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Curriculum Vitae of

Dan M. Marom

- **Personal Detail**

Full name:	Dan Mark Marom
Date and place of birth:	July 14, 1967 in Detroit, Michigan (U.S.A.)
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- **Education**

B.Sc.:	Mechanical Engineering (1985-1989) Tel Aviv University Magna Cum Laude (GPA: 88.58/100)
M.Sc.:	Electrical Engineering (1991-1995) Tel Aviv University Magna Cum Laude (GPA: 94.24/100)
Thesis advisor:	Prof. David Mendlovic
Thesis title:	*Dynamic optical interconnections with multistage architectures*
Ph.D.:	Electrical Engineering (1995-2000) University of California, San Diego (GPA: 4.0/4.0)
Thesis advisor:	Prof. Yeshaiahu Fainman
Thesis title:	*Femtosecond-rate optical signal processing with applications in ultrafast communications*

- **Employment history**

2013-present	Associate Professor Hebrew University
2005-2013	Senior Lecturer Hebrew University
2000-2005	Member of the Technical Staff Advanced Photonics Research Department Bell Laboratories, Lucent Technologies

- **Professional Activities**

  General Chair of Optical MEMS 2015 conference, to take place in Jerusalem, August 2015.

  Technical co-Chair of Photonics in Switching 2014 (Optical Systems subcommittee).

  Program committee member for Optoelectronics and Communications Conference (OECC) 2014.

  Technical committee member of iNNOVEX, 2014.

  IEEE Young Investigator Award Committee Member, 2013-2014.

  Senior Editor of IEEE Photonics Technology Letters, 2013-present.

  Associate Editor of IEEE Photonics Technology Letters, 2008-2013.

  Co-Chair of IEEE Optical MEMS 2004 conference, Japan, August 2004.

  Program committee member for Optical Fiber Communications (OFC), 2006-08.

  Program committee member for Conference on Lasers and Electro-Optics (CLEO), 2007-2009.

  Program committee member for the Annual Meeting of the Laser and Electro-Optics Society (LEOS), 2008-2010.

  Program committee member for Frontiers in Optics (FiO, formerly the Annual Meeting of the Optical Society of America), 2008-2013.

  Program committee member for Optical MEMS, 2004-2006, 2013-present

  Committee member for ISF awards in optics 2009, 2013.

  Reviewer for OSA journals (Journal of the Optical Society of America, Optics Letters, Optics Express, Applied Optics), IEEE journals (Journal of Lightwave Technology, Photonics Technology Letters), and SPIE (Optical Engineering).

  Member of Optical Society of America (OSA).

  Senior Member of Institute of Electrical and Electronics Engineers (IEEE-LEOS).

- **University Activities**

  Faculty Candidate Screening Committee, School of Engineering, 2014-present.

  Research Student Authority member, Applied Physics representative, 2013-present.

  Graduate student advisor for Applied Physics Department, 2007-2013.

  Curriculum committee for NanoScience program, 2011-present.

- **Awards, Citations, Honors, Fellowships**

  2014: Photonics Society Distinguished Lecturer Award

  2008: Senior Member, IEEE Photonics Society

  2006: Peter Brojde Excellence in Engineering Award

  2006: Golda Meir Fellowship

  1999: Best Student Paper Award of LEOS Annual Meeting.

  1996-2000: Fannie and John Hertz Foundation fellow

  1995-1996: Powell Foundation fellowship

- **Synopsis of Research Activity**

  Optical Waveguide-based Devices
  Creating functional devices based on optical waveguides with tailored material properties. Waveguides fabricated from polymers enable the host material to be easily doped with nanocrystals. The composite route with colloidal nanocrystals is an effective alternative to epitaxial fabrication methodologies, enabling simpler fabrication, greater diversity of materials, and freedom from lattice-matching considerations. Semiconductor nanocrystals, in particular, can be used for their very fast dynamics associated with electronic nonlinearities. The current research activity is investigating the doping of polymer waveguides with semiconductor nanocrystals for "fast" applications in the telecom space (optical modulators, amplifiers, limiters, lasing properties, etc.).

  Optical Switching via MEMS and LCoS spatial light modulators
  Inventor, lead researcher, and developer of the first Wavelength-Selective 1×K Switch, a device that can switch individual optical channels from a DWDM input port to multiple (K) output ports with low-loss, low polarization dependencies, ultra wide and flat bandwidth response, and channel equalization capability. The switch's desirable attributes are fundamental for the creation of all-optical networks, and today constitute a market segment of many $100M per annum. The MEMS technology has also been used for tunable channelized dispersion compensation and approximate inverse filtering of distorted data signals in 2-R optical signal regeneration. Many of these operations are now performed with LCoS technology in the lab, demonstrating various photonic spectral processors. Using two-dimensional dispersion schemes, demonstrated filtering with 3 GHz resolution across the entire C-band, representing a record space-bandwidth product.

Demonstrated optimized MEMS spectral amplitude and phase modulator, based on diffractive optics principles and simplified actuation by mechanically linking mirror elements. WSS functionality extension to support networking functionality over Space-Division Multiplexing, whether in the form of multi-core or few-mode fibers platforms.

Ultrafast optics and Communications
Specialization in instantaneous spatial-temporal signal processing using optical nonlinearities. Performed first real-time space-to-time conversion experiments using cascaded three wave mixing processes in a spatial-temporal processor. Real-time correlation experiments between spatial domain signals and temporal domain signals. Real-time four-wave mixing of spectrally decomposed waves for phase conjugation and time reversal of complex amplitude ultrafast waveforms. Achieved enhanced temporal resolution (or super-resolution) by operating a real-time time-to-space converter in the nonlinear conversion regime. Working towards extending performance of processors via planar lightwave integration. Demonstrated and analyzed a data communication format based on ultrafast pulse packets in a time division multiplexing scheme using real-time spatial-temporal processors for multiplexing from and demultiplexing to slower electronics. Investigated a code division multiple access/pulse position modulation format (CDMA/PPM), with ultrafast pulses. CDMA facilitates network management by interference suppression, with efficient bandwidth utilization by PPM.

Nonlinear Optics
Optical solitons, and soliton perturbations and collisions. Investigated soliton-Airy collisions and soliton shedding from Airy pulses, all in the temporal domain (one-dimensional media, i.e. single mode fiber or plane waves).

Optical Switching via Polarization modulation
Built a transparent bypass-exchange optical switch (2×2) based on birefringent crystals and a liquid crystal polarization modulator. Switch was scaled up to perform reduced-state 4×4 switching, enabling optical implementation of a three-dimensional multistage interconnection network. Team leader, design, construction, and testing of two generations of a folded 8×8 optical multistage interconnection network with transparent switches based on birefringent computer generated holograms and polarization control. Routing algorithm and switching performed by control computer.

- **Research Grants:** ***Raised approximately $2.5M in 8 years.***

  Rectangular core mode division multiplexing platform, from HUJI Applied Science Fund, 2014. Awarded 25,000 USD.

  INSPACE: Spatial-Spectral Flexible Optical Networking, FP7-ICT-Call 11. 2014-2017. 300,000 Euro.

  Spatial Mode Multiplexing, from HUJI Applied Science Fund, 2012. Awarded 40,000 USD.

  Nonlinear Doped-Polymer Optical Waveguide Devices for Photonic Information Processing from Israel Science Foundation, 2012-2016. Awarded 1,100,000 ILS.

FOX-C: Flexible Optical Cross-connect Nodes enabling next generation flexible optical networking, FP7-ICT-Call 8. 2013-2016. 320,000 Euro.

LED test box for fruit preservation extension, 2012-13. Awarded 50,000 GBP by Wolfson Foundation.

Industry sponsored development project, details under NDA, 2012-2014. Awarded 105,000 USD.

Photonically Assisted Analog-to-Digital Conversion, Ministry of Industry and Trade under Kamin program, 2011-2013. Awarded 800,000 NIS for two years.

OTONES: Optical Access Networking using OFDM Tones, EC under ERANetPlus program, 2011-2014. Awarded 105,000 Euro (as subcontractor to Finisar).

TeraSanta: Creating an efficient terabit/secOFDM channel, Ministry of Industry and Trade under Magnet program, 2010-2014. Awarded 1,220,000 NIS for first four years (now being extended to fifth and last year).

Photonically-assisted analog-to-digital conversion, from HUJI Applied Science Fund, 2010. Awarded 40,000 USD.

Nonlinear optical waveguide devices composed of semiconductor nanocrystals in a polymer host. From HUJI Science Faculty Fund, 2010. Awarded 17,000 USD.

Alignment and Fixation of Semiconductor Nanocrystals Embedded in Polymeric Matrices; The Critical Step on the Path towards Novel Optical Devices, from HUJI Applied Science Fund, 2008. Awarded 25,000 USD.

Adaptive Photonic Spectral Processor (PSP) for Mitigating Transmission Impairments, from Israel Science Foundation, 2007-2009. Awarded 155,000 USD.

Adaptive optics at 1.55 microns, from (Israel Defense Development Agency (Mafaat), 2008-2010. Awarded 450,000 NIS.

Undergraduate Optoelectronics Laboratory, from Intel, 2007. Awarded 40,000 USD.

- **Educator Experiences**

  Supervised M.Sc. students:

  2006-2009: Yoram Palti: *Complex Optical (Amplitude and Phase) Device Characterization Tool*

  2007-2009: Yaron Glazer: *Novel Polymeric Waveguides Optimized For Nanocrystals Hosting*

  2007-2009: David Seinfeld (advanced to direct PhD)

  2008-2010: Asael Adler: *High Index Contrast Polymer Optical Waveguides*

  2008-2010: Jonathan Dunayevsky: *MEMS Spatial Light Modulator for Spectral Phase and Amplitude Modulation*

  2008-2011: Amitai Rudnik: *Airy-Solitons interactions*

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