November 2026

CURRICULUM VITAE

GAD KOREN

ACADEMIC DEGREES:

B.Sc.	Mathematics and Physics, Hebrew University, Jerusalem	1967
M.Sc.	Physics, Hebrew University, Jerusalem	1969
Ph.D.	Physics, Hebrew University, Jerusalem	1974

APPOINTMENTS:

Teaching Assistant, Physics Dept., Hebrew University	1968–1969
Assistant, Physics Department, Hebrew University	1970-1972
Instructor, Physics Dept., Hebrew University	1973–1974
Post-Doctoral Fellow, I.B.M. Research Laboratory, Zurich, Switzerland	1974-1975
Research Fellow, Physics Department and Solid State Institute, Technion	1975–1978
Senior Research Fellow, Physics Dept., Technion	1978–1980
Senior Lecturer, Physics Dept., Technion	1980-1987
Tenure Position, Physics Dept., Technion	1982
Visiting Professor, Physics Dept., Univ. of Toronto Canada (sabbatical)	Sept. 1982-June 1983
World Trade Summer Faculty positions with IBM, Thomas J. Watson Research Center, Yorktown Heights, N.Y., U.S.A.	
With the laser Physics Group (sabbatical)	Summer 1983
With the Semiconductor Science and Technology Dept.	Summers 1984,85,86
With the laser processing group in the manufacturing research department	Summer 1987
Associate Professor, Physics Department, Technion	1987-1997
Visiting Scientist, IBM T.J. Watson Research Center Yorktown Heights, N.Y., U.S.A. (sabbatical)	summer 1988 1988-1989
Full Professor, Physics Department, Technion	1998
Karl Stoll Chair in Advanced Materials, Technion	2002-2013

Professor Emeritus, Physics Department, Technion 2013

TEACHING EXPERIENCE:

Physics Department, Hebrew University 1968-1974
Basic physics recitation and labs. to undergraduate and graduate students.
Physics Department, Technion from 1975
Basic physics courses to undergraduate students and courses in laser physics and optics.
Supervising graduate students in their research towards higher degrees.
Excellent faculty lecturer, Physics 2K, second semester 1996

RESEARCH EXPERIENCE:

-Experimental physics in many basic and applied research fields employing various kind of lasers and laser techniques.
-Studies of topological insulators and proximity induced topological superconductors in thin film junctions and bilayers, looking for unconventional superconductivity and Majorana fermions.
-Studies of superconductor ferromagnet hybrids, multilayes thin films, proximity effects, transport anisotropy, and the symmetry of the order parameter in the high temperature superconductors.
-Deposition of epitaxial thin films of high temperature superconductors, manganites and insulators by laser ablation and dc sputtering techniques.
-Fabrication and characterization of high T_c edge-junctions and SQUIDs.
-Laser assisted etching of metals and polymers and laser produced plasma.
-Multiphoton excitation of molecular gases and laser separation of isotopes.
-Non-linear optics in solids and laser research in general.

INVITED TALKS AND ACTIVE PARTICIPATION IN INTERNATIONAL CONFERENCES:

1. G. Koren, Ein Bokek, Lasers in Chemistry, 1978. Infrared Emission Spectra of Multiphoton Excited SF_6 Gas.
2. G. Koren, Y. Gertner and U. Shreter, Munich, 12th IQEC - International Conference on Quantum Electronics, 1982, Isotope Separation Experiments in Natural UF_6 by CF_4 and CO_2 Lasers Analyzed by Gamma-Ray Spectroscopy. Appl. Phys. **28**, 188 (1982).

3. G. Koren and J.T.C. Yeh, Anaheim, California, 13th IQEC and CLEO 1984, Excimer Laser Etching of Polymers: Emission Spectra, Surface Quality and Mechanism. CLEO '84, Conference on Lasers and Electro-Optics, post-deadline paper ThR11.

4. G. Koren, San-Francisco, 1986, Reactive Ar-Ion Laser Assisted Etching of Molibdenum and Tungsten Foils in Air. CLEO-86, paper TuK 10, page 96.

5. G. Koren, A. Gupta, E.A. Giess, A. Segmüller, T.R. McGuire and R.B. Laibowitz, Boston, Materials Research Society Meeting, Nov. 28 -Dec. 3, 1988. Epitaxial Films of $YBa_2Cu_3O_7$ on $NdGaO_3$, $LaGaO_3$ and $SrTiO_3$ Substrates Deposited by Laser Ablation. A post deadline paper.

6. G. Koren and A. Gupta, Los Angeles, Electrochemical Society Conference, May 8-10, 1989. $YBa_2Cu_3O_7$ Thin Films Deposited by Laser Ablation. **Invited talk**, paper # 689HTS, J. Electrochem. Soc. **136**, 235C (1989).

7. G. Koren, Properties and Applications of High Temperature Superconducting Thin Films Deposited by Laser Ablation. **Invited talk** in the Third Bar-Ilan Conference on Frontiers in Condensed Matter Physics, Jan. 8-11 (1990).

8. G. Koren, E. Polturak, D. Cohen and E. Aharoni, All High T_c Josephson Junctions and SQUIDs. **Invited talk** in the 8^{th} Umbrella Symphosium, KFA- Julich Research Center, Germany, October 7-10, 1991.

9. G. Koren, E. Polturak, E. Aharoni and D. Cohen, All High T_c Josephson Junctions, **Invited talk** in ISEC'91 (Third International Superconductive Electronics Conference) 25-27 June 1991, Glasgow, Scotland.

10. G. Koren, E. Polturak, E. Aharoni and D. Cohen, $YBa_2Cu_3O_7$ Based Josephson Junctions and SQUIDs. **Invited talk** JJ1 in the 2nd Israeli International Conference on High T_c Superconductivity, Eilat, Jan. 4-7 (1993).

11. G. Koren, E. Polturak, D. Cohen and . Aharoni, Josephson Edge Junctions of $YBa_2Cu_3O_7$ With $YBa_2CoCu_2O_7$ As the Barrier/Insulator. Presented in ISEC'93 - 4th International Superconductive Electronics Conference in Boulder Colorado, Aug. 11-14, 1993, as a talk and as a poster (p. 239-40).

12. G. Koren and E. Polturak, All High T_c Josephson Junctions and Their I_cR_N versus J_c Behavior. **Invited talk** in the International Workshop on Coherence in High T_c Superconductors, Herzelia, May 1-2, 1995. Appeared as a chapter in a book entitled: *Coherence in High Temperature Superconductors* edited by G. Deutscher and A. Revcolevschi, World Scientific, Singapore (1996), pp 333-353.

13. G. Koren, E. Polturak and G. Deutscher, Tomasch Oscillations in Oxygen Deficient YBCO Junctions With Tunneling-Like Behavior, Presented in WSS'96 - Weak Superconductivity Symposium, Smolenice Castle, Slovak Republic, Aug. 4-7, 1996.

14. G. Koren, E. Polturak and G. Deutscher, Temperature Dependent Measurements of the Symmetry of the Order Parameter in $YBa_2Cu_3O_{7-\delta}$, **Invited talk** in the Minerva Workshop on Electronic and Vortex structure in High T_c Superconductors, Herzelia, May 6-8, 1997.

15. G. Koren, D. Cohen, E. Polturak and G. Deutscher, Properties of Edge and Twin Boundary Junctions, International Superconductive Electronics Conference - ISEC'97, Berlin, June 25-8, 1997.

16. E. Polturak, G. Koren, D. Cohen and O. Nesher, Proximity Effect In YBCO/YBCoCO Bilayer Films, European Conference on Applied Superconductivity - EUCAS'97, Eindhoven, June 30 - July 3, (1997). Inst. Phys. Conf. Ser. No 158. G. Koren has also been the **chairman of a session** on "Materials Aspects of Small Scale Applications" in this conference.

17. G. Koren, High Temperature Superconductive Active Devices and Junctions, **invited talk** in the 27^{th} European Microwave Workshop, Jerusalem, Sept. 12, 1997.

18. E. Polturak, O. Nesher and G. Koren, Role of Interface Orientation with Respect to the S-N coupling in d-wave Pairing, **invited talk** at the Superconducting and Related Oxides Symposium, SPIE Conference in San Diego, July 22-24, 1998.

19. G. Koren, **organizer** of the Minerva Workshop on High Temperature Superconductivity: From Fundamentals to Applications, Haifa, April 12-14, 1999.

20. N. Levy, G. Koren, E. Polturak and Y. Koral, High power microwave transmission lines made of YBCO on 3 inch wafers, EUCAS 1999, Barcelona, Sept. 12-18, 1999. (contributed talk given by G. Koren)

21. R. Carmi, E.Polturak and G. Koren, Spontaneous Generation of Flux in a Josephson Junction Loop, **invited talk**, in *Proceeding of the International Workshop on Macroscopic Quantum Coherence and Quantum Computing*, editted by D. V. Averin, B. Ruggiero and P. Silverstrini, Kulver Academic/ Plenum Publishers, NY, pp 443-448. Naples, Italy, June 14-17, (2000). (given by R. Carmi).

22. R. Carmi, E. Polturak, and G. Koren, Testing a Cosmological Scenario using Superconductors, **invited talk** at the Symposium on Ultra Low Energy Physics, Kisakeskus, Finland, January 2001. (given by E. Polturak).

23. D. E. Oates, M. A. Hein, P. J. Hirst, R. J. Humphreys, G. Koren, and E. Polturak, Non-linear microwave surface impedance of YBCO films, **invited talk** in EUCAS 2001, Lyngby, Denmark, Aug. 26-30, 2001. (given by Dan Oates).

24. G. Koren and N. Levy, Experimental evidence for a small *is* or id_{xy} component in the order parameter of YBCO, **invited talk** at MOS2002 - International Conference on Physics and Chemistry of Molecular and Oxide Superconductors, Hsinchu, Taiwan, Aug. 13-18, 2002.

25. G. Koren, L. Shkedy, I. Lubimova and E. Polturak, Studies of the symmetry of the order parameter in underdoped YBCO Junctions, **invited talk** in the German-Israeli Minerva School, Blaubeuren, Germany, April 27-May 1, 2003.

26. D. Oates, Temperature dependence of inter-modulation distortion in YBCO, D. E. Oates1, S. H. Park, D. Agassi and G Koren, **invited talk** in EUCAS2003, Sorrento, Italy, Sept. 14-18, 2003. (given by Dan Oates).

27. G. Koren, **Chair** of the session in superconductivity in the Israel Physical Society Conference, Ramat Gan, Dec. 21, 2003. (Including two **invited talks** from our group by A. Maniv and A. Sharoni).

28. G. Koren, P. Aronov and E. Polturak, Cross-Andreev spintronics junctions, ASC2004, Jacksonville, Florida, Oct. 3-8, 2004. Also in the same conference, an **invited talk** was given by D. Oates on Temperature Dependence of Intermodulation Distortion in YBCO: Understanding Nonlinearity, by D. E. Oates, S. H. Park, D. Agassi, G. Koren, and K. Irgmaier.

29. G. Koren, an **invited talk** on A study of YBCO junctions with magnetic and doped YBCO barriers, given in the Israel Physical Society Conference in Haifa, Dec. 9, 2004.

30. G. Koren, P. Aronov and E. Polturak, Spintronics response of YBCO junctions with the metallic ferromagnet $SrRuO_3$, an **invited talk** in SPIE2005 on Strongly correlated materials: Physics and nanoengineering, July 31 - Aug. 4, 2005, San Diego, Calif. USA. Another **invited talk** of our group in the same conference, by O. Millo, I. Asulin, A. Sharoni, O. Yuli and G. Koren on the proximity effect in YBCO/Au and the crossed Andreev effect, was given by O. Millo. Proceedings of SPIE **3952**, 39520P-1-9 and 395216-1-8, 2005.

31. P. Aronov and G. Koren, Signature of crossed Andreev reflection effect in the magnetic response of YBCO junctions with the itinerant ferromagnet $SrRuO_3$, Minerva Workshop, Kfar Hamaccabia, May 8-10 2005. **Invited talk** given by G. Koren in the USAF-TAU Symposium on Nanoscale Science and Technology, Tel Aviv University, Nov. 14-15, 2005.

32. G. Koren, **Chair** of the session in superconductivity in the Israel Physical Society Conference, Karmiel, Dec. 29, 2005, where two **invited talks** by P. Aronov and I. Asulin of our groups were given.

33. G. Koren and P. Aronov, Properties of HTS Ramp-type Junctions with a Magnetic Barrier. **Invited talk** in CIMTEC 2006, Acireale, Sicily, Italy, June 4-9, 2006.

34. G. Koren **organizer and chair** of the Sixth Minerva and ISF Workshop in Superconductivity and Magnetism, Kfar Hamaccabia, May 6-10, 2007. In this workshop five **invited talks** were given by I. Asulin, O. Yuli, D. Golovchik, Y. Mor and G. Aharonovich of our groups.

35. G. Koren participated in the Gordon Conf. on Superconductivity, September 9-14, 2007 Les Diablerets, Switzerland, where two students from our group, A. Asulin and O. Yuli presented posters.

36. G. Koren, O. Yuli, I. Asulin, L. Iomin, O. Millo and D. Orgad, Enhancement of the superconducting transition temperature T_c in overdoped and underdoped $La_{2-x}Sr_xCuO_4$ bilayers: Role of pairing and phase stiffness, **Invited talk** in the 420th WEH Seminar on Unconventional Proximity Effect in Novel Materials, Bad Honnef, Germany, Oct. 12-15, 2008.

37. G. Koren, attended the 9th International Conference M^{2}S on Materials and Mechanisms of Superconductivity, Spet. 7-12, 2009, Tokyo, Japan. Two posters of our group were presented.

38. G. Koren, attended the Applied Superconductivity Conference (ASC 2010) in Washington DC, August 1-6, 2010.

39. G. Koren, attended the 26th International Conference on Low Temperature Physics, in Beijing, August 10-17, 2011.

40. G. Koren, Energy scales and interface effects in SNS and SFS ramp-type junctions of high temperature superconductors with a non-superconducting cuprate or ferromagnetic barriers. **Invited talk** in the Royal Society Workshop on oxide interfaces, September 14-15, 2011 in Chicheley Hall, England. See: http://royalsociety.org/events/superconductivity-at-oxide-interfaces

41. G. Koren, attended the M^{2}S Conference on Materials and Mechanism of Superconductivity, in Washington DC, July 29 - August 3, 2012.

42. G. Koren, **Invited talk** on Laser ablation deposition of thin films. Given in the 7th International Conference on Materials for Advances Technologies - ICMAT 2013, 30 June to 5 July, 2013, Suntec, Singapore.

43. G. Koren, **Chair** of the LAO/STO session in the M^{2}S Conference on Materials and Mechanism of Superconductivity, in Geneva, Aug. 23-28, 2015.

44. G. Koren, Two pair fluctuation lifetimes, supercurrents and proximity effects in the pseudogap regime of cuprate junctions (Poster presentation). Strongly Correlated Electron Systems - SCES17, Prague, July 17-21 (2017).

45. G. Koren, Magnetic and superconductive proximity effects in bilayer and trilayer thin film hybrids of a topological insulator, ferromagnet and cuprate superconductor: A possible new platform for Majorana nano-electronics. 21^{st} International Conference on Magnetism, ICM-2018, July 16-20 (2018), San Francisco (Poster presentation); and also in 2^{nd} Global Conference on Magnetism and Magnetic Materials, GCMMM-2019, July 25-26 (2019), Rome , Italy (**Invited talk**).

MEMBERSHIP IN SCIENTIFIC ASSOCIATIONS

A member of the American Physical Society (APS).

CONSULTANT TO INDUSTRY

Synergy Superconductive Technologies, Jerusalem (formerly Xsirius - Superconductivity Materials, Jerusalem) - on high T_c thin films (1990-1994).

ICS - Israeli Consortium for Superconductivity - including, Galram (RAFAEL), Elisra and Elta - on high T_c thin films for passive microwave devices (1993-1994).

Elron, Haifa - on laser processing in microelectronics (1989).

Oramir, Haifa - on lasers and microelectronics processes (1997).

Applied Materials, Haifa and Rehovot - on lasers and microelectronics processes (2003-4).

MEMBERSHIP IN NATIONAL SCIENTIFIC COMMITTEES

Member of the National Committee for Superconductivity of the Ministry of Science, (from 1990 on, renewed 1995).

Member of the Condense Matter Committee of the Israel Science Foundation (ACADEMIA), (1992, 1995 and 2003).

PAPERS PUBLISHED IN CONFERENCES AND SHORT NOTES

1. G. Koren together with others, The Bulletin of the Israel Physical Society, p.40 (1972), ps. 7 and 8 (1973), p. 45 (1976), p. 19 (1977), p. 50 (1978), p. 19 (1979), ps. 71 and 72 (1980), p. 12 (1981), p. 22 (1982), p. 48 (1983), p. 40 (1988).

2. H. Lotem and G. Koren, Jour. of Phys. E. Scient. Instr. **6**, 672 (1973).

3. G. Koren and U.P. Oppenheim, Optics Comm. **18**, 222 (1976).

4. F. Ho, J. Ritsko and G. Koren, CLEO-85, Conference on Lasers and Electro-Optics, Baltimore, FQ4 (1985).

5. J.E. Rothenberg, G. Koren and J.J. Ritsko, CLEO-85 Conference on Lasers and Electro-Optics, Baltimore, FQ6 (1985).

6. G. Koren and E. Polturak, The Bulletin of the IPS **34**, 23 (1988). **Invited talk** J-2.

7. E. Zeldov, N.M. Amer and G. Koren, Nonequilibrium Optical Response of $YBa_2Cu_3O_{7-x}$ Epitaxial Films, MRS Spring Meeting San Diego, April 1989.

8. S.G. Lee, C.C. Chi, G. Koren, A. Gupta and M.R. Scheuermann, Acoustic Attenuation of $YBa_2Cu_3O_7$ Thin Films, Bulletin Am. Phys. Soc. **34**, 515 (1989). (APS Meeting, 20-24 March 1989, St. Louis).

9. R.B. Laibowitz, R.H. Koch, W.J. Gallagher, B. Bumble, R.L. Sandstrom, J.M. Vigiano, A. Gupta, G. Koren, A. Kleinlssaser, E.A. Giess, C.S. Nichols, N.S. Shiren and T.G. Kazyaka, High T_c Superconducting Thin Films: Characterization and Device Applications, Bulletin Am. Phys. Soc. **34**, 890 (1989). (APS Meeting, March 20-24, 1989, St. Louis).

10. E. Zeldov, N.M. Amer and G. Koren, Nonequilibrium Optical Response of $YBaCuO$ Epitaxial Films, Bulletin Am. Phys. Soc. **34**, 1038 (1989). (APS Meeting, March 20-24, 1989, St. Louis).

11. Attended the International Conference on Materials and Mechanism of Superconductivity High Temperature Superconductors, M^2S-HTSC, Stanford University, July 23-28, 1989 and presented with others posters #1A-64, 1A-66, 4B-13 and 6B-36.

12. A. Gupta, G. Koren, C.C. Tsuei, A. Segmüller and T.R. McGuire, Preparation and Properties of Epitaxial Thin Films of Superconducting $Nd_{1-x}Ce_xCuO_{4-y}$, Materials Research Society Meeting, Boston, Nov. 27 - Dec. 2 1989, (paper # M3.13).

13. G. Burns, F.H. Dacol, C.A. Feild, A. Gupta, F. Holtzberg, G. Koren, R.B. Laibowitz and T.K. Worthington, MRS Fall Meeting, Boston, Nov. 27 - Dec. 2 1989 (paper # M7.112).

14. T. R. McGuire, D. Dimos, A. Gupta, G. Koren and R. B. Laibowitz, Magnetic Properties of Laser Deposited Films of Y-Ba-Cu-O, 34-th Annual Conference on Magnetism and Magnetic Materials, paper CP-21, Boston, Mass. Nov. 28 - Dec. 1 (1989).

15. S. G. Lee, C. C. Chi, A. Gupta, G. Koren and A. Segmuller, Study of Epitaxial Y-Ba-Cu-O Films, Proc. SPIE, 17-21 March 1990, San Diego, Calif..

16. R. B. Laibowitz, R. H. Koch, V. Foglietti, W. Gallagher, J. M. Viggiano, G. Koren, A. Gupta, M. I. Lutwyche and B. Oh, High Tc Multilayer Junctions and SQUIDs, Proc. SPIE, 17-21 March 1990, San Diego, Calif..

17. T. R. McGuire, A. Gupta, G. Koren and R. Gross, High Current Densities in Superconducting Films from Magnetization, International Magnetic Conference, paper AP-01, April 17-20, 1990, Brighton, UK.

18. S. G. Han, Z. V. Vardeny, O. G. Symko and G. Koren, Femtoseconds Dynamics of Quasi-Particles in $YBa_2Cu_3O_7$ Supeconducting Films, *Applications in Superconductivity Conference*, Bolder, Colorado Sept. 24-28 (1990).

19. B. Fisher, J. Genosar, L. Patlagan, G. Koren, J. Ashkenazi and C. G. Kuper, Thermoelectric Power and Resistivity Measurements of $Pr_xY_{1-x}Ba_2Cu_3O_{7-\delta}$ Up to 1200 K and a Theoretical Analysis, Proc. *The University of Miami Workshop on: Electronic Structure and Mechanism for High Temperature Superconductivity*, edited by J. Ashkenazi, S. E. Barnes, F. Zuo, G. C. Vezzoli and B. M. Klein (Plenum, New York, 1991).

20. Emil Polturak, Daniel Cohen, David Cohen and Gad Koren, A Self Contained Inductance Bridge for Rapid Non Destructive Testing of Superconducting Thin Films, **Invited talk** in the ONR-Office of Naval Research Workshop on AC Susceptibility of Superconductors and Other Spin Systems, May 1991, Virginia (Plenum, 1992).

21. E. Aharoni, G. Koren, E. Polturak, D. Cohen and E.Iskevitch, In-Situ $YBa_2Cu_3O_7/SrTiO_3/YBa_2Cu_3O_7$ a-b Plane Josephson Edge Junctions, SQUID'91, Berlin, 18-21 June, 1991. *Springer Proceedings in Physics* **64**, 41-4 (1992).

22. G. Koren, E. Polturak, D. Cohen and E. Aharoni, DC QUID Made of a-b Plane $YBa_2Cu_3O_7/Ag/YBa_2Cu_3O_7$ Josephson Junctions, SQUID'91, Berlin, 18-21 June, 1991.

23. S. G. Han, Z. V. Vardeny and G. Koren, Femtosecond Dynamics of Quasiparticles in YBCO System, APS Meeting, Buletin Am. Phys. Soc. **37**, 435, 1992.

24. Y. Yeshurun, L. Klein, E. R. Yacoby, Y. Wolfus, M. Konczykowski, G. Koren and F. Holtzberg, Effects of Irradiation on Magnetization Curves in High temperature Superconductors. World Congress on Superconductivity, Munich, Sept. 1992. **Invited talk**.

25. E. Polturak, G. Koren, D. Cohen and E. Aharoni, Studies of the Proximity Effect and the In-plane Energy Gap of YBCO Using YBCO-N-YBCO Edge Junctions. Advances in Superconductivity V, Proc. of 5-th Int. Symp. on Superconductivity (ISS'92), Nov. 16-19, Kobe, Japan, p. 1043-8, 1992. **Invited talk**.

26. E. Polturak, G. Koren, D. Cohen and E. Aharoni, Temperature Dependence and Anisotropy of the In-Plane Energy Gap of YBCO from Andreev Reflection Measurements, MRS Meeting, Boston, Nov. 30 - Dec. 4, 1992. **Invited talk**.

27. G. Koren, Laser Ablation Deposition of High temperature Superconducting Thin Films. Conference of the Israel Vacuum and Materials Societies, Tel Aviv, May 4 (1993). **Invited talk** - First talk in this conference.

28. G. Koren and E. Polturak, Flux Flow Effects in Large $YBa_2Cu_3O_7$ Edge Junctions With $YBa_2Co_xCu_{3-x}O_y$ Barriers, Presented as a poster in the IVth Materials and Mechanisms M^{2}S Conference in Grenoble, France, July 4-9 (1994).

29. P. P. Nguyen, D. E. Oates, G. Dresselhaus, M. S. Dresselhause, G. Koren and E. Polturak, Microwave Power Dependence of $YBa_2Cu_3O_7$ Thin Film Josephson Edge Junctions, MRS Meeting in Boston, Dec. 1994.

30. E. Farber, G. Deutscher, G. Koren and E. Jerby, Microwave Measurements of High T_c Superconductors, IEEE Conference in Jerusalem, Nov. (1996).

31. K. M. Satyalakshmi, N. D. Zakharov, D. Hesse and G. Koren, Atomic Scale Structure and Properties of Thin Epitaxial $SrRuO_3$ Films Grown on (100) $SrTiO_3$ by Pulsed Laser Deposition. In: Ferroelectric Thin Films VII, edited by R.E.Jones, R.W.Schwartz, S.Summerfelt, and I.K.Yoo, MRS Symp. Proc. 541 (1999) 167-172.

32. E. Polturak and G. Koren, The First Superconductivity Experiment in Space, **invited talk**, Annual Meeting of the IPS, March 18, 1999, Tel Aviv (Bulletin of the IPS, **45**, 32 (1999)).

33. G. Koren, N. Levy, E. Polturak and Y. Koral, Demonstration of Power Handling of 0.5 kW at 0.4 GHz in a Stripline of YBCO on 3" $LaAlO_3$

Wafer, Inst. Phys. Ser. No 167, Applied Superconductivity vol. 2, pages 903-6 (2000).

INVENTIONS AND PATENTS:

Filed:

1. M. Anschel, F. D. Egitto, R. S. Horwath, G. Koren - US Patent 4,869,777, Sep. 26, 1989. METHOD FOR SELECTIVELY ETCHING THE MATERIALS OF A COMPOSITE OF TWO MATERIALS.

Published:

2. M. Anschel, G. Koren and J.J. Ritsko, Laser Resist Stripping and Cleaning, Research Disclosure, Aug. 1, 1986, number 26879, Kenneth Mason Publications Ltd., England.

3. G. Koren and J.J. Ritsko, Invention Disclosure on "High Resolution Molybdenum Masks by Laser Etching", #YO8850546, Date Pub. Sept. 1, 1986.

4. M. Anschel and G. Koren, Technique for the Selective Etching of KTFR Negative Resist on Polyimide Panels. Research Disclosure, Oct. 1, 1988, number 29453, Kenneth Mason Publications Ltd., England.

5. A. Gupta, N. Moore and G. Koren, "Preparation of Superconducting Thin Films by Spray Deposition". Research Disclosure, Jan. 1, 1989, number 29789, Kenneth Mason Publications Ltd., England.

6. A. Gupta, G. Koren and N. Moore, Patterning of High Temperature Superconducting Thin Films, IBM Technical Disclosure Bulletin, **31**, 227 (1989).

7. G. Koren and A. Gupta, Direct Write of Highly Insulating Features in High Temperature Superconducting Thin Films. #YO8870658, Date Pub. Feb. 2, 1989, TDB Volume 31 page 09.

Submitted:

8. B.W. Hussey and G. Koren, Etching Fine Features for Thin Metal Masks, #YO889-0191, submission date March 7, 1989, rated publish.

9. G. Koren, R.J. Baseman, A. Gupta and M.I. Lutwyche, Reducing Particulates in Laser Ablated High T_c Superconducting Films, #YO889-0688, submitted September 8, 1989, rated publish.

10. R.B. Laibowitz, R.H. Koch, W. Gallagher, J.M. Viggiano, A. Gupta and G. Koren, High T_c Edge Junctions and SQUIDs, 1990.

AWARDS

1. IBM Research Division Award - for work on the development of pulsed laser deposition for the growth of epitaxial oxide films. Given by IBM Research T. J. Watson Research Center in Yorktown Heights, 1993.

2. Academic Excellence Award - Given by the New England branch of the American Society for Technion, 1993.

3. Minerva Center for High T_c Superconductivity (together with Tel Aviv and Bar Ilan Universities) - established by a grant of DM 5 million from Germany, 1994-2001. Renewed 2002-2008.

4. Center of Excellence for Research and Applications of High Temperature Superconductors (together with Tel Aviv and Bar Ilan Universities) - awarded by The Israel Science Foundation, 1994-1998.

5. Center of Excellence for Tunneling Phenomena in Nanostructured Materials and Devices (together with Tel Aviv and the Hebrew Universities) - awarded by The Israel Science Foundation, 2000-2004. Renewed 2004-2007, and final renewal 2007-2009.

PROFESSIONAL RESEARCH PROJECTS

1. Etching and Plasma Produced by Intense Laser Irradiation of Solids. VATAT and Technion for buying an excimer laser, 1984, $75,000.

2. Dry and Clean Laser Etching of Polymers. Sponsored by IBM, Research Budget for 1986-7 was $50,000.

3. High Temperature Superconducting SNS SQUIDs and Bolometers, supported by the Israeli Ministry of Defense, budget for 1990-92 was $533,000.

4. High Temperature Superconducting SIS Tunnel Junctions and SQUIDs, supported by the Israeli Aircraft Industry, budget for 1990-1 was $136,000.

5. Two Sided Coating by DC Sputtering of YBCO Thin Films for Passive Microwave Devices, Supported by the Israeli Consortium for Superconductivity, Budget for 1992 was about $60,000.

6. Technological Feasibility of High T_c SQUIDs - in collaboration with the Naval Research Laboratory (NRL - Washington DC, USA), 1993-96, Supported by MOD, budget $440,000.

7. High T_c Bolometer Arrays. 1993-1995, supported by MOD, budget was $250,000. (in collaboration with Tel Aviv University and the Microelectronics Div. in the Technion).

8. High T_c Films and Junctions for Microwave Transmission Lines, in collaboration with Lincoln Laboratory, MIT. Supported by the US Air Force, $25.000, 1993-4

9. DM 300,000 for equipment from the Minerva center for High T_c Superconductivity (1994). See also "AWARDS".

10. Research and Applications of High Temperature Superconductors (together with Tel Aviv and Bar Ilan Universities) - supported by The Israel Science Foundation, 1994-1997. The Technion part of the budget is $330,000.

11. Same as above, supported by MINERVA, 1994-2001, $405,000. Renewed 2002-2008, about $350,000.

12. Layer by Layer Deposition of High Temperature Superconductors - supported by a grant of $200,000 from the Wolfson Foundation, 1996.

13. Phase Shifter Made of Large area Thin Films of YBCO - supported by the Ministry of Defense, 1996-2000, $540,000.

14. Investigation of the Superconducting Order Parameter in YBCO, Supported by the Israel Science Foundation, 1999-2000, budget $80,000.

15. Hopping Frequency Multiplexer Based on High Temperature Superconducting Films of YBCO - Supported by the US Air Force via the EOARD and the Israeli Ministry of Defense 2000-2002, budget $150,000.

16. Tunneling Phenomena in Nanostructured Materials and Devices, Center of Excellence together with Tel Aviv and the Hebrew Universities - supported by the Israel Science Foundation - the Technion part is $400,000 for 2000-2004, $200,000 for 2004-2007, and $140,000 for 2007-2009.

17. Eu 33,000 for equipment from the Minerva center for High T_c Superconductivity (2003).

18. Nanostructured hybrids of superconductors and ferromagnets, A DIP project including the Technion, and Bar-Ilan, Konstanz, and the Hebrew universities, the Technion part is 376,000 Euro for 2009-2013.

19. Testing "Cosmological" models in a Superconductor by Magneto-optical imaging of single flux quanta, supported by the Israel Science Foundation, annual budget is about 300,000 Shekel, 2009-2013.

NAMES OF GRADUATE STUDENTS:

(a) Completed their studies:

M. Okon	M.Sc.	1979	Formaldehyde Photodissociation and Deuterium Separation Induced by a Powerful CO_2 Laser Radiation
I. Levine	M.Sc.	1980	Infrared Fluorescence of SF_6 Molecules Excited by a TEA-CO_2 Laser.

M. Dahan	M.Sc.	1981	Optically Pumped CF_4 Laser
M. Naftali	M.Sc.	1984	Construction and Operation of a CO_2 Waveguide Laser, A Homodyne Experiment and Mode Pulling in a CO_2 Laser.
A. Fogelman	M.Sc.	1988	Unspherical Resonators with Aspherical Mirrors
P. Bahat	M.Sc.	1988	Linear Theory of Longitudinal Wiggler Free Electron Laser - Lowbitron, Inside a Conducting Waveguide
E. Aharoni	M.Sc.	1989	Infrared Emission Spectroscopy in the Interaction of Excimer Laser with Polymers and Superconductors.
Y. Ariel	M.Sc.	1991	Laser Ablation Deposition of High T_c Thin Films of $YBa_2Cu_3O_7$ on MgO and Al_2O_3. (School of Applied Science, Hebrew University).
M. Katz	M.Sc.	1992	High T_c Superconducting Detectors in the Infrared.
S. Israelite	M.Sc.	1992	The Competition Between Superconductivity and localization in the $Pr_xCa_zY_{1-x-z}Ba_2Cu_3O_{7-\delta}$ Compounds.
E. Aharoni	Ph.D.	1994	All $YBa_2Cu_3O_7$ Josephson Egde Junctions and SQUIDs.
A. Madyuni	M.Sc.	1996	Polarization Dependent IR Measurements.
O. Nesher	Ph.D.	1999	Tunneling in Oxygen Deficient Junctions Based on Thin Films of $YBa_2Cu_3O_{6.6}$.
N. Levy	M.Sc.	2001	Measurements of the Symmetry of the Order Parameter in YBCO Films.
L. Shkedy	Ph.D.	2004	Magneto-transport Investigation of Anisotropic Properties in the a-b plane of YBCO Films and Junctions.

A. Maniv	Ph.D.	2004	Measurements of spontaneous magnetic flux generated during a rapid thermal quench of a superconductor.
P. Aronov	M.Sc.	2005	Crossed Andreev reflection effect in $YBa_2Cu_3O_7$ junctions with the itinerant ferromagnet $SrRuO_3$.
G. Aharonovich	M.Sc.	2007	Properties of multilayers of high temperature superconductors and ferromagnets.
Y. Mor	M.Sc.	2008	Quantum vortex tunneling in the high temperature superconductors.
T. Kirzhner	M.Sc.	2011	Interface effects in d-wave SF junctions in the vicinity of domain walls.
T. Kirzhner	Ph.D.	2015	Died on Oct. 3, 2013 (Posthumous PhD) Coherence-length and energy-gap scales in cuprate and topological superconductors with a pseudogap.