Curriculum Vitae - Professor Itamar Willner
(Synopsis)

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Academic Background:

1974-1978	Ph.D. Thesis, Physical Organic Chemistry, The Hebrew University of Jerusalem
1978-1980	Post-doctoral fellow, U.C. Berkeley, Physical Chemistry
1980-1981	Staff Scientist and Adjunct Assistant Professor, U.C. Berkeley
1981-1983	Senior Lecturer, The Hebrew University of Jerusalem
1983-1986	Associate Professor, The Hebrew University of Jerusalem
1986-	Professor, The Hebrew University of Jerusalem

Research Activities:
Supramolecular Chemistry, Nanotechnology, Nanobiotechnology, Molecular Self-Assembly, Molecular and Biomolecular Machines, Molecular and Biomolecular Electronics, Sensors and Biosensors, Electronics and Photophysics of Nanoparticles and Quantum Dots, Functionalized Monolayers, Molecular Optoelectronics, Optobioelectronics, Photocatalysis, Photoinduced Electron Transfer, Artificial Photosynthesis, Sensors and Biosensors, Biofuel Cells.

Awards and Honors:
Bergmann Award - 1986
Honorary Professor, Osaka University, Osaka, Japan - 1991
Kolthoff Award - 1993
AAAS (American Association for the Advancement of Science) Fellow - 1996
Sandoz-Novartis Award - 1997
The Kaye Innovations Award – 1998, 2004
Max Planck Research Award for International Cooperation – 1998
Israel Chemical Society Award – 2001
Israel Prize in Chemistry – 2002
Member of The Israel Academy of Sciences – 2002
The Klachky Family Prize for the Advancement of the Frontiers of Science – 2003
Member of the European Academy of Sciences and Arts - 2004
Honorary Guest Professorship, Tsinghua Univesity, Beijing, China – 2005
Honorary Professor, East China University of Science and Technology, Shanghai, China – 2007
Rothschild Prize in Chemistry – 2008
EMET Prize in Chemistry (under the auspices of the Prime Minister of Israel) – 2008
Fellow of the Royal Society of Chemistry (FRSC), UK – 2009
Member of the German National Academy of Sciences Leopoldina – 2009
ACS Nano Lectureship Award – 2013

Publications:
About 670 papers and 30 patents.
h-index (Web of Science): 99

Professor Itamar Willner

LIST OF PUBLICATIONS

1. M. Rabinovitz and I. Willner
Aromatic Linearly Annelated Dibenzocyclononatetraenyl Anion
Tetrahedron Letters, 4447-4450 (1974).

2. I. Willner and M. Rabinovitz
Cycloocta[*def*]fluorenyl Anion: A Perturbed Antiaromatic [15]annulenyl Anion.
Tetrahedron Letters, 1223-1226 (1976).

3. I. Willner and M. Rabinovitz
A New Route to 1,2:7,8-Dibenzocyclononatetraene via an Electrocyclic Reaction of 2,3:5,6-Dibenzobicyclo[5.2.0]non-8-ene.
Tetrahedron Letters, 3335-3336 (1976).

4. A. Gamliel, I. Willner and M. Rabinovitz
Synthesis of Benzannelated [13]Annulenes via the Bis-Wittig Reaction.
Synthesis, 410-411 (1977).

5. I. Willner, L.A. Gutmann and M. Rabinovitz
Protonated Cycloocta[*def*]fluorenone Dication. A New 14π-electron Aromatic System.
J. Am. Chem. Soc. **99**, 4167-4168 (1977).

6. I. Willner and M. Rabinovitz
Dibenzo[*gh,op*]nonalenide Dianion. A Novel Aromatic System Derived from Nonalene.
J. Am. Chem. Soc. **99**, 4507-4509 (1977).

7. I. Willner, A. Gamliel and M. Rabinovitz
2,3:6,7:8,9:12,13-tetrabenzo[13]annulenyl Anion.
Chemistry Letters, 1273-1274 (1977).

8. I. Willner
Novel Series of Polycyclic Aromatic Ions. Aromaticity-Structure Relationships.
Ph.D. Thesis, submitted to the Senate of the Hebrew University of Jerusalem, September 1978, 289 pages (under the supervision of Prof. Mordecai Rabinovitz).

9. I. Willner and M. Rabinovitz
1,9-Dimethyldibenzo[*b,f*]pentalene Dication and Dianion. New 14π and 18π Aromatic Systems.
J. Am. Chem. Soc. **100**, 337-339 (1978).

10. I. Willner, M. Halpern and M. Rabinovitz
Versatile Deuterium Exchange and Isomerization of Hydrocarbons via Phase Transfer Catalysis.
J. Chem. Soc., Chem. Commun. 155-157 (1978).

11. P. Furderer, F. Gerson, M. Rabinovitz and I. Willner
Radical Ions in the Pentalene Series. Dibenzo[*b,f*]pentalene and Its 5,10-Dimethyl Derivative.
Helv. Chim. Acta 2981-2988 (1978).

12. I. Willner, J.Y. Becker and M. Rabinovitz
Manifestation of Dual Aromaticity in Doubly Charged Annelated Pentalenes.
J. Am. Chem. Soc. **101**, 395-401 (1979).

13. M. Rabinovitz, I. Willner, A. Gamliel and A. Gazit
Benzannelated[9] and [13]annulenes: Formation, Structural Properties, and the Effect of Benzannelation on the Aromaticity of the [4n+2]π Anionic Systems.
Tetrahedron **35**, 667-673 (1979).

14. I. Willner and M. Halpern
Alkylation via Aromatization of Ketones by Phase Transfer Catalysis.
Synthesis 177 (1979).

15. I. Willner and M. Rabinovitz
Isomerizations of Benzannelated C_9H_{10} Bicyclic Systems into Cyclononatetraenes; Insight into the Behavior of Medium-sized Conjugated Rings.
Tetrahedron **35**, 2359-2364 (1979).

16. I. Willner, A. Minsky and M. Rabinovitz
1,2:6,7-Dibenzo-1,7-Homotropylium Cation: Examination of Steric Effects Operative in Homoaromatic Overlap.
J. Org. Chem. **44**, 4440-4444 (1979).

17. I. Willner, W.E. Ford, J.W. Otvos and M. Calvin
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Nature **280**, 823-824 (1979).

18. I. Willner and M. Rabinovitz
New Routes to 4,5 Substituted Fluorenes.
Org. Prep. Proc. Int. OPPI **12**, 351-355 (1980).

19. I. Willner and M. Rabinovitz
Cycloocta[*def*]fluorene. A Planar Cyclooctatetraene Derivative: Paratropicity of Hydrocarbon and Anion.
J. Org. Chem. **45**, 1628-1633 (1980).

20. M. Rabinovitz and I. Willner
Novel Aromatic Cations and Anions: Aromaticity-Structure Relationships.
Pure and Appl. Chem. **52**, 1575-1585 (1980).

21. J.Y. Becker, G. Ginzburg and I. Willner
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22. I. Willner, J.W. Otvos and M. Calvin
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J. Chem. Soc., Chem. Commun. 964-966 (1980).

23. I. Willner, W.E. Ford, J.W. Otvos and M. Calvin
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p. 55-81 (1980).

24. M. Halpern, Y. Sasson, I. Willner and M. Rabinovitz
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Tetrahedron Letters 1719-1722 (1981).

25. I. Willner, J.W. Otvos and M. Calvin
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J. Am. Chem. Soc. **103**, 3203-3205 (1981).

26. C. Laane, I. Willner, J.W. Otvos and M. Calvin
Photosensitized Electron Transfer Processes in SiO_2 Colloids and NaLS Micellar Systems. Correlation of Quantum Yields with Interfacial Surface Potentials.
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27. I. Willner, J.-M. Yang, J.W. Otvos and M. Calvin
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J. Phys. Chem. **85**, 3277-3283 (1981).

28. M. Calvin, I. Willner, C. Laane and J.W. Otvos
Photosensitized Electron Transfer Reactions in Organized Interfacial Systems.
J. Photochem. **17**, 195-206 (1981).

29. I. Willner and M. Rabinovitz
Cycloocta[*def*]fluorenone - A Planar Cyclooctatetraene Derivative: Aromaticity of the Related Dication.
Nouv. J. Chim. **6**, 129-135 (1982).

30. I. Willner, J.W. Otvos and M. Calvin
Vectorially Photoinduced Electron-Transfer Process Across a Water-in-Oil Interface, in *Solution Behavior of Surfactants*, E.J. Fendler and
K.L. Mittal, Eds., Plenum Press, New York, Part II, 1237-1256 (1982).

31. I. Willner, C. Laane, J.W. Otvos and M. Calvin
Control of Photosensitized Electron Transfer Reactions in Organized Interfacial Systems: Vesicles, Water-in-Oil Microemulsions and Colloidal SiO_2 Particles, in *Inorganic Reactions in Organized Media*, Adv. in Chem.
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32. I. Willner and Y. Degani
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33. I. Willner and Y. Degani
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34. I. Willner and Y. Degani
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35. I. Willner and W.E. Ford
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36. M. Rabinovitz, I. Willner and A. Minsky
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37. Y. Degani and I. Willner
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41. P. Dan, I. Willner, N.S. Dixit and R.A. Mackay
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43. Z. Goren, P. Dan and I. Willner
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44. Y. Degani, I. Willner and Y. Haas
Lasing of Rhodamine B in Aqueous Solutions Containing β-Cyclodextrin
Chem.Phys. Lett. **104**, 496-499 (1984).

45. P. Dan and I. Willner
Cyclic NAD^+/NADH Models: Participation of Zn^{++} in the Reduction of Ethyl-benzoylformate.
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46. D. Mandler, Y. Degani and I. Willner
Photoredox Reactions in Water-in-Oil Microemulsions: The Functions of Amphiphilic Viologens in Charge Separation and Electron Transfer Across the Water-Oil Boundary.
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47. D. Mandler and I. Willner
Solar Light Induced Formation of Chiral 2-Butanol in an Enzyme Catalyzed Chemical System.
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48. R. Maidan, Z. Goren, J.Y. Becker and I. Willner
Application of Multielectron Charge Relays in Chemical and Photochemical Debromination Processes. The Role of Induced Disproportionation of Dioctyl-4,4'-bipyridinium Radical Cation in Two Systems.
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49. Y. Degani and I. Willner
Photosensitized Cleavage of Acetylene to Methane - A Model for Nitrogen Fixation.
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50. I. Willner
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51. I. Willner, Z. Goren, D. Mandler, R. Maidan and Y. Degani
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52. G. Lipiner, I. Willner and Z. Aizenshtat
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53. A.J. Frank, Z. Goren and I. Willner
Photohydrogenation of Acetylene and Ethylene by Pt and Rh Supported on CdS Semiconductor Particles.
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54. Y. Degani and I. Willner
Complex Formation Between Anthraquinone-2,6-disulfonate and a Neutral Zn-Porphyrin. Effects of CTAB Micelles on Complex Stability and Photoinduced Electron Transfer.
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55. Y. Degani and I. Willner
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56. D. Mandler and I. Willner
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Reductive Amination of Pyruvic and Ketoglutaric Acids to Amino Acids.
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57. G. Lipiner, I. Willner and Z. Aizenshtat
Phase Transfer Catalysed Metallation of Porphyrins in Water-Oil Systems.
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Photoinduced CO_2-fixation Forming Malic and Iso-citric Acids.
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59. R. Maidan and I. Willner
Photochemical and Chemical Enzyme Catalysed Debromination of *meso*-1,2-Dibromostilbene in Multiphase Systems.
J. Am. Chem. Soc. **108**, 1080-1082 (1986).

60. I. Willner and Z. Goren
Photodecomposition of Formic Acid by CdS-Semiconductor Particles.
J. Chem. Soc., Chem. Commun. 172-173 (1986).

61. D. Mandler and I. Willner
Photoinduced Enzyme Catalysed Synthesis of Amino Acids by Visible Light.
J. Chem. Soc., Chem. Commun. 851-853 (1986).

62. E. Adar, Y. Degani, Z. Goren and I. Willner
Photosensitized Electron Transfer Reactions in β-Cyclodextrin Aqueous Media: Effects on Dissociation of Ground state Complexes, Charge Separation and H_2-evolution.
J. Am. Chem. Soc. **108,** 4696-4700 (1986).

63. R. Maidan and I. Willner
Photoreduction of CO_2 to CH_4 in Aqueous Solutions Using Visible Light.
J. Am. Chem. Soc. **108**, 8100-8101 (1986).

64. G. Lipiner, I. Willner and Z. Aizenshtat
Metallation of Porphyrins in Two Phase Systems Using Carboxylic Acids, Thiols and Phenols.
J. Chem. Soc., Perkin Trans. II, 287-291 (1987).

65. I. Willner, D. Mandler and R. Maidan
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Nouv. J. Chim. **11**, 109-121 (1987).

66. G. Lipiner, I. Willner and Z. Aizenshtat
Porphyrin Metallation by Graphite-Metal Intercalates - A Model for the Occurrence of Metalloporphyrins in Coal.
J. Chem. Soc., Chem. Commun. 34-35 (1987).

67. A.J. Frank, I. Willner, Z. Goren and Y. Degani
Improved Charge Separation and Photosensitized H_2-evolution from Water with TiO_2 Particles on Colloidal SiO_2 Carriers.
J. Am. Chem. Soc. **109**, 3568-3573 (1987).

68. D. Mandler and I. Willner
Photohydrogenation of Acetylenes in Water-Oil Two Phase Systems: Application of Novel Metal Colloids and Mechanistic Aspects of the Process.
J. Phys. Chem. **91**, 3600-3605 (1987).

69. Z. Goren, N. Lapidot and I. Willner
Photocatalysed Regeneration of NAD(P)H by Formate Using CdS-semiconductor Powders.
J. Mol. Catal. **47**, 21-32 (1988).

70. I. Willner, R. Maidan, D. Mandler, H. Dürr, G.Dörr and K. Zengerle
Photosensitized Reduction of CO_2 to CH_4 and H_2-evolution in the Presence of Ru and Os-Colloids: Strategies to Design Selectivity of Products Distribution.
J. Am. Chem. Soc. **109**, 6080-6086 (1987).

71. I. Willner and Y. Eichen
TiO_2 and CdS Colloids Stabilized by β-Cyclodextrins. Tailored Semiconductor-Receptor Systems as a Means to Control InterfacialElectron Transfer Processes.
J. Am. Chem. Soc. **109**, 6862-6863 (1987).

72. I. Willner, E. Adar, Z. Goren and B. Steinberger
Photosensitized Reduction of Benzyl and Octyl Viologens in β-CD Aqueous Media.
Nouv. J. Chim. **11**, 769-773 (1987).

73. D. Mandler and I. Willner
Effective Photoreduction of CO_2/HCO_3^- to Formate Using Visible Light.
J. Am. Chem. Soc. **109**, 7884-7885 (1987).

74. I. Willner and B. Steinberger
Hydrogen Evolution Through Photochemical, Photoelectrochemical and Photobiological Systems, in *Advances in Solar Energy Technology*,
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75. D. Mandler and I. Willner
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77. I. Willner and R. Maidan
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78. I. Willner and B. Steinberger-Willner
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79. I. Willner and D. Mandler
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J. Am. Chem. Soc., **111**, 1330-1336 (1989).

80. I. Willner and D. Mandler
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81. I. Willner, N. Lapidot, and A. Riklin
Photoinduced Enzyme Catalyzed Reduction of Nitrate (NO_3^-) and Nitrite (NO_2^-) to Ammonia (NH_3).
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Photochemically Induced Oxidative and Reductive Regeneration of $NAD(P)^+$/NAD(P)H Cofactors: Applications in Biotransformations.
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83. I. Willner, Y. Eichen and A.J. Frank
Tailored Semiconductor-Receptor Colloids: Improved Photosensitized H_2 Evolution from Water with TiO_2-(β-Cyclodextrin) Colloids.
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84. Z. Goren, I. Willner, A.J. Nelson and A.J. Frank
Selective Photoreduction of CO_2/HCO_3^- to Formate by Aqueous Suspensions and Colloids of Pd-TiO_2.
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85. I. Willner, R. Maidan and M. Shapira
Thermal and Photochemical Regeneration of Nicotinamide Cofactors and a Nicotinamide Model Compound Using a Water-Soluble Rhodium Phosphine Catalyst.
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86. I. Willner, T. Tsfania and Y. Eichen
Photocatalyzed and Electrocatalyzed Reduction of Vicinal Dibromides and Activated Ketones Using Ru(I)-tris-Bipyridine as Electron-Transfer Mediator.
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Photosensitized Electron-Transfer Reactions and H_2-Evolution in Organized Microheterogeneous Environments: Separation of Ground-State Xanthene-Bipyridinium Complexes by Means of SiO_2-Colloids.
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88. I. Willner and B. Willner
Photosensitized Electron Transfer Reactions in Supramolecular Assemblies, in "*Frontiers in Supramolecular Organic Chemistry and Photochemistry*", H.-J. Schneider and H. Dürr (eds.), VCH Verlagsgesellschaft, Weinheim, FRG, 337-370, 1991.

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90. H. Dürr, H.-P. Trierweiler, I. Willner and R. Maidan
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91. I. Willner, S. Rubin and A. Riklin
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94. I. Willner, J. Rosengaus and Y. Eichen
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95. I. Willner, N. Lapidot, S. Rubin, A. Riklin and B. Willner
Interacting Light Energy with Biocatalytic Assemblies: Biocatalysed Photosynthesis and Photoregulation of Enzymes. in *Biotechnology: Bridging Research and Applications*, D. Kamely, A.M. Chakrabarty and S.E. Kornguth (Eds.), Kluwer Academic Publishers,
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97. I. Willner, M. Rosen and Y. Eichen
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98. I. Willner and N. Lapidot
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99. I. Willner and N. Lapidot
Electrically Wired Glutathione Reductase - a Biocatalyst for the Photochemical Reduction of Glutathione.
J. Am. Chem. Soc., **113**, 3625-3626 (1991).

100. I. Willner, S. Rubin and T. Zor
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101. I. Willner, Y. Eichen, S. Sussan and B. Shoham.
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102. I. Willner, Y. Eichen, M. Rabinovitz, R. Hoffman and S. Cohen
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105. D. Mandler, A. Kaminski and I. Willner
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