

## GERSHON GROSSMAN

<b>Personal:</b>	Born in Haifa, Israel, December 28, 1942 Married with two children Citizen of Israel Present Residence: 15, Ovadia St. Haifa, Israel 34564 (972) 4-8334782
<b>Education:</b>	Sc.D., Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, Mass. U.S.A., 1971  M.Sc., (with distinction), Mechanical Engineering, Technion, Israel Institute of Technology, Haifa, Israel, 1967  B.Sc., (Cum Laude), Mechanical Engineering, Technion, Israel Institute of Technology, Haifa, Israel, 1964
<b>Summary of Academic and Industrial Experience:</b>	
2011 - present:	Professor Emeritus
1987 - 2011:	Professor
1979 - 1987	Associate Professor
1973 - 1979	Senior Lecturer
	Faculty of Mechanical Engineering, Technion - Israel Institute of Technology, Haifa, Israel. <i>Graduate and Undergraduate Teaching in Thermodynamics, Fluid Mechanics, Heat and Mass Transfer, Energy Technology, Cooling and Air Conditioning, Mechanical Engineering Laboratory.</i> (on sabbatical leave 1980 - 1982, 1987 - 1989, 1995-1996, 2007, 2010)
Spring-summer 2010 Spring-summer 2007 Spring 2005	Guest Researcher, National Institute of Standards and Technology (NIST), Boulder, Colorado, U.S.A. <i>Research on cryogenic cooling systems</i>
Summer 2001	Visiting Scientist, Lawrence Berkeley National Laboratory, Berkeley, California, U.S.A. <i>Research on combined heat and power systems</i>
1995 - 1996	Senior Development Staff Member, Lockheed Martin Energy Systems, Oak Ridge National Laboratory, Oak Ridge, Tennessee, U.S.A. <i>Research and development on residential absorption heat pumps and desiccant systems. Major projects - development of modular computer</i>

*simulation of absorption systems (ABSIM) and applications to complex multi-stage absorption heat pumps.*

- 1987 - 1989      Program Engineer, L'Garde, Inc. Tustin, California, U.S.A.  
*Research and development on inflatable structures. Major projects - deployable solar concentrator, high power inflatable radiator, advanced launch system recovery ballute, thermal management of spacecraft.*
- 1987 - 1989      Visiting Researcher, Department of Mechanical Engineering, University of California at Irvine, Irvine, California, U.S.A.
- Summer 1983, 1985, 1986, 1987, 1990-1995      Visiting Scientist, Oak Ridge National Laboratory, Oak Ridge, Tennessee, U.S.A.  
*Research on residential absorption chillers and heat pumps*
- Summer 1984  
Winter 1987      Visiting Professor, Department of Physics, Technische Universität München, Garching bei München, Germany.
- 1980 - 1982      Research Staff Member, Union Carbide Corp., Nuclear Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, U.S.A.  
*Research and development on industrial and residential heat pumps. Major projects - development of lithium bromide-water absorption heat transformer for low-grade heat recovery and computer simulation of different heat pump cycles.*
- 1975 - 1980      Consultant, Tadiran - Israel Electronics Industries, Applied Solar Devices Division, Tel Aviv, Israel.  
*Development of solar systems for domestic and industrial applications - absorption chiller, flat-plate and concentrating collectors, storage and control systems.*
- Summer 1978      Visiting Scientist, National Institute of Mechanical Engineering, Council for Scientific and Industrial Research, (CSIR), Pretoria, South Africa.  
*Research on solar air conditioning - system based on controlled evaporation and dehumidification with tri-ethylene glycol desiccant.*
- Summer 1975 & 1977      Visiting Associate Professor, Materials & Energy Research Center, Arya-Mehr University, Tehran, Iran.  
*Research on solar thermal systems.*
- Summer 1976      Academic Visitor, Department of Mechanical Engineering, Imperial College, London, England.
- 1975      Visiting Senior Lecturer, Faculty of Engineering, Ben-Gurion University, Beer-Sheva, Israel.
- 1971 - 1973      Staff Scientist, Avco Corp., Systems Division, Wilmington, Massachusetts, U.S.A.  
*Research and development on water desalination and purification - freeze crystallization and ion-exchange systems.*

1967 - 1971	Research Assistant and Graduate Student, Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts, U.S.A.
1966 - 1967	Teaching Assistant and Graduate Student, Faculty of Mechanical Engineering, Technion - Israel Institute of Technology, Haifa, Israel.
1967	Instructor, Heat and Power Technicians Course, Technion, Haifa, Israel.
1964 - 1966	Mechanical Engineer, Israeli Navy, Armament Research and Development Branch (Military Service). Rank - Lieutenant. <i>Development and testing of military equipment for naval applications.</i>

### **Administrative Experience:**

2013	Chair, Committee on formulating an Israeli Standard for Absorption Water Chillers, The Standards Institution of Israel.
2013	Chair, Committee on Academic Curriculum for Energy Engineering Studies toward a Bachelor's Degree in Israeli Colleges, Israel Council for Higher Education.
2010	Member, Academic Committee on National Effort to develop Technologies for reducing World use of Oil for Transportation, the National Economic Council, Prime Minister Office.
2008- 2010	Member, Energy Committee, the Israel National Council for Research and Development.
2005- present	Head, Rechler Cryogenic Cooling Laboratory, Faculty of Mechanical Engineering, Technion - Israel Institute of Technology.
1996 - present 1989 - 1995 1982 – 1987	Head, Solar Energy Laboratory, Faculty of Mechanical Engineering, Technion - Israel Institute of Technology.
2002 – 2010	Head, Center for Energy Engineering and Environmental Preservation, Faculty of Mechanical Engineering, Technion - Israel Institute of Technology.
2006 – present	Head, Energy Forum, the Samuel Neaman Institute for Advanced Studies in Science and Technology, Haifa, Israel.
2006 – present	Member, Green Campus Council, Technion - Israel Institute of Technology.
2005 – 2015	Member of the Executive Board, Israel Union for Environmental Defense (Adam Teva Vadin).

2008 – 2015	Member, Steering Committee for the Grand Technion Energy Program, Technion - Israel Institute of Technology.
2008 – present	Member, Graduate School Inter-Departmental Committee on Energy and the Environment, Technion - Israel Institute of Technology.
2004 – 2007	Member, Presidential Appointment Committee, Technion - Israel Institute of Technology.
2003 – 2005	Member, Steering Committee on Energy R&D, Chief Scientist Office of the Israel Ministry of Agriculture and Rural Development.
2000 – 2002	Senate representative to the Board of Governors, Technion - Israel Institute of Technology.
1997 - 2001	Dean, Faculty of Mechanical Engineering, Technion - Israel Institute of Technology.
1998 - 2000	Member, Evaluation Committee, Israel Mining Industries (IMI), Haifa, Israel
1999 – 2000	Member, Vice Presidents Appointment Committee, Technion - Israel Institute of Technology.
1996 - 1999	Chairman, Scientific Committee, and Member, Organizing Committee for the 99' International Solar Energy Society (ISES) Solar World Congress, Jerusalem, Israel
1994 - 1999	Member, Technology Branch Committee on Alternate Energies, Chief Scientist's Office, Israel Ministry of Trade and Industry.
1998	Member, Vice President for Research Committee on the Establishment of the Research Authority, Technion - Israel Institute of Technology.
1997 - 1998	Member, Academic Development Committee, Technion - Israel Institute of Technology.
1993 - 1995	Member, Advisory Committee, the Samuel Neaman Institute for Advanced Studies in Science and Technology, Haifa, Israel.
1993 - 1995	Member, Senate Research Committee, Technion - Israel Institute of Technology.
1991 - 1994	Member (since 1993 - Chairman), Judicial panel, Student Disciplinary Court, Technion - Israel Institute of Technology.
1990 - 1993	Member, Senate Steering Committee, Technion - Israel Institute of Technology
1990 - present	Member, Scientific Council, International Center for Heat and Mass Transfer, Ankara, Turkey (formerly Belgrade, Yugoslavia).

1989 - 1991	Member (since 1990 - Chairman), Institute Student-Faculty Committee, Technion - Israel Institute of Technology.
1987 - 1990	Chairman, Finance Committee, the '90 International Heat Transfer Conference, Jerusalem, Israel
1984 - 1987	Member, Standing Committee of the Senate for Undergraduate and Graduate Studies, Technion - Israel Institute of Technology.
1984 - 1987	Assistant Dean for Undergraduate Studies, Faculty of Mechanical Engineering, Technion - Israel Institute of Technology.
1982 - 1987	Member, Standards Committee for Solar Energy Systems, Israel Standards Institute.
1983 - 1984	Member, Undergraduate Curriculum Committee, Faculty of Mechanical Engineering, Technion - Israel Institute of Technology.
1981 - 1982	Member, Technical Committee on Heat Pump Program Integration, U.S. Department of Energy.
1978 - 1979	Member, Energy Conservation Awards Committee, Israel Ministry of Energy.
1978	Chairman, Organizing Committee for the International Conference on the Applications of Solar Energy, Haifa, Israel.
1975 - 1977	Head, Energy Laboratory, Faculty of Mechanical Engineering, Technion - Israel Institute of Technology.
1975 - 1977	Coordinator, Cooperative meetings of solar energy research groups at the Technion - Israel Institute of Technology.
1974, 1979	Coordinator, Departmental Seminars, Faculty of Mechanical Engineering, Technion - Israel Institute of Technology.
1974	Member, Institute Committee on Energy Research at the Technion.
1974	Member, Energy Committee, Israel Museum of Technology.

### **Current Research Interests and Activities:**

Heat Pumps: absorption chillers, heat pumps and heat transformers; waste heat utilization; industrial and residential heat pumps; energy conservation.

Solar Energy: heating and cooling of buildings; solar air conditioning and dehumidification; solar water and space heating; heat storage; solar energy for industrial applications.

Cryogenic Cooling: Stirling and Pulse Tube cryocoolers, Joule-Thomson systems, adsorption compressors

Micro-Electrical-Mechanical Systems (MEMS): thermal management; uncooled IR detectors; thermal actuators

**Consulting:**

- 2007 – 2009: Ricor – Cryogenic and Vacuum Systems, Ein Harod, Israel: *Consulting on the Company's involvement in a new enterprise concerning cooling of electronic circuits.*
- 2007: Erlich and Fenster, Patent Attorneys, Ramat Gan, Israel: *Consulting on litigations regarding patents on liquid desiccant dehumidification.*
- 2004 – 2005: Mor Engineering , Jerusalem, Israel: *Consulting on the development of a novel hybrid absorption/compression heat pump.*
- 2003 – 2004: Kibbutz Shefayim, Israel: *Consulting on the development of an artificial snow park.*
- 1998 – 2000: Gal-Shat LTD, Kfar-Saba, Israel: *Consulting on artificial snow dehumidification and cooling systems.*
- 1996 – 2000: The Jewish Agency, Department of Rural and Urban Development, Jerusalem, Israel: *Consulting on ice rink cooling systems.*
- 1998 – 1999: Drykor LTD, Atlit, Israel: *Consulting on liquid desiccant air conditioning and dehumidification systems.*
- 1997: Automat - Oranim Ltd. Jerusalem, Israel: *Development of a test method for freeze-protection systems for solar collectors.*
- 1994 – 1995: RASKOR - Delek Car Air-conditioning Ltd. Ramat-Gan, Israel: *Consulting on automotive air conditioning systems.*
- 1990 – 1992 Even-Ziv Co. Ltd. Tel Aviv, Israel: *Consulting on a novel refrigeration system.*
- 1990 – 1991 Israel Electric Corp., Haifa, Israel: *Study of dry cooling towers for rejection of waste heat from power plants.*
- 1989 – 1991 L'Garde Inc., Tustin, California, U.S.A.: *Consulting on thermal management of spacecraft and on inflatable structures.*
- 1985 – 1987 PAZ - Oil Co., Ltd., R&D Branch, Haifa, Israel: *Consulting on industrial applications of solar energy and heat pumps.*
- 1985 – 1987 TADIRAN - Israel Electronics Industries, Holon, Israel: *Consulting on thermal management in electronic packages.*
- 1983 – 1985 Australian Wool Industries, Ltd., Ashdod, Israel: *Consulting on energy conservation in the company's plant.*

1983 – 1985	GALIL Technologies Ltd., Ramat Gan, Israel: <i>Review of development proposals in the field of energy conservation.</i>
1982 – 1983	ELECTRA (Israel) Ltd., Rishon Letzion, Israel: <i>Consulting on solar-assisted residential heat pumps.</i>
1978 – 1980	ERGO - Energy Corporation, Ltd., Haifa, Israel: <i>Consulting on solar energy applications, energy conservation, co-generation.</i>
1979 – 1980	YALCIN TEKNİK Engineering Co., Ankara, Turkey: <i>Consulting on solar energy utilization for water heating, space heating, and air conditioning.</i>
1978 – 1980	IMCO - Industrial and Marine Engineering, Haifa, Israel: <i>Consulting on the development of a high-temperature concentrating solar collector.</i>
1977 – 1978	LIFE - Industrial Planning and Engineering Co., Haifa, Israel: <i>Consulting on solar energy applications and energy conservation.</i>
1978	PAZ - Oil Co., Ltd., Haifa, Israel: <i>Consulting on the participation of the company in a solar energy commercial venture.</i>
1978	Brown and Root International, Ltd., Tehran, Iran: <i>Consulting on solar heating in housing projects.</i>
1977	ARMITI - Consulting Engineers, Tehran, Iran: <i>Consulting on the design of solar water and space heating for a housing project.</i>
1969 – 1971	Lehigh University, Department of Metallurgy and Material Science, Bethlehem, Pennsylvania, U.S.A.: <i>Development of mathematical models for metal-forming processes.</i>

#### **Awards and Honors:**

2010	Elected Fellow - American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE).
2010	Hershel Rich Innovation Award, Technion - Israel Institute of Technology.
2009	Russell B. Scott Memorial Award, Cryogenic Engineering Conference, Tucson, Arizona, Cryogenic Society of America.
2008	Georg Alefeld Memorial Award on Absorption Heat Pump Technology, International Sorption Heat Pump Conference, Seoul, Korea.
2006	Excellence in Teaching Citation, course on Energy Technology, Technion - Israel Institute of Technology.



1993	General Yakov Dori Memorial Prize on Technological Innovation, City of Haifa, Israel.
1992	Sherman-Gilbert Chair in Energy, Technion - Israel Institute of Technology.
1989	Elected Fellow - American Society of Mechanical Engineers (ASME).
1978	CSIR, South Africa and NCRD, Israel - Scientist Exchange Program Grant.
1976	British Royal Society and Israel Academy of Sciences - Scientist Exchange Program Grant.
1975	Gutwirt Research award, Technion - Israel Institute of Technology.
1967 – 1970	Scholarship, Hebrew Technical Institute, New York, U.S.A.
1967 – 1970	Fulbright Grant for Doctoral Studies.
1960 – 1961 1961 – 1962 1963 – 1964	Student Honorary awards, Technion - Israel Institute of Technology

### **Membership in Professional Societies:**

American Society of Mechanical Engineers (ASME) – Fellow; Member of the Advanced Energy Systems Division Heat Pump Technical Committee, 1998 –2000.

International Solar Energy Society (ISES) - Member; Member of the board of directors, 1986 – 1989, 2008 - 2010; Member of the Executive Committee and Secretary of the Israeli Section, ISES, 1979 - 1980, 1982 - 1987; Chairman of the Israeli Section, 1992 – 1995, 2002-2006; Honorary Member since 2013.

American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) - Fellow; Member of Technical Committee 8.3 (Absorption and Heat-Operated Machines) and Technical Committee 8.12 (Desiccant and Sorption Technology); Member of Israeli affiliate - ISHRAE.

Cryogenic Society of America (CSA) – Member.

Israel Society of MOEMS (IsraMEMS) – Member; Secretary General and Member of the Governing and Founding Committee, 2002 – present.

### **Reviewer For Scientific Journals:**

AIAA Journal of Spacecraft and Rockets



AIChE Journal

AIP Journal of Renewable and Sustainable Energy

Applied Energy

Applied Thermal Engineering

ASHRAE Transactions

ASME Journal of Solar Energy Engineering

ASME Journal of Engineering for Gas Turbines and Power

Canadian Journal of Chemical Engineering

Energy – The International Journal

Heat Transfer Engineering

Industrial and Engineering Chemistry Research

International Archives of Heat and Mass Transfer

International Journal of Heat and Fluid Flow

International Journal of Heat and Mass Transfer

International Journal of HVAC&R Research

International Journal of Refrigeration

International Journal of Thermal Sciences

Israel Journal of Technology

Journal of Computing and Information Science in Engineering

Journal of Heat Recovery Systems and CHP

Journal of Membrane Science

Solar Energy Journal

**Reviewer for Sponsoring Organizations:**

U. S. National Science Foundation (NSF)

German-Israeli Foundation (GIF) for Scientific Research and Development

Israel Science Foundation

