, On Several Coupons And The Influence Of Disinfectants". [M.Green – Supervisor, R. Armon Co – supervisor]. (Equis, Head R&D)
2. Mr. Abu – Shkara Farrah (M.Sc.) 1994 – 1996. "Resistance / Adaptation Of Free Coliform Bacteria To Disinfection In Water Systems As Related To Their Fatty Acid Composition". [I. Neeman – supervisor and R. Armon co – supervisor]. (Pharmacist)
3. Ms. Natalia Laot (M.Sc.) 1994 – 1997. TiO₂ photocatalytic inactivation of microorganisms in drinking and effluent water. [N. Narkis – supervisor and R. Armon co – supervisor].
4. Ms. Svetlana Koniansky (M.Sc.) 1994 – 1997 Health risk assessment of reused water irrigation of crops. [G. Shelef – supervisor and R. Armon Co – supervisor].
5. Mr. Ibrahim Saadi (M.Sc.) 1994 – 1997 Sol – gel as a matrix for detection of bacteria in water. [R. Armon – supervisor]. (Volcani, Neve Yaar, Senior researcher)
6. Ms. Yulia Grozonovsky (M.Sc.) 1994 – 1997 Interaction of bacteriophages with biofilms in water distribution system. [R. Armon – supervisor].
7. Ms. Michal Danziger (M.Sc.) 1995 – 1997 Adsorption of bacteria in water system to metal surfaces at zero potential. [R. Armon – supervisor]. (Ministry of Health)
8. Mr. Slava Shmulevitz (M.Sc.) 1995 – 1997 Comparison of natural and commercial microflora in trickling filter for removal of phenol. [N. Galil – supervisor and R. Armon co – supervisor].
9. Ms. Ephrat Marco (M.Sc.) 1996 – 1998 Bacteriophages ecology in sewage and their indicative relation to sewage pollution of drinking water sources. [R. Armon – supervisor, Y. Zimmeles co – supervisor]. (Ministry of Health, Public Health Laboratory, Dept. Head)
10. Ms. Vered Cohen (M.Sc.) 1998 – 2000. TiO₂ Photocatalytic inactivation of microorganisms in a continuous reactor. [R. Armon – supervisor].
11. Ms. Ella Zilberman (M.Sc.) 1997 – 2000 Development of a concentration and separation method for *Cryptosporidium* oocysts in soil. [R. Armon – supervisor Y. Zimmels co – supervisor].
12. Ms. Galit Weltch – Cohen (M. Sc.) 1998 – 2000 Inactivation of *B. subtilis* spores by TiO₂ photocatalysis in water and soil. [R. Armon – supervisor and G. Shelef co – supervisor].
13. Mr. Beni Gabrieli (M.Sc.)(IDF) 1999 – 2002 – Microbiological quality of water in IDF soldiers canteens and their relation to enteric diseases. [R. Armon – supervisor]. (IDF, Construction Unit, Lt. Colonel)
14. Ms. Marina Bronshtein (M.Sc.) 2001 – 2003 – Combined in – vitro enzymatic biodegradation of atrazine in sol – gel. [R. Armon – supervisor and C. Dosoretz co – supervisor].
15. Ms. Ahashibon Kifah (M.Sc.) 2000 – 2002 – Detection and fate of protozoan parasites in lisimeters irrigated with effluents. [R. Armon – supervisor and A. Shaviv co – supervisor].
16. Ms. Irit Hart (M.Sc.) 2000 – 2002 – Detection and fate of bacteriophages in lisimeters irrigated with effluents as a model for enteric viruses. [A. Shaviv – supervisor and R. Armon co – supervisor]. (Central Mekorot Lab., Beit Netofa)
17. Ms. Rinat Tardi (M.Sc.) 2004 – 2006 – Silicate bacteria *Bacillus mucilaginosus* activity on sol – gel. [R. Armon – supervisor]. (Ministry of Health, Public Health lab., Haifa)

18. Mr. Guy Goldman (M.Sc.) 2004 – 2006 – Biofouling prevention of membranes used for effluent treatment (NF and RO) by use of specific bacteriophages. [R.Armon – supervisor]. (Private Company, R&D)
19. Ms. Marina Epshtein (M.Sc.) 2005 – 2007 – Enhanced Photo – efficiency of Embedded TiO₂ Catalyst *via* Extreme Anodic Biasing. [R. Armon – supervisor]. (R&D Strauss Co.)

B. – studies completed [Ph.D.]

1. Ms. Arza Seidel (D.Sc.) 1994 – 1997 Mechanism of metals bioleaching from coal fly ash in concentrated suspension by *Thiobacillus thiooxidans* bacteria [Y. Zimmels – supervisor and R. Armon co – supervisor]. (Post – Doc., Yale University)
2. Ms. Tamar Arbel (Ph.D.) 1996 – 1999 Bioremediation of BTEX in subsurface by bioventing process. [R. Armon – supervisor and N. Narkis co – supervisor]. (Equis, Head R&D)
3. Mr. Udi Zuckerman (Ph.D.) 1995 – 1999 Giardia and *Cryptosporidium* in surface water and their viability under bacterial growth. [R. Armon – supervisor and D. Gold – supervisor]. (Mekorot Water Co., Chief Microbiologist)
4. Ms. Ephrat Marco (Ph.D.) 2000 – 2004 Well clogging by biotic factors: factors, prevention and rehabilitation. [R. Armon – supervisor]. (Ministry of Health, Public Health Laboratory, Dept. Head)
5. Ms. Natalia Laot (Ph.D.) 2000 – 2004 Electrochemical methods to prevent biocorrosion and biofouling. [R. Armon – supervisor]. (R&D Shtrauss Co.)
6. Ms. Chen Zolkov (Ph.D.) 2000 – 2004 – Development of sol – gel matrix for virus detection with tissue culture. [R. Armon – supervisor]. (Head R&D, Tami, Biocides Lab.)
7. Ms. Pnina Shlezinger (Ph.D.) 2003 – 2006 – Microbial characterization of storm dust in Israel. [Y. Maman – supervisor and R. Armon co – supervisor].
8. Ms. Galit Weltch – Cohen (Ph.D.) 2000 – 2004 – galactosidase entrapment in sol – gel films for wine aging. [R. Armon – supervisor and C. Dosoretz co – supervisor].

C – Studies in progress [M.Sc.]

1. Mr. Yair Farber (M.Sc.) 2007. Silicate degrading bacteria and sol – gel interaction [R. Armon – supervisor].
2. Ms. Ravit Kamari (M.Sc.) 2007 – . Reduction of Fe⁺³ (rust dissolution) by bacteria. [R. Armon – supervisor].

D – Studies in progress [Ph.D.]

1. Ms. Anastasia Malkovski (Ph.D) 2006. Interaction mechanism of Microorganisms and aquatic plant roots in removal of organic components from wastewater. [Y. Zimmels – supervisor and R. Armon – advisor].
2. Mr. Eyal Kurzbaum (Ph.D.) 2007. The contribution of plants, microbial activity and porous bed, in reduction of dissolved organic carbon compounds in constructed wetland system. [Y. Zimmels – supervisor and R. Armon co – supervisor].
3. Mr. Eli Kotzer (Ph.D.) 2007. Development of a sensor for bacterial biofilm growth and clogging in RO plant. [R. Armon – supervisor and Carlos Dosoretz – co – supervisor]. (Head of RO pilot of Mekorot)
4. Ms. Tally Cohen (Ph.D. candidate) 2007. Macromolecular imprinting of sensors for bacterial identification in liquids. [R. Armon – supervisor].

Research Grants and Projects

1. 1988 – 1989, Ministry of Science – 3,500 \$, Y. Kott (P.I.) and R. Armon (Co – P.I.).
2. 1990 – 1993, Water Commissioner Office – \$ 55,000, Y. Kott (P.I.) and R. Armon (Co. – P.I.).
3. 1991 – 1994, 180,000 \$, EEC joint projects in collaboration with University of Barcelona, Spain, Y. Kott (P.I.) and R. Armon (Co – P.I.).
4. 1992 – 1995, 55,000 NIS/year, Water Commissioner Office, Y. Kott (P.I.), R. Armon (Co.P.I.) and M. Green (Co – P.I.).
5. 1994 – 1997, 74,000 NIS/year, Ministry of Science, R. Armon (P.I.).
6. 1991, 50,000 NIS, Ministry of Health, R. Armon (P.I.).

7. 1993, 200,000 NIS, Kishon Project, Mekorot Water Co. Prof. G.Shelef (P.I.) and Dr. R.Armon (Co – P.I.).
8. 1993 – 1996, 164,000 NIS, Mekoroth Co., Y. Kott (P.I.) and Armon (Co – P.I.).
9. 1995 – 1997, 70,000 \$ WRI (Grand Water Research Institute, Technion), R. Armon (P.I.), I. Neeman (Co – P.I.) and R. Sheinman (Co – P.I.).
10. 1994 – 1996, 60,000 \$ WRI (Grand Water Research Institute, Technion) Robert Armon (P.I.), I. Yahalom (P.I.), J. Starosvetzky (Co – P.I.) and D. Starosvetzky (Co – P.I.).
11. 1995 – 1996, 79,000 NIS, Mekorot Water Co., R. Armon (P.I.).
12. 1995 – 1999, 210,000 NIS, Mekorot Water Co. Dr. R. Armon (P.I.).
13. 1995 – 1997, 60,000 \$, WRI (Grand Water Research Institute, Technion), R. Armon (P.I.), Prof. N.Narkis (P.I.) and Prof. I. Neeman (Co – P.I.).
14. 1995 – 1997, 69,000 \$, WRI (Grand Water Research Institute, Technion), S.Yanai (P.I.) Dr. R. Armon (P.I.).
15. 1995 – 1998, 75,000 NIS/year, Ministry of Environment, H.Rubin (P.I.), N.Narkis (P.I.), R. Armon (P.I.).
16. 1996 – 1997 100,000 NIS, Ministry of Environment, R. Armon (P.I.).
17. 1997 – 1998, 70,000 \$, France – Israel Joint Project AFIRST, R. Armon (P.I.) and L.Schwartzbrod (P.I.).
18. 1997 – 2000, 120,000 NIS/year, ISF (Israel Academy of Sciences and Humanities). R. Armon (P.I.), I. Yahalom (P.I.), D. Starosvetzky (Co – P.I.), J. Starosvetzky (Co – P.I.).
19. 1996 – 1999, 100,000 \$, (BARD), G. Oron, (P.I.), Ch. Gerba (P.I.), R. Armon (Co – P.I.).
20. 1997 – 1998, 120,000 NIS/year, Water Commissioner Office, R. Armon (P.I.), D. Gold (Co – P.I.), G. Oron (Co – P.I.), R. Sheinman (Co – P.I.).
21. 1998 – 1999, 70,000 NIS, IDF (Israel Defense Forces), Medical Corp., R. Armon (P.I.).
22. 1998 – 2000, 150,000 NIS, IDF (Israel Defense Forces), Medical Corp., IDF, R. Armon (P.I.).
23. 2000 – 2002, 1,400,000 NIS, Ministry of Commerce and Industry, Start – up projects, A. Show (P.I.), A. Shrif (Co – P.I.) and R. Armon (Co – P.I.).
24. 1998 – 1999, 150,000 NIS/year, Water Commissioner Office, R. Armon (P.I.), D. Gold (Co – P.I.), G. Oron (Co – P.I.), R. Sheinman (Co – P.I.).
25. 1998 – 1999, 30,000 NIS, IDF (Israel Defense Forces), R. Armon (P.I.) and J. Starosvetzky (Co – P.I.).
26. 1999 – 2000, 15,000 \$, WRI (Grand Water Research Institute, Technion), R. Armon (P.I.).
27. 1999 – 2000, 50,000 NIS/year, IDF (Israel Defense Forces), Medical Corp., R. Armon (P.I.).
28. 2000 – 2001, 30,000 \$, WRI (Grand Water Research Institute, Technion), R. Armon (P.I.).
29. 2000 – 2001, 120,000 NIS, IDF (Israel Defense Forces), Medical Corp., IDF, R. Armon (P.I.).
30. 2000 – 2003, 90,000 \$, Tashtiot Project (Ministry of Science), R. Armon (P.I.).
31. 2006 – 2009, 132,000 NIS/year, ISF (Israel Academy of Sciences and Humanities), R. Armon (P.I.).
32. 2007 – 2009, 80,000 NIS/year, Mekorot Water Co., R. Armon (P.I.).
33. 2007 – 2010, 125,000 NIS, Ministry of Defense, R. Armon (P.I.) and Y. Ein – Eli (P.I.).
34. 2009, 36,000 \$, Gurwin Foundation, Technion, R. Armon (P.I.).
35. 2009, 160,000 NIS, Technion Funds for Security Research, Ein – Eli, Y and Armon R. (P.I.)

Significant Professional Projects (with other researchers)

- 1) 1992: Active participation in research on "Anti urease activity of plant extracts, a mean to eradicate *Helicobacter pylori* infection". (Directed by I. Neeman, and in association with M. Tabak and M.Sc. student Mrs. V. Poherelitz).
- 2) 1992 – 1993: Vegetable irrigation with treated secondary effluents, the microbiological aspect. (Directed by G. Shelef, and in collaboration with Y. Ezov, C. Dozoretz and A. Yoirish).
- 3) 1992 – 1993: Microbiological aspects of denitrification by USAB and Fluidized beds systems of drinking water. (Directed by M. Green).
- 4) 1993 – 1994: Entrapment of biomolecules in Sol – gel glass for microbiological use. (Directed by R. Armon with J. Starosvetzky, and collaboration with D. Avnir and O. Lev from Hebrew University, Jerusalem).
- 5) 1993 – 1994: Biofilm formation by autochthonous bacteria isolated from drinking water sources. (Directed by R. Armon and M. Green, with T. Arbel graduate student, M.Sc.).
- 6) 1993 – 1994: Antioxidant properties of *Deinococcus Radiodurans*. (Directed by I. Neeman, with E. Shimoni, M. Sc. student).
- 7) 1993 – 1994: *Erwinia carotovora* subsp. *carotovora* presence in effluents, its identification and risk assessment of plant infection with this phytopathogen. (Conducted by R. Armon with C. Dosoret (Migal), and D. Zohar (Mekorot Co.).

- 8) 1993: Presence of *Giardia lamblia* and *Cryptosporidium parvum* in water in Israel. (Conducted by R. Armon with D. Zohar (Mekorot Co.) and Z. Greenberg (Central Laboratories, Jerusalem, and Ministry of Health).
- 9) 1992 – 1994: Sulfate – reducing bacteria and biocorrosion, detection of biocorrosion by probes. (Conducted by R. Armon with J. Starosvetzky (New Immigrants Scientific Funds).
- 10) 1993: Giardia and Cryptosporidium survival in bovine manure. (Directed by R. Armon with G. Shelef).
- 11) 1993: *Erwinia carotovora* subsp. *carotovora* survival in soils and risk assessment of crop contamination by irrigation with effluents. (Directed by R. Armon with C. Dozorets, and I. Neeman).
- 12) 1994: Growth and physiological studies of *Aquaspirillum magnetotacticum* in water. (Directed by R. Armon with M. Green).
- 13) 1992 – 1994: Chlorination resistance of coliforms in drinking water. (Directed by R. Armon and R. Sheinman – District Health Laboratory, Ministry of Health, Haifa).
- 14) 1993: Reoccurrence of *Legionella pneumophila* in hospitals' hot water distribution system in Israel. (Directed by R. Armon with R. Sheinman and R. Yarom – District Health Laboratory, Ministry of Health, Haifa).
- 15) 1994: Inhibition of *Helicobacter pylori* by plant extracts. (Directed by I. Neeman and R. Armon with M. Tabak – Food Eng. & Biotechnology Faculty).
- 16) 1994: Biofilm characteristics and means to combat its formation. (Directed by M. Green and R. Armon with Tamar Arbel, M. Sc. Student).
- 17) 1994 – 1995: Adaptation/resistance of coliforms to chlorination. (Directed by R. Armon, I. Neeman and Y. Argaman with Farah Abushkara, M. Sc. student).
- 18) 1994 – 1995: Photocatalytic inactivation of microorganisms by TiO₂ in water and effluents. (Directed by R. Armon with N. Narkis and Natalia Laut, M.Sc. student).
- 19) 1996: Detection and isolation of *Giardia lamblia* and *Cryptosporidium parvum* in surface water in Israel. (Directed by R. Armon and G. Shelef with U. Zuckerman Ph.D. student).
- 20) 1999: Bulking phenomenon and practical solutions in wastewater industry. (R. Armon for Industry and Mekorot Water Co.).
- 21) 2000: Microbiological aspects of new Ahula wetland. Advisory staff of Ministry of Agriculture.

Publications

A. Theses:

M.Sc. – "concentration of Simian Rotavirus SA – 11 from tap water using positive filter as Zeta Plus [60 S]." 1981.

D.Sc. – "Viruses concentration from water using biological membranes." 1985.

B. Refereed papers in professional journals:

- 1) Guttman – Bass, N. and Armon, R. Concentration of Simian Rotavirus SA – 11 from tap water by membrane filtration and organic flocculation. Appl. and Environ. Microbiol. 45: 850 – 855, (1983).
- 2) Armon, R., Kott, Y. and Neeman, I. Ghost cells as a sorptive matrix for virus concentration from water. Appl. and Environ. Microbiol. 47: 1337 – 1340, (1984).
- 3) Armon, R., Kott, Y. and Neeman, I. Concentration of viruses using pig erythrocyte ghost cells. Water Sci. and Technol. 17: 71 – 80, (1985).
- 4) Guttman – Bass, N., Hostovsky, T., Luchten, M. and Armon, R. A comparison of current methods of Poliovirus concentration from tap water. Water Res. 19: 85 – 88, (1985).
- 5) Armon, R. and Payment, P. A modified mCP for enumeration of *Clostridium perfringens* from water. Can. J. Microbiol. 34: 78 – 79, (1988).
- 6) Armon, R. and Cabelli, V. J. Phage f2 desorption from clay (bentonite and kaolinite) using non – ionic detergents, beef extract and chaotropic agent. Can. J. Microbiol. 34: 1022 – 1024, (1988).
- 7) Armon, R., Arella, M. and Payment, P. A highly efficient second – step concentration technique for bacteriophages and enteric viruses using ammonium sulfate and Tween 80. Can. J. Microbiol. 34: 651 – 655, (1988).
- 8) Payment, P. and Armon, R. Virus removal by drinking water treatment processes. CRC Critical Reviews in Environmental Control 19: 15 – 31, (1989).

- 9) Armon, R., Neeman, I. and Kott, Y. Pig erythrocyte ghost cells used in enteric viruses concentration from experimentally contaminated clinical specimens. *J. Medical Virology* 29: 256 – 260, (1989).
- 10) Payment, P., Berube, A., Perreault, D., Armon, R. and Trudel, M. Concentration of *Giardia lamblia* cysts, *Legionella pneumophila*, *Clostridium perfringens*, human enteric viruses and coliphages from large volumes of drinking water using a single filtration. *Can. J. Microbiol.* 35: 932 – 935, (1989).
- 11) Armon, R. and Payment, P. A transparent medium for isolation of *Legionella pneumophila* from environmental sources. *J. Microbiol. Methods* 11: 65 – 71, (1990).
- 12) Armon, R., I. Potasman and M. Green. Biochemical fingerprints of *Legionellae spp.* by the BIOLOG system: presumptive identification of clinical and environmental isolates. *Letters in Applied Microbiology* 11: 290 – 292, (1990).
- 13) Armon, R. and Kott, Y. A simple, rapid, and sensitive Presence/Absence test for bacteriophages detection of aerobic/anaerobic bacteria in drinking water samples. *Journal of Applied Bacteriology* 74: 490 – 496, (1993).
- 14) Armon, R. Bacteriophage monitoring in drinking water: do they fulfil the index or indicator function? *Wat. Sci. Tech.* 27: 463 – 470, (1993).
- 15) Green, M., Tarre, S., Snizer, M., Bogdan, B., Armon, R., Shelef, G. Groundwater denitrification using an upflow sludge blanket reactor. *Water Res.* 28: 631 – 637, (1994).
- 16) Shimoni, E., Armon, R., and Y. Neeman. E. Antioxidant properties of Deferoxamine. *Journal of the American Oil Chemists Society* 71(6): 641 – 644, (1994).
- 17) Armon, R., C.G. Dosoretz, Y. Azov and G. Shelef. Residual contamination of crops irrigated with different effluent qualities: a field study. *Water Sci. Technol.* 30: 239 – 248, (1994)
- 18) Tarre, S., R. Armon, G. Shelef, and M. Green. Effects of water characteristics on granular sludge formation in a USB reactor for denitrification of drinking water. *Water Sci. & Technol.*, 30: 141 – 147, (1994).
- 19) Armon, R., J. Starosvetzky and M. Green. Denitrification by bacterial strains originating from upflow sludge blanket reactor (USBA) following entrapment in sol – gel glass. *Lett. Appl. Microbiol.* 20: 25 – 28, (1994).
- 20) Narkis, N., R. Armon, R. Offer, F. Orshansky and E. Friedland. Effect of Suspended Solids on Wastewater Disinfection Efficiency by Chlorine Dioxide. *Water Res.* 29: 227 – 236, (1995).
- 21) Armon, R. and Y. Kott. Distribution comparison between coliphages and phages of anaerobic bacteria (*Bacteroides fragilis*) in water sources and their reliability as fecal pollution indicators in drinking water. *Water Sci. & Technol.* 31: 215 – 222, (1995).
- 22) Armon, R., C.G. Dosoretz, A. Yoirish, G. Shelef and I. Neeman. Survival of the phytopathogen *Erwinia carotovora* subsp. *carotovora* in sterile and nonsterile soil, sand and their admixture. *J. Appl. Bacteriol.* 79: 513 – 518, (1995).
- 23) Dosoretz, C., R. Armon, J. Starosvetzky and N. Rothschild. Activity of parathion hydrolase and other enzymes entrapped in sol – gel glass. *J. Sol – Gel Sci. and Technol.* 7: 7 – 11, (1996).
- 24) Tabak, M., Armon, R., Pottesman, I. and I. Neeman. In vitro inhibition of *Helicobacter pylori* by extracts of thyme. *J. Appl. Bacteriol.* 80: 667 – 672, (1996).
- 25) Abu – Salah, K., G. Shelef, R. Armon and C.G. Dosoretz. Microbial degradation of aromatic and polyaromatic toxic compounds adsorbed on powdered activated carbon. *Journal of Biotechnology*, 51: 265 – 272 (1996).
- 26) Armon, R., C. Dosoretz, J. Starosvetzky, F. Orshansky & I. Saadi. Sol – gel applications in environmental biotechnology. *Journal of Biotechnology*, 51: 279 – 285, (1996).
- 27) Armon, R. and Y. Kott. Bacteriophages as pollution indicators. *Critical Reviews in Environmental Science and Technology*, CRC Press 26: 299 – 335, (1996).
- 28) Armon, R., T. Arbel, M. Green & J. Starosvetzky. Survival of *Legionella pneumophila* and *Salmonella typhimurium* in biofilm systems. *Water Sci. & Technol.* 35: 293 – 300, (1997).
- 29) Zuckerman, U., D. Gold, G. Shelef & R. Armon. The presence of *Giardia* and *Cryptosporidium* in surface waters and effluents in Israel. *Water Sci. & Technol.* 35: 11 – 12, (1997).

- 30) Armon, R., R. Araujo, Y. Kott, F. Lucena and J. Jofre. Bacteriophages of enteric bacteria in drinking water, comparison of their distribution in two countries. *Journal of Applied Microbiology*, 83:627 – 633, (1997).
- 31) Shimoni, E., R. Armon and I. Neeman. Antioxidant properties of lipid fractions from *Deinococcus radiophilus* strain UWO 1055. *Journal of Applied Microbiology*, 84: 461 – 465, (1998).
- 32) Armon, R., N. Laot, N. Narkis & I. Neeman. Photocatalytic inactivation of different bacteria and bacteriophages in drinking water at different TiO₂ concentration with or without exposure to O₂. *Journal of Advanced Oxidation*, 3: 145 – 150, (1998).
- 33) Abu – Shkara, F., I. Neeman, R. Sheinman and R. Armon. The Effect of fatty acid alteration in coliform bacteria on disinfection resistance and/or adaptation. *Water Sci. & Technol.* 38:133 – 139, (1998).
- 34) Armon, R., T. Arbel & M. Green. A quantitative and qualitative study of biofilm disinfection on glass, metal and PVC surfaces, by chlorine, bromine and bromochloro – 5,5 dimethylhydantoin (BCDMH). *Water Sci. & Technol.* 38: 175 – 179, (1998).
- 35) Starosvetsky, J., Armon, R., Groysman, A., Starosvetsky, D. Fouling of carbon steel heat exchanger caused by iron bacteria. *Journal of Materials Performance*, January: 55 – 61, (1999).
- 36) Zuckerman, U., Armon, R., Tzipori, S., Seder, R. and Gold, D. Evaluation of a Portable Differential Continuous Flow Centrifuge for Concentration of *Cryptosporidium* Oocysts and *Giardia* Cysts from Water. *Journal of Applied Microbiology* 86: 955 – 961, (1999).
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B1 – Submitted for Publication

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C. Papers in Professional Conferences:

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Books

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Chapters in Books

1. "The Health Dimension Of Groundwater Contamination" by R.Armon and Y.Kott in Groundwater Contamination and Control. Uri Zoller (Editor), Pub. Marcel Dekker Inc. (to be released at American Chemical Society National Meeting August 21 – 26, 1994 in Washington, DC, U.S.A.).
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3. "Indigenous soil microflora versus introduced microorganisms in subsurface bioremediation " by R.Armon and T. Arbel. In Soil and Aquifer Pollution (Rubin, H., Narkis, N. and Carberry, J., Eds.), Springer – Verlag, Hedelberg. (Released 1998).
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Patents

- a. "Method for virus concentration from fluids by biological membranes". Inventors: Neeman, I, Kott, Y, and Armon, R. 1989. Israel – Patent No.42013, England – Patent No. GB 2159537A, R. South Africa – Patent No. 853824.
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Research Reports

Semi – annual reports to E.P.A. – U.S.:

1. Development of monitoring data on microbial indicators in Narragansett Bay (1986).
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1. *B. fragilis* bacteriophages as fecal pollution indicator of drinking water in Israel (1991). For Israel Water Commissioner.
2. Presence comparison of bacteriophages of aerobic and anaerobic bacteria in drinking water, and their capability to use as domestic sewage pollution index (1991 – 92). For Israel Ministry of Science and Technology.
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4. Definition of agricultural crops which can be irrigated with Kishon Project effluents subject to treatment system, reservoirs, disinfection, retention time, and irrigation types. For Kishon Project, R.Armon, E. Zandbank, A.Yoirish, and G.Shelef (1992).
5. Distribution comparison between coliphages and phages of anaerobic bacteria (*Bacteroides fragilis*) in water sources, and their reliability as fecal pollution indicators in drinking water. For Ministry of Science, R. Armon & Y.Kott 1990 – 91.

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7. Distribution comparison between coliphages and phages of anaerobic bacteria *Bacteroides fragilis* in water sources, and their reliability as fecal pollution indicators in drinking water. For Ministry of Science, R. Armon & Y. Kott 1992 – 93.
8. Monitoring the Third line Project for enteric viruses by use of F – male specific phages. For Mekorot Water Co., R. Armon & Y. Kott 1993 – 1994.
9. Biofilm characteristics in water system and means to combat its formation. For Mekorot Water Co., M. Green & R. Armon, 1994.
10. Health Risk assessment of unrestricted irrigation of vegetables with Maaleh Hakishon effluents. For Mekorot Water Co., R. Armon, C. Dosoretz and G. Shelef, 1995.
11. Giardia and Cryptosporidium isolation and identification in surface water in Israel. For Mekorot Water Co., R. Armon, Y. Eren and U. Zuckerman, 1995.
12. Electrochemical approach to combat biofilms and prevent biofouling of metals. For ISF (Israel Academy of Sciences and Humanities) 1997 – 2000.
13. Cryptosporidium and Giardia risk assessment of vegetables irrigated with effluent. For Water Commissioner Office 1997 – 1998.
14. Microbiological study of cantines water quality of IDF soldiers. For Medical Corp., IDF 1998 – 1999.
15. Disinfection of water sources and soil by spores of *Bacillus subtilis* as a model of Bacillus anthracis contamination. For Medical Corp, IDF. 1998 – 2000.
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17. Biocorrosion assay of cooling liquids in cooling systems of armoured personal carriers. For IDF 1998 – 1999.
18. *Erwinia carotovora* subsp. *carotovora* in irrigation water and its environmental impact. For WRI, Technion, 1999 – 2000.
19. Bacteriological quality of infantry canteens. For IDF Medical Corp., 1999 – 2000.
20. Treatment of well biofouling with bacteriophages and disinfectants. For WRI, Technion, 2000 – 2001.
21. *B. subtilis* inactivation by TiO₂ photocatalysis in water, soil and surfaces as a model in biological warfare. For IDF Medical Corp, 2000 – 2001.
22. Enzymes entrapped in Sol – gel for pollutants catalysis. For Tashtiot Project (Ministry of Science)). 2000 – 2003.
23. Interaction of a silicate bacterium with sol – gel matrices. For ISF (Israel Academy of Sciences and Humanities) 2006 – 2008.
24. Bacterial regrowth as a sensor for various treatments at filtration plant. For Mekorot Water Co. 2007 – 2008.
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Other publications

1. Les Chimères. Max Arella and Robert Armon. 1988. Dires 6: 99 – 107. (In French).
2. Presence of corrosion bacteria in sea water and their impact on several technological systems linked to Israel industry. Starosvetzky, J. and Armon, R. Synthesis 17: 27 – 30, 1997 (In Hebrew)
3. Utilization of treated wastewater for irrigation of Arad Valley area. Oron, G., Klein, Y., Campos, C., Gilerman, L., Bruner, M., Shtrim, M., Mandelbaum, R., Armon, R. and Manor, Y. Water and Irrigation 378: 27 – 36, 1998 (In Hebrew).

Conferences

Bold – Presenter

Italics – students

- 1) IAWPR's 12th Biennial International Conference of Water Pollution, Amsterdam, 17 – 20 September 1984. Lecture on "Concentration of viruses from water using pig erythrocyte ghost cells". **Armon, R.**, Neeman, Y., Kott, Y. (Oral Presentation)
- 2) Narragansett Bay Project Meeting, E.P.A. – U.S., Kingston, Rhode Island, U.S.A., 1986. Lecture on "Development of monitoring data on microbial indicators in Narragansett Bay ". **Cabelli, V.**, Armon, R., Duncanson, R. (Oral Presentation)
- 3) Narragansett Bay Project Meeting, E.P.A. – U.S., Kingston, Rhode Island, U.S.A., 1986. Lecture on "Evaluation of shellfish growing area classification practices in Narragansett Bay ". **Armon, R.**, Cabelli, V., Duncanson, R. (Oral Presentation)

- 4) American Society for Microbiology, Annual Meeting, Miami, Florida, U.S.A., 1988. "A highly efficient method using Tween 80 and ammonium sulfate for concentration of bacteriophages and enteric viruses from water". Abstract Q – 26, p.287. **Payment, P.**, Armon, R., Arella, M. (Oral Presentation)
- 5) The 4th International Conference on Environmental Quality and Ecosystem Stability, Jerusalem, Israel, June 4 – 8, 1989. Lecture on "A superior technique for bacteriophage concentration from water, used in microbial monitoring of drinking water". **Armon, R.**, Payment, P. (Oral Presentation)
- 6) International Symposium on Health – related Water Microbiology, Specialist group on health – related water microbiology (IAWPRC). Tübingen, Germany, 1 – 6 of April 1990. Participation at various workshops.
- 7) International Workshop on "Virology for the water supply in the nineties ", organized by KIWA and RIVM, held in Utrecht, Holland, 4 – 5 of April 1991. Participation and oral contribution to the main workshop.
- 8) Israel Ecological Society, Annual meeting at Beit – Hatphutzot, Tel – Aviv. Lecture on "Bacteroides fragilis bacteriophages as indicator of drinking water contamination with viruses". June 6th, 1991 **Armon, R.** Jofre, J. (Oral Presentation)
- 9) International Symposium on Wastewater Reclamation and Reuse (IAWPRC). Castell Platja d'Aro, Gerona, Spain, 24 – 26 September 1991. Participation and oral contribution to the main workshop
- 10) The Israeli Microbiology Society Annual Meeting, February 10 – 11, 1992 Ben – Gurion University. Symposium on Microbiology of Water supply systems. Lecture on "Bacteriophages in water supply system in Israel – The actual status". **Armon, R.** (Oral Presentation)
- 11) Health – Related Water Microbiology Symposium, Washington DC, 1992, May 24 – 30. Lecture on " Bacteriophage monitoring in drinking water: Do they fulfil the index or indicator function?" **Armon, R.**, Kott, Y. (Oral Presentation)
- 12) The Fifth International Conference on Environmental Quality and Ecosystem Stability, Jerusalem, Israel, June 21 – 26, 1992. Lecture on "Bacteriophages as fecal pollution indicators". **Armon, R.** Kott, Y. (Oral Presentation)
- 13) 6th International Symposium on Microbial Ecology, September 6 – 11, 1992, Barcelona, Spain, "Coliforms survivors of water disinfection process: what they really mean?" Armon, R. (Poster Presentation)
- 14) Annual meeting of Israeli Microbiological Society, Tel – Aviv University, Feb. 1 – 2,
- 15) 1993. "Coliforms survivors of water disinfection process: what they really mean?" **Armon, R.** (Oral Presentation)
- 16) The 4th International Symposium on "Contamination of the Environment by Viruses and Methods of Control ", Vienna, September 3 – 4, 1993. Lecture on "Two years bacteriophage survey in drinking water in Israel (1992 – 1993)". **Armon, R.** (Oral Presentation)
- 17) Annual Meeting of the Israel Microbiology Society, February 14 – 15, 1994, Weizmann Institute, Rehovot, Lecture on "Soil Survival Behavior of the Phytopathogenic Enterobacteria *Erwinia carotovora* subsp. *carotovora*". **Armon, R.** (Oral Presentation)
- 18) The Health – Related Water Microbiology Symposium, Budapest 24 – 30 July 1994. – "Distribution comparison between coliphages and phages of anaerobic bacteria (*Bacteroides fragilis*) in water sources and their reliability as fecal pollution indicators in drinking water" **Armon, R.**, Jofre, J. (Oral Presentation)
 - a) "Reoccurrence of *Legionella pneumophila* in hospitals' hot water distribution system in Israel." Armon, R., Sheinman, R., Rom, Y. (Poster Presentation)
 - b) "Residual Contamination of Crops Irrigated with Different Effluent Qualities: A Field Study." Armon, R., Dosoretz, C., Shelef, G. (Poster Presentation)
- 19) International Meeting on Protozoan Parasites in Water, Meeting held at University of York, 26 to 28 of September 1994. *Giardia lamblia* and *Cryptosporidium parvum* in surface waters of Israel; and their clinical prevalence for the period 1923 – 1991. R. Armon, Z. Greenberg and G. Shelef. (Oral Presentation)
- 20) Workshop on: "Sol – gel in Israel " Organized by The Organic Chemistry Dept., The Hebrew University of Jerusalem, Jerusalem 16 of May, 1995. " Denitrification by a bacterial mixture entrapped into sol – gel".R. Armon, J.Starosvetzky and M.Green. (Oral Presentation)
- 21) The National Meeting of The Israel Society of Ecology and Environmental Quality Sciences, Haifa 3 – 4 July. 1995 "Presence of pathogenic protozoan in water". Armon, R. (Oral Presentation)
- 22) International Conference Workshop: Biofilm structure, growth and dynamics (needs for new concepts), Noordwijkerhout, The Netherlands, 30 August – 1 September 1995. "New approaches in biofilms investigation: Sol – gel matrix (SGM) a new prospect in surface modulation by

- biomolecules entrapment without denaturation, and generation of thin films for biofilm adhesion and growth follow – up". Armon, R., Saadi, I., Starosvetsky, J. (Oral Presentation)
- 23) Workshop on Environmental Biotechnology. Food Engineering and Biotechnology Faculty, Technion, 28 November 1995: Sol – gel applications in environmental biotechnology. Armon, R., Saadi, I., Starosvetsky, J. (Oral Presentation)
- 24) International Workshop On Sewerage Wastewater Treatment And Reclamation For Agriculture, Irrigation And Alternative Uses, Netanya, February 26 – March 7, 1996. Organized by Ministry of Foreign Affairs and Ministry of Agriculture and Rural Development for participants from Arab Countries. Lectures on Wastewater Microbiology and Public Health Aspects. Armon, R. (Invited Lecture)
- 25) International Association of Water Quality (IAWQ) – Health – Related Water Microbiology Conference, Palma de Majorca, 6 – 10 October 1996: – " Photocatalytic inactivation of *E. coli* CN13, *D. radiophilus*, bacteriophage MS2 and a naturally occurring bacteriophage infecting *B. fragilis* HSP40 strain, in drinking water." Laot, N., Narkis, N., Armon, R. (Oral Presentation)
- a) " Sol – gel matrix (SGM) a new prospect in detection and identification of bacteria in water and in biofilms." Armon, R, Saadi, I, Starosvetsky, J. (Poster Presentation)
- b) " Survival of *Legionella pneumophila* and *Salmonella typhimurium* in biofilm systems. " Armon, R., Starosvetsky, J., Arbel, T., Green, M. (Poster Presentation)
- c) " The presence of *Giardia* and *Cryptosporidium* in surface waters and effluents in Israel." Gold, D., Zuckermann, U., **Armon, R.** (oral presentation)
- d) "Comparison of Survival of F Male – Specific Bacteriophages and Three Bacterial Indicators during Wastewater Chlorination and Transport in Estuarine Waters." Armon, R, Cabelli, V., (Poster Presentation)
- 26) 10th International Biodeterioration and Biodegradation Symposium, September 15 – 18, 1996, Hamburg University, Germany. "Mechanism of Iron And Steel Corrosion Induced By Sulfate – Reducing Bacteria" **Starosvetsky, D.**, Starosvetsky, J, Yahalom, J. Armon, R. (Oral Presentation)
- 27) 3rd International IAWQ Special Conference on Biofilm Systems, Copenhagen 28 – 30, August 1996. "A Quantitative And Qualitative (SEM) Study Of Biofilm Disinfection On Glass, Metal And PVC Surfaces, By Chlorine, Bromine And Bromochloro – 5,5 Dimethylhydantoin (BCDMH)". **Armon, R** and *Arbel, T.* (Poster Presentation)
- 28) International Workshop on: Soil and Aquifer Pollution (Non – aqueous – phase liquids – contamination and reclamation) (Sponsored by Water Research Institute) Technion, Israel Institute of Technology, Haifa, May 13 – 15, 1996. "Indigenous soil microflora versus introduced microorganisms in subsurface bioremediation". **Armon, R.**, *Arbel, T.* (Oral Presentation)
- 29) The 2nd Conference of the Corrosion Forum – NACE Israel, Tel – Aviv, June 17 – 18, 1996.
- a) "Iron and steel corrosion by sulfate reducing bacteria",
- b) "Mechanism of copper corrosion induced by sulfate reducing bacteria". **Starosvetsky, J.**, Starosvetsky, D., Armon, R. (Oral Presentation)
- 30) The Third International Conference on Advanced Oxidation Technologies for water and air Remediation. Regal Cincinnati Hotel, Cincinnati, Ohio, USA, October 26 – 29, 1996. Photocatalytic Inactivation of Different Bacteria and Bacteriophages in Drinking Water at Different TiO₂ Concentration with Or Without Exposure to O₂. *Laot, N.*, Narkis, N., **Armon, R.** (Oral Presentation)
- 31) International Symposium on waterborne *Cryptosporidium*, Newport Beach, California, March 2 – 5, 1997. "Microbial degradation of *Cryptosporidium parvum* by *Serratia marcescens* with high – chitinolytic enzyme activity". Armon, R., Gold, D., *Zuckermann, U.* (Poster Presentation)
- 32) The Eight Materials Engineering Conference (IMEC). Ben – Gurion University, Beer – Sheva, 16 to 17 of April 1997. Lecture on: "The mechanism of cathodic depolarization of steel, copper and copper alloys in SRB media". **Starosvetsky, J.**, J Yahalom, D Starosvetsky, R Armon. (Oral Presentation)
- 33) Israel Society for Ecology and Environmental Quality Sciences, Annual Meeting 16 – 17 June 1997, Haifa University.
- a) "Coliforms fatty acids composition and their role in disinfection resistance" *Abu – Skara, F.*, **Armon, R.** (Oral Presentation)
- b) "Microbial aspects in foam production of activated sludge". Armon, R, Galil, N., *Smulevitz, S.* (Poster Presentation)
- 34) Technical Advisory Committee Meeting (Semiannual), The Center for Biofilm Engineering, Montana State University, Bozeman, 16 – 19 June 1997. Invited lecture: Biocorrosion of metals in SRB medium. **Starosvetsky, J.** Starosvetsky, D., Armon, R. (Oral Presentation)

- 35) The Fourth International Conference on Advanced Oxidation Technologies for Water and Air Remediation. Radisson Twin Towers Hotel, Orlando, Florida, USA, September 23 – 26, 1997. TiO₂ Photocatalytic inactivation of selected microorganisms under various conditions: sunlight, intermittent and variable irradiation intensity, CdS supplementation and entrapment of TiO₂ into sol – gel. **Armon, R.**, Narkis, N., *Laot, N.* (Oral Presentation)
- 36) Umbrella Meeting University of Aachen and Technion on Biotechnology. Aachen, November 9 – 15, 1997. "Enzymes and organic molecules entrapment in sol – gel and possible future applications". **Armon, R.**, Zolkov, Ch, Starosvetsky, J. *Saadi, I.* (Oral Presentation)
- 37) AFIRST – Workshop, Avignon, France, November 23 – 25, 1997. "Bacteriophages ecology in sewage and their indicative relation to sewage pollution of drinking water sources". **Armon, R. Gino, E.** (Oral Presentation)
- 38) Annual Meeting of Israeli Society for Microbiology, 9 – 10 of February, 1998, Tel – Aviv University. Bacteriophages ecology in sewage and their indicative relation to sewage pollution of drinking water. **Armon, R. Gino, E.** (Oral Presentation)
- 39) The 3rd Conference of the Corrosion Forum – NACE Israel, 6 – 7 May 1998, Dan Accadia Hotel, Hertzelia.
- a. "Pitting corrosion of carbon steel induced by iron bacteria" **Starosvetsky, D.**, Yahalom, I, Starosvetsky, J, Armon, R. (Oral Presentation)
 - b. "Role of hydrogen sulfides, chlorides and iron sulfides in iron and steel corrosion induced by sulfate reducing bacteria" Starosvetsky, D, Yahalom, I, **Starosvetsky, J.**, Armon, R. (Oral Presentation)
- 40) Workshop on "Sol – gel in Israel II ".1998. Jerusalem, June 3rd, Beit – Belgia, Hebrew University of Jerusalem. Sol – gel matrix (SGM) a new prospect in detection and identification of bacteria in water and in biofilms. **R. Armon, J. Starosvetsky** and *I. Saad.* (Oral Presentation)
- 41) IAWQ 19th Biennial International conference, 21 – 26 June – Vancouver, 1998, Canada. – The Effect Of Fatty Acid Alteration In Coliform Bacteria On Disinfection Resistance and/or Adaptation. *Abu – Shkara, F.*, I. Neeman, R. Sheinman and **R. Armon** (Oral Presentation)
- a)"A Quantitative And Qualitative Study Of Biofilm Disinfection On Glass, Metal And PVC Surfaces, By Chlorine, Bromine And Bromochloro – 5,5 Dimethylhydantoin (BCDMH)". Robert Armon, *Tamar Arbel & Michal Green* (Poster Presentation)
 - b)"Adsorption of *Flavobacterium* sp. and *P. fluorescens* P17 on different metals: electrochemical polarization effect" Starosvetsky J., Starosvetsky D., *Danziger M.* and Armon R. (Poster Presentation)
 - c) "Enzymatic Degradation Of *Cryptosporidium Parvum* Oocyst Walls" *U. Zuckerman*, D. Gold, A. Yuditsky and R. Armon. (Poster Presentation)
- 42) OECD Workshop on "Molecular Technologies for safe drinking water". Hosted by EAWAG, Interlaken, 5 – 8 July, 1998, Switzerland. (Member of the Steering Committee). Armon, R (invited to Steering Committee).
- 43) 8th International Symposium on Microbial Ecology, Halifax, Nova Scotia, Canada, August 9 – 11, 1998. Biodegradation of BTE by two bacterial groups isolated from different soils. **T. Arbel**, N. Narkis and R. Armon. (Poster Presentation)
- 44) Workshop "Corrosion Monitoring and Control in Industry". Corrosion Forum – NACE Israel. College Ort Braude, Carmiel, 4 of December 1998. Lecture on: "Biocorrosion: identification and prevention" **Styarosvetsky, J.** and Armon, R.
- 45) The Annual Meeting of Israeli Society for Microbiology, February 28 – March 3, 1999. Weizmann Institute of Science, Rehovot, Israel.
- a) "Survival capability of E.coli O157:H7 on parsley and lettuce leaves" *M. Dekel*, R.Armon and Y. Kott. (Poster Presentation)
 - b) "A portable continuous flow centrifuge for concentration of *Cryptosporidium* and *Giardia* from water" **U. Zuckerman**, R. Armon, S. Tzipori and D. Gold. (Oral Presentation)
 - c) "Chitin, a structural component of *Cryptosporidium* oocysts walls" *U. Zuckerman*, R. Armon, A. Yuditsky and D. Gold. (Poster Presentation)
- 46) International Conference on: Minimizing the risk from *Cryptosporidium* and other Waterborne particles. Paris, France April 19 – 23, 1999. Evaluation of a portable differential continuous flow – centrifuge for concentration of *Cryptosporidium* oocysts and *Giardia* cysts from water. *U. Zuckerman*, R. Armon, S. Tzipori & D. Gold. (Poster Presentation)
- 47) The 7th International Conference of the Israel Society for Ecology and Environmental Quality Sciences on Environmental Challenges for the Next Millennium, Jerusalem, Israel, June 13 – 18, 1999.
- a)"Controlling biofilm formation by hydrogen peroxide and silver combined disinfectant" *N. Laot*, R. Armon, O. Lev, H. Shuval & B. Fattal (Poster Presentation)

- b) "Aerobic biodegradation of benzene, toluene and ethylbenzene in liquid medium by a bacterial consortium, isolated from non – history clay soil, and their interrelation effect" *T. Arbel*, N. Narkis, H. Rubin & **R. Armon**. (Oral Presentation)
- 48) 11th International Biodeterioration & Biodegradation Symposium, Crystal Gateway Marriott, Arlington, Virginia, USA August 2 – 6, 1999. **D. Starosvetsky**, J. Yahalom, J. Starosvetsky, and R. Armon. Pitting corrosion of carbon steel induced by iron bacteria. (Oral Presentation)
- 49) 51st AWWA Conference, September 21 – 24th, 1999 Ocean City, Maryland, USA. "Inactivation of bacteria in TiO₂ – UV fluidized bed reactor" **Bilanovic, D.**, Narkis, N. and Armon, R. (Oral Presentation)
- 50) 10th International Workshop on Glasses and Ceramics Hybrids and Nanocomposites from Gels, Sol – Gel '99, Yokohama, Japan, September 19 – 24, 1999.
- a) "Humic Substances Entrapped In Sol – Gel Matrix: A New Tool For Sorption Studies" **C. Zolkov**, Y. Laor & R. Armon. (Oral Presentation)
- b) "Sol – gel as reaction matrix for bacterial enzymatic activity" R. Armon, J. Starosvetsky & *I. Saad*. (Poster Presentation)
- 51) Workshop "Analysis and prevention of corrosion failures in industry". Corrosion Forum – NACE Israel. College Ort Braude, Carmiel, 22 of March 1999. Lecture on: "Involvement of microorganisms in corrosion processes" (Oral Presentation) **Starosvetsky, J.** and Armon, R.
- 52) 1st World Water Congress of the International Water Association (IWA). Paris, France, 3 – 7 July 2000.
- a) "Bacteriophages Ecology In A Small Settlement Sewer System In Northern Part Of Israel As Related To Their indicative role in sewage pollution of drinking water" Robert Armon & **Efrat Marcu – Gino**. (Oral Presentation)
- b) "Secondary wastewater for crop irrigation with minimal risks" **G. Oron**, R. Armon, R. Mandelbaum, Y. Manor, C. Campos, L. Gillerman, M. Salgot, C. Gerba, I. Klein, C. Enriquez. (Oral Presentation)
- 53) Water Quality Assessment & Enhancement, Tel – Hai Academic College, BSF, 12 – 14 March, 2000. Isolation, identification of the waterborne protozoan parasites *Cryptosporidium* spp. and *Giardia* spp. in Israel and their interaction with bacteria. **Armon, R.**, *Zuckerman, U.* and Gold, D. (Oral Presentation)
- 54) European Geophysical Society, 25th General Assembly. April 25 – 29, Nice, France. Immobilizing humic acids in a sol – gel matrix to study the interactions of PAHs with humic substances. R. Armon, *Ch. Zolkov*, and **Y. Laor**. Oral presentation. Geophysical Research Abstract, Vol 2, 2000.
- 55) 5th International Conference on TiO₂ Photocatalytic Purification and Treatment of Water and Air (TiO₂ – 5th) and the 6th International Conference on Advanced Oxidation Technologies for Water and Air Remediation (AOTs – 6th), London, Ontario, Canada, June 26 – 30, 2000. Inactivation of selected microorganisms in water by TiO₂ photocatalysis in a fluidized bed reactor. Oral presentation. *Vered Cohen – Yaniv* & **Robert Armon**.
- 56) Workshop "Corrosion Problems and Their Solutions in Industry", Association of Israel Engineers and BAZAN, Ltd., Haifa, 29 of February 2000. Lecture on: "Bacterial activity as a factor responsible for pollution and corrosion in chemical industry". **Starosvetsky, J.** and Armon, R.
- 57) The 4th Conference of the Corrosion Forum, NACE Israel, 17 to 18 of May, 2000. Lectures on:
- a) "Carbon steel corrosion induced by iron bacteria"
- b) "Effect of electrochemical potential on adsorption of biofilm – forming microorganisms to different metals",
- a) "Investigation of biofouling on metals by specially designed electrochemical set – up", Starosvetsky, J., **D. Starosvetsky**, R Armon, J. Yahalom, *et al.*
- 58) American–Israeli Paper Plants, Ltd., Hadera, 20 of June 2000. Invited lecture on: "Corrosion failure problems associated with microorganisms activity in technological media". **Starosvetsky, J.** and Armon, R.
- 59) Isolation, Identification of the Waterborne Protozoan Parasites *Cryptosporidium* Spp. and *Giardia* Spp. and their Presence on Restricted and Unrestricted Irrigated Vegetables in Israel. **R. Armon**, G. Oron, D. Gold, R. Sheinman, *U. Zuckerman*. ATS Conference on "Preserving the Water Resources Quality", Vienna, Austria, 23 – 25 April, 2001. (Oral Presentation)
- 60) International Conference on Biofouling and Materials, Dechema, 10 – 13 June 2001, Frankfurt am Main, Germany. Electrochemical approach to biofilms problem and prevention of metal biofouling. *N., Laot, J.* Starosvetsky, **D. Starosvetsky** and R. Armon. (oral Presentation)
- 61) 11th International Workshop on Glasses, Ceramics, Hybrids and Nanocomposites from Gels. University of Padova, Padova, Italy, September 16 – 21, 2001, Abano Terme. Immobilizing humic acids in a sol – gel matrix to study the interactions of polycyclic aromatic hydrocarbons (PAHs) with humic substances. R. Armon*, **Ch. Zolkov** and Y. Laor. (Oral Presentation)

- 62) The European Corrosion Congress, European Federation of Corrosion, Riva del Garda, Lake Garda, Italy, September 30 – October 4, 2001. Mic Of Aluminium Alloy Floating Roofs For Storage Tanks During Hydro – Test. J.Starosvetsky*, R. Armon, A. Groysman & D. Starosvetsky. (Poster Presentation)
- 63) IWA 2nd World Water Congress, Berlin, Germany, 15 – 19 October 2001. a)"Surface and subsurface irrigation with effluents of different qualities and presence of *Cryptosporidium* oocysts in soil and on crops" **R. Armon***, D. Gold, M. Brodsky and G. Oron. (Oral Presentation)b)"A two phase separation method for recovery of *Cryptosporidium parvum* oocysts from soil samples" Armon, R.* and *Zilberman, A.* (Poster Presentation)c) "Inactivation Of Selected Microorganisms In Water By Tio₂ Photocatalysis In A Combined CSTR Fluidized Bed Reactor" R. Armon* and *V. Cohen – Yaniv.* (Poster Presentation)
- 64) Workshop “Advanced Materials and Technologies for Corrosion Control”. Corrosion Forum – NACE Israel, Association of Israel Engineers and BAZAN, Ltd., College Ort Braude, Carmiel, 28 of February 2001. Lecture on: “Microbiologically influencing corrosion (MIC): Past, Present, Future”. **Starosvetsky, J.**, Starosvetsky, D. and Armon, R. (Oral Presentation)
- 65) Proceedings Of The Int. Humic Substances Soc. 20th Anniversary Conference, Boston, USA. Pp. 149 – 151. 2002. Non – linear binding of PAH – s to dissolved humic – acid: evidence from three different methods, **Y. Laor**, M. Rebhun, S. *Meir*, R. Armon and *Ch. Zolkov.* (Oral Presentation)
- 66) IWA – AWWA International Symposium on Waterborne Pathogens , September 22 – 25, 2002 Cascais, Portugal.
- a) Invited lecture: Future policy on microbiological monitoring and water supply. **Armon, R. & Show, A.**
- 67) b)"Disinfection Of *Bacillus* Spp. Spores In Drinking Water, By TiO₂ Photocatalysis As A Model For *Bacillus Anthracis*" **R. Armon** , *G. Weltch – Cohen* & P. Bettane.
- 68) International Union of Microbiological Societies, IUMS, The World of Microorganisms, Paris, July 27 – August 1st, 2002 France. *Sphaerotilus natans* Bacteriophages Used In A Combined Biological – Chemical Treatment For Biofilm Removal In Clogged Wells. **Gino, E.** and Armon, R. (Oral Presentation)
- 69) Antioxidants: Benefits and Risks 25th – 28th September 2002, Churchill College, Cambridge, UK, "The effect of Palmitoyl ascorbate on *Helicobacter pylori* and other bacterial strains survival" Neeman, I., Tabak, M., Rosenblat, G. and Armon, R. (Poster Presentation)
- 70) **Laor, Y.**, Rebhun, M., *Meir, S.*, Armon, R., *Zolkov, Ch.* (2002). “Non – Linear Binding of PAHs to Dissolved Humic – Acid: Evidence from Three Different Methods”. *Proceedings of the 20th Anniversary Conference of the International Humic Substances Society, Boston, USA.* pp. 149 – 151
- 71) The 5th Biannual Conference of the Corrosion Forum NACE Israel, Tel – Aviv, 29 to 30 of May 2002. Lecture on: “Corrosion of aluminum parts used in diesel engine cooling systems” **Starosvetsky, J.**, R. Armon, M Ratzker, S Levitsky, E Tuval.
- 72) Workshop “Case histories of corrosion failure in industry, building and water systems”. Corrosion Forum – NACE Israel, Association of Israel Engineers and BAZAN, Ltd., College Ort Braude, Carmiel, 13 of March 2002. Lecture on: ”Biorrosion and biofouling process and their control in industry”. **Starosvetsky, J.**, Starosvetsky, D. and Armon, R.
- 73) **Zolkov, Ch.**, Armon, R., Laor, Y. “Immobilizing Humic Acids in a sol – gel matrix to study the interaction of Polycyclic Aromatic Hydrocabons with Humic substances”. Prof. Alberto Waks Memorial Workshop on Novel Studies in Environmental Research, Faculty of Civil Eng., Technion. Jan. 11, 2000 (oral presentation).
- 74) Armon, R., *Zolkov, Ch.*, Laor, Y. “Immobilizing humic acids in a sol – gel matrix to study the interactions of polycyclic aromatic hydrocarbons (PAHs) with humic substances”. 11th International Workshop on Glasses, Ceramics, Hybrids and Nanocomposites from Gels. September 16 – 21, 2001. Abano Terme, Italy (Poster).
- 75) **Zolkov, Ch.**, Armon, R., Avnir, D. “Sol – gels films substrates for tissue – cell culture growth”. 11th International Workshop on sol – gel science and technology. August 24 – 29, 2003. Sydney, Australia (Oral presentation).
- 76) **Zolkov, Ch.**, Avnir, D., Armon, R. “Hybrid sol – gel films for tissue – derived cell growth”. Euromat 2003. September 1 – 5, 2003. Lausanne, Switzerland (Oral presentation).
- 77) Biodegradability of effluent – DOM monitored by fluorescence excitation – emission matrices. 10th Int. Symposium on Microbial Ecology ISME – 10, August 22 – 27, Cancun, Mexico. (2004).p. 324, *Saadi, I.*, Borisover, M., Armon, Y., and **Y. Laor** (Oral Presentation)
- 78) Biodegradability of effluent – DOM monitored by fluorescence excitation – emission matrices. Annual meeting of the Israeli Society for Ecology and Environmental Quality Sciences (ISEEQS) (2004). *Saadi, I.*, **Laor, Y.**, Borisover, M., and R. Armon (Oral Presentation)

- 79) Water Micro – 05' IWA, HRWM, Swansea, UK, 4 – 9 September, 2005.
- a) *Khashiboun, K., Zilberman, A., Shaviv, A., Starosvetsky, J. and Armon, R.* The fate of *Cryptosporidium parvum* oocysts in reclaimed water irrigation – history and non – history soils irrigated with various effluent qualities using a new isolation method of oocysts from soil samples. (Oral Presentation)
 - b) *Zuckerman, U., Hart, I & R Armon, Field evaluation of Colilert 3000 for ground, raw and treated surface water and comparison with standard membrane filtration method.* (Poster Presentation)
- 80) Minutes of Workshop for the Joint – Dutch – Israeli Agricultural Science and Technology Program. Biofouling in drip irrigation systems, 12 – 13 September 2005, WICC, Wageningen, the Netherlands. **R. Armon, E. Gino** and J. Starosvetsky (Oral Presentation) Prevention and rehabilitation of clogged wells by chemical and biological treatments.
- 81) International Workshop: Microorganisms – Water and Aquifers”, September 20 – 21, 2005, Ben – Gurion University of the Negev, Zuckerberg Institute for Water Research, Beer – Sheva, Israel. *Gino, E., Starosvetsky, J. & Armon, R.* Wells clogging prevention by combined physicochemical and biological treatment. (Oral Presentation)
- 82) Monitoring of effluent DOM biodegradation using fluorescence, UV and DOC measurements. Annual meeting of the Israeli Society for Ecology and Environmental Quality Sciences (ISEEQS) (2005). *Saadi, I., Laor, Y., Borisover, M., and R. Armon* (Oral Presentation)
- 83) Materials 2007: Global Materials For The Xxi Century: Challenges To Academia And Industry, Porto 1 – 4 April, (2007).
- a) "Sol – gel materials: 'Smart Petri dish' for tailored tissue growth" *Chen Zolkov, David Avnir and Robert Armon* (Oral Presentation)
 - b) "TiO₂ photocatalytic oxidation of microorganisms through novel electrochemical approach" *N. Baram, D. Starosvetsky, J. Starosvetsky, M. Epshtein, R. Armon and Y. Ein – Eli* (Oral presentation)
 - c) "Prospect of biomolecules surface concentration by electrophoretic applications of sol – gel matrix in solid and liquid states" *J. Starosvetsky, E. Starosvetsky and R. Armon* (Poster)
- 84) 15th International Society of Environmental Bioindicators, 2007, Hong – Kong, June 6 – 9. *Gino, E., Starosvetsky, J. and Armon, R.* Small community sewer and its bacteriophage ecology as potential bioindicators" (Oral presentation)
- 85) "Watermicro 2007" Symposium of HRWM Specialist Group, September 9 – 15, Tokyo, Japan (Invited Chair Person). *Gavrieli, B. and Armon, R.* "The quality of drinking water stored in canteens of field soldiers as a probable source of enteric diseases" (Oral presentation).
- 86) American Society of Agricultural and Biological Engineers, Annual International Meeting 2008, June 29 – July 2, Providence, Rhode Island, USA. Treatment of livestock odor and pathogens with ultraviolet light. *Xiuyan Yang, Jacek A. Koziel, Tim Cutler, Shicheng Zhang, Jeffrey Zimmerman, Steven J. Hoff, William Jenks, J (Hans) van Leeuwen, Jay Harmon, Carol Faulhaber, Yael Laor, Uzi Ravid, Robert Armon* (Oral Presentation).
- 87) The First Israeli Conference on Biofilms in Water and Food Industry. Grant Water Research Institute, Technion, May 15th, Haifa. "Use of specific bacteriophages to prevent bacterial biofilm formation: a potential disinfectant that amplifies itself" *Gino, E., Goldman, G., Starosvetsky, J. & Armon, R.*
- 88) IWA World Water Congress and Exhibition, 7–12 September 2008, Austria Center, Vienna. "Photocatalytic inactivation of *Flavobacterium* and *E. coli* in water by a continuous stirred tank reactor (CSTR) fed with suspended/immobilized TiO₂ medium" *Vered Cohen – Yaniv, Nava Narkis and Robert Armon.* (Long presentation) Oxidation in water treatment 2 Chair **Robert Armon** Israel.
- 89) *The 3rd IWA Odour and VOCs Conference*, Barcelona, Spain, October 2008. Treatment of livestock odor and pathogens with ultraviolet photocatalysis. *Koziel, J.A, X. Yang, S. Zhang, L. Cai, S. J. Hoff, H. J. Leeuwen, T. Cutler, J. Zimmerman, W. S. Jenks, Y. Laor, U. Ravid, R. Armon.* 2008.
- 90) *ASABE Annual International Meeting*. Providence, RI, June, 2008. Treatment of livestock odor and pathogens with ultraviolet light. *Yang, X., J.A. Koziel, T. Cutler, S. Zhang, J. Zimmerman, S.J. Hoff, W. Jenks, J (Hans) van Leeuwen, J. Harmon, C. Faulhaber, Y. Laor, U. Ravid, R. Armon.* 2008 ASABE Paper # 085198.
- 91) *Mitigating Air Emissions from Animal Feeding Operations Conference*. Des Moines, IA, May, 2008. Mitigation of odor and pathogens from CAFAs with UV/TiO₂: exploring cost effectiveness. *Koziel, J.A., X. Yang, T. Cutler, S. Zhang, J. Zimmerman, S. J. Hoff, W. Jenks, Y. Laor, U. Ravid, R. Armon, J.H. van Leeuwen.* 2008.

- 92) *AgEng 2008 International Conference on Agricultural Engineering and Industry Exhibition*, Treatment of livestock odor and pathogens with ultraviolet photocatalysis. Hersonissos, Greece, June, 2008. Koziel, J.A., X. Yang, T. Cutler, S. Zhang, J. Zimmerman, S. Hoff, W.S. Jenks, J.H. van Leeuwen, **Y. Laor, U. Ravid, R. Armon**. 2008. Abstract OP – 575 in the proceedings.
- 93) International Society of Environmental Bioindicators (ISEBI), Annual Meeting, 17th, International Conference on Environmental Bioindicators, Moscow, 18 – 22 May 2009. Does identification methods globalization outcome is always accurate in bacterial enumeration/identification? Coliforms as water hygiene index, a case study. **Robert Armon** Rachel Yarom, Rivka Sheinman. **Invited Chair and International Board: Session on Microbial Indicators.**
- 94) Gordon Research Conference – Green Chemistry 2008, August 3 – 8, 2008, Bates College, Lewiston, ME, USA. Magnetite Coating of Colloidal Clay – Xanthan Aggregates. **D.D. Bilanovic**, T.J. Kroeger, R. Armon, C.A. Rehm and N.A. Burnham.
- 95) 15th International Symposium on Health – Related Water Microbiology (IWA), Naxos, Greece between May 31 and June 5, 2009. *Legionella pneumophila* serogroup 3 prevalence in drinking water survey in Israel (2003 – 2007). **Rachel Yarom**, Rivka Sheinman & Robert Armon.
- 96) Annual Meeting of the Israel Society for Microbiology (ISM), Bar Ilan University, Israel (March 2009) – A halotolerant *Streptomyces* sp., isolated from rhizosphere of a constructed wetland, biodegrades agar, agarose, chitin, polypectate, gellan gum, and phenol. **Kurzbaum E.**, R. Armon, Y. Zimmels. (Poster).
- 97) 37th Annual Meeting of the Israeli Society of Ecology and Environmental Sciences, Weizmann Institute of Science, Israel (May 2009) – A halotolerant *Streptomyces* sp., isolated from rhizosphere of a constructed wetland, biodegrades agar, agarose, chitin, polypectate, gellan gum, and phenol. **Kurzbaum E.**, R. Armon, Y. Zimmels. (Poster)

Organization of International/National Conferences

2008 – The First National Conference on Biofilms in water and food Industry, May 15th, Technion, Haifa, Israel (Head of Organizing Committee)

2011 – International Society of Bioindicators and Biomarker Annual Conference, to be held in Haifa, Israel (Head of Organizing Committee)

Chairperson in Conferences (invited)

1. IAWQ 17th Biennial International Conference, 24 – 29 July 1994, Budapest, Hungary. Session of Health Related Water Microbiology: "Molecular Biology Methods for detection of Viruses".
2. The National Meeting of The Israel Ecology and Environmental Quality Sciences Society, Haifa 3 – 4 July, 1995. Session "Diseases and Environment".
3. The Xth International Congress of Virology, Jerusalem, 11 – 16 August, 1996. Workshop: Industrial and Environmental Aspects of Bacteriophages "
4. The VIth International Conference of the Israel Society for Ecology and Environmental Quality Sciences and The VIIIth Regional Conference of the International Union of Air Pollution Prevention and Environmental Protection Associations, Jerusalem, June 30 – July 4, 1996. Session: Water Bodies 2.
5. Water Quality International. 19th Biennial Conference of the International Association on Water Quality, June 21 – 26, 1998, Vancouver, Canada. Session: Microbes in the environment.
6. The 7th International Conference of the Israel Society for Ecology and Environmental Quality Sciences on Environmental Challenges for the Next Millennium, Jerusalem, Israel, June 13 – 18, 1999. Session: Novel Methodologies for water quality monitoring II.
7. The Fourth International Conference on Advanced Oxidation Technologies for Water and Air Remediation. Radisson Twin Towers Hotel, Orlando, Florida, USA, September 23 – 26, 1997.
8. Annual Meeting of Israeli Society for Microbiology, 9 – 10 of February, 1998, Tel – Aviv University. Environmental Microbiology.
9. The 7th International Conference of the Israel Society for Ecology and Environmental Quality Sciences on Environmental Challenges for the Next Millennium, Jerusalem, Israel, June 13 – 18, 1999. Environmental Microbiology.
10. IWA 2nd World Water Congress, Berlin, Germany, 15 – 19 October 2001. Disinfection Session I.
11. Water Micro – 05' IWA, HRWM, Swansea, UK, 4 – 9 September, 2005. Water Indicators Session.
12. "Watermicro 2007" Symposium of HRWM Specialist Group, September 9 – 15, Tokyo, Japan (Invited Chair Person).
13. The First Israeli Conference on Biofilms in Water and Food Industry. Grant Water Research Institute, Technion, May 15th, Haifa, Israel.
14. IWA World Water Congress and Exhibition, 7–12 September 2008, Austria Center, Vienna. Session: Oxidation in Water Treatment 2 Session Date: 10 September 2008.

15. 17th International Conference on Environmental Bioindicators, Moscow, Russia, 18 – 22 May 2009. (Microbial Indicators).

Administrative & Scientific Posts

- a. **1997 – 1999** Faculty Council secretary, Technion – Faculty of Civil Engineering.
- b. **2000 – 2003** Library Committee, Technion – Faculty of Civil Engineering.
- c. **2000 – 2002** Graduate Committee, Technion – Faculty of Civil Engineering.
- d. **2006 – 2008** Graduate Committee, Technion – Environmental, Water and Agriculture Eng. Unit.
- e. **2006 – 2009** Head of Environmental Eng. Research Center, Technion – Environmental, Water and Agriculture Eng. Unit.
- f. **2008 – on** Library Committee, Technion – Faculty of Civil & Environmental Engineering.
- g. **2008 – 2009** Member of Professional Committee, Chemical & Environmental Engineering Area. The Israeli Science Foundation (ISF).
- h. **2008 – on** Development Committee member, Technion – Faculty of Civil & Environmental Engineering.

Professional Specialization

1. Virology – (**1978 – 1985**) Tissue culture methods, virus identification methods, Environmental Virology Methods. Hebrew University, Israel
2. Microbiology – (**1977 – 1990**) Aerobes and anaerobes isolation, growth and identification. Environmental and Public Health microbiological methods. Clinical microbiology methods. Bacteriophage methods. (Bikur – Holim Hospital, Jerusalem, University of Rhode Island, Dept. of Microbiology, RI, USA).
3. Biochemistry – (**1981 – 1990**) Electrophoretic methods, enzymology and chromatography. (Carmel Hospital, Haifa, Israel).
4. Immunology – (**1981 – 1988**) Basic methods and monoclonal antibody preparation and use.
5. Electron Microscopy – (**1978, 1986 – 1988**) Preparative methods, and use. (Institute Armand – Frappier, University of Quebec, Canada).
6. Clinical Laboratory – (**1978 – 1985**) Haematology, Biochemistry and Serology. (Carmel Hospital, Haifa, Israel)
7. Food Engineering – (**1981 – 1985**) Food analysis methods. (Food Engineering Dept., Technion, Israel)
8. Molecular Biology – (**1986 – 1988**) DNA – probes at Institute Armand – Frappier (Montreal, Canada) with Dr. M. Arella.
9. *Giardia lamblia* and *Legionella pneumophila*, isolation, purification, and identification. (**1986 – 1988**). Institute Armand – Frappier (Montreal, Canada).
10. *Giardia lamblia* and *Cryptosporidium parvum* concentration, isolation and immunofluorescent methods for identification. (**1995**) University of Sunderland (Sunderland, England).
11. Sol – gel preparation. (**1994**). Hebrew University of Jerusalem (Israel).