BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Jacob Scheuer	Faculty member, head of the NanoPhotonics Lab at Tel Aviv University

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Technion, Haifa, Israel	B.Sc	07/92	Electrical Engineering
Technion, Haifa, Israel	B.A,	07/92	Physics
Technion, Haifa, Israel	Ph.D.	03/01	Electrical Engineering

NOTE: The Biographical Sketch may not exceed four pages. Follow the formats and instructions below.

A. Personal Statement

Large scale integrated optics has been on the list of “the next game changer” for many years. Nevertheless, such technology is still considered futuristic and only a few, small-scale integrated, devices are being used commercially. The missing key technologies are twofold: 1) The ability to fabricate high quality and versatile optical components; 2) Doing so in mass production and low costs. The approach we propose in order to tackle these obstacles is merging the unique properties of high quality and versatile advanced materials (primarily sol-gel) with the unique capabilities of Nano-imprint lithography (NIL). NIL technology has developed substantially during the last decade, demonstrating resolution which is similar to state of the art E-beam lithography and the ability to form a wide variety of active and passive materials. As a research associate at Caltech, I was involved with the development and demonstration of the first optical components fabricated by NIL. When I joined Tel-Aviv University in 2006, I have established here similar capabilities and further expanded them by acquiring and developing advanced infrastructure and processes for NIL technology. To date, my group at Tel-Aviv University is leasing team in this field in Israel with more than 10 years of practical experience. TAU nanofabrication center is the only institute in Israel with the necessary facilities, knowhow and expertise needed for the proposed project.

My group at Tel Aviv University focuses on nano-photonics physics and applications. In particular we have made substantial work on plasmonics, dielectric and metallic meta-surfaces, sensing, polymer optics, and solar power harvesting. The research in my group yielded more than 100 scientific publications in peer-review journal, a similar number of conference presentation (of which 21 were invited) and more than 10 patents. Throughout my career at Tel Aviv University I received significant number of research grants from various sources such as ISF, BSF, GIF, Department of Defense, DARPA, Ministry of Science and Technology, and the Ministry of Economics. I have supervised more than 20 graduate students of which 15 have graduated (4 PhD, 11MSc) and 7 are at different stages of their studies. Currently, my group includes 5 PhD students, 2 MSc students and 2 postdoctoral researchers.

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NAME POSITION TITLE

B. Positions and Honors

Positions and Employment

2003-2004 Post-doctoral associate, Department of Applied Physics, Caltech, California, USA.
2004-2006 Research associate, Center for the Physics of Information, Caltech, California, US.
2006-2010 Senior lecturer, School of Electrical Engineering, Tel-Aviv University, Israel
2010- Associate Professor, School of Electrical Engineering, Tel-Aviv University, Israel
2012-2013 Visiting professor, Atomic physics group, Northwestern University, Illinois, USA.
2016- Professor, School of Electrical Engineering, Tel-Aviv University, Israel
2017- Chair, Department of Physical Electronics, Tel-Aviv University

Other Experience and Professional Memberships

2001-2006 Member, IEEE
2006- Member OSA
2007- Senior Member, IEEE
2013-2014 Member, SPIE
2015- Fellow, SPIE
2017 - Fellow, OSA

Honors

1997 Special Gootvirt foundation excellence scholarship
1998-2000 Levi-Eshcol scholarship for research in national scientific infrastructure areas (Ministry of Science)
2000 The Council for Higher Education in Israel scholarship for excellent PhD students in high-tech research areas
2004-2005 Caltech Information Science and Technology postdoctoral fellowship
2007 British Council Research Exchange program (RXP) fellowship
2008 T AU-Northwestern nanotechnology collaboration award
2010 British-Israel Research and Academic Exchange Partnership (BIRAX) award

C. Peer-reviewed Publications

1. U. Ben-Ami, R. Nagar, N. Ben-Ami, J. Scheuer, M. Orenstein, G. Eisenstein, A. Lewis, E. Kapon, F. Reinhardt, P. Ils, and A. Gustafsson, "*Near-field scanning optical microscopy studies of V-grooved quantum wire lasers"*, **Appl. Phys. Lett**. 73, 1619 (1998).
2. J. Scheuer and M. Orenstein, "*Optical Vortices Crystals – Spontaneous Generation in Nonlinear Semiconductor Microcavities*", **Science** 285, 230 (1999).
3. J. Scheuer and M. Orenstein , "*Interactions and switching of spatial soliton pairs in the vicinity of a non-linear interface*", **Opt. Lett.** 24, 1735 (1999).
4. Jacob Scheuer and Meir Orenstein, "*Oscillation modes of spatial soliton arrays in waveguides with nonlinear boundaries*", **J. Opt. Soc. Am. B.** 19, 732 (2002).
5. Y. Yadin, J. Scheuer, Y. Gross and M. Orenstein, "*Light flowers from coherent VCSEL arrays*", **Opt. Lett.** 27, 1908 (2002).
6. J. Scheuer and A. Yariv, "*Two-Dimensional Optical Ring Resonators Based on Radial Bragg Resonance*", **Opt. Lett**. 28, 1528 (2003).

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7. Y. Huang, G. T. Paloczi, J. Scheuer and A. Yariv, *"Soft lithography replication of polymeric microring optical resonators"***, Opt. Express.** 11, 2452 (2003).
8. J. Scheuer and A. Yariv, *"Optical Annular Resonators Based on Radial Bragg and Photonic Crystal Reflectors"*, **Opt. Express** 11, 2736 (2003).
9. J. Scheuer and A. Yariv, "*Annular Bragg Defect mode Resonators*", **J. Opt. Soc. Am. B.** 20, 2285 (2003).
10. J. Scheuer and A. Yariv, *"Coupled-Waves Approach to the Design and Analysis of Bragg and Photonic Crystal Annular Resonators"*, **IEEE J. Quantum Electron.** 39, 1555 (2003).
11. J. K. S. Poon, J. Scheuer, S. Mookherjea, G. T. Paloczi, Y. Huang and A. Yariv, *"Matrix analysis of coupled-resonator optical waveguides"*, **Opt. Express**. 12, 90 (2004).
12. J. K. S. Poon, J. Scheuer and A. Yariv, *"Wavelength Selective Reflector Based on a Circular Array of Coupled Ring Resonators"*, **IEEE Photon. Tech. Lett**. 16, 1331 (2004).
13. G. T. Paloczi, Y. Huang, J. Scheuer and A. Yariv, *"Soft Lithography Molding of Polymer Integrated Optical Devices: Reduction of the Background Residue"*, **J. Vac. Sci. Technol. B**. 22, 1764 (2004).
14. J. Scheuer and A. Yariv, *"Circular Photonic Crystal Resonators"*, **Phys. Rev. E.** 70, 036603 (2004).
15. J. K. S. Poon, J. Scheuer, Y. Xu and A. Yariv, *"Designing Coupled-Resonator Optical Waveguide Delay Lines"*, **J. Opt. Soc. Am. B**. 21, 1665 (2004).
16. J. Scheuer, W. M. J. Green, G. DeRose and A. Yariv, *"Low Threshold Two-Dimensional Annular Bragg Lasers"*, **Opt. Lett**. 29, 2641 (2004).
17. W. M. J. Green, J. Scheuer, G. DeRose, A. Yariv and A. Scherer, "Assessment of lithographic process variation effects in InGaAsP annular Bragg resonator lasers", **J. Vac. Sci. Technol. B**. 22, 3206 (2004).
18. W. M. J. Green, J. Scheuer, G. DeRose and A. Yariv, *"Vertically emitting annular Bragg lasers using polymer epitaxial transfer"*, **Appl. Phys. Lett**. 85, 3669 (2004).
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21. J. Scheuer, W. M. J. Green, G. DeRose and A. Yariv, *"InGaAsP annular Bragg lasers: theory, applications and modal properties"*, **IEEE J. Sel. Top. Quantum Electron.** 11, 476 (2005).
22. J. Scheuer and M. Orenstein, *"All-Optical Gates facilitated by Soliton Interactions in Multilayered Kerr Medium"*, **J. Opt. Soc. Am. B**. 22, 1260 (2005).
23. J. Scheuer, W. M. J. Green, G. DeRose and A. Yariv, *"Lasing from a circular Bragg nanocavity with an ultra-small modal volume"*, **Appl. Phys. Lett**. 86, 251101 (2005).
24. D. Chang, J. Scheuer and A. Yariv, *"Optimization of circular photonic crystal cavities – beyond coupled mode theory"*, **Opt. Express** 13, 9272 (2005).
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26. J. Scheuer and A. Yariv, "*Sagnac Effect in Coupled-Resonator Slow-Light Waveguide Structures*", **Phys. Rev. Lett.** 96, 053901 (2006).
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32. J. Scheuer, “*Slow propagation of externally injected light pulses in coupled semiconductor laser array*”, **Europhysics. Lett.** 77, 44004 (2007).
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54. S. Levy, V. Lyubin, M. Klebanov, J. Scheuer, and A. Zadok, *"Stimulated Brillouin scattering amplification in centimeter-long directly written chalcogenide waveguides*", **Opt. Lett.** 37, 5112 (2012).
55. O. Kotlicki*, J. Scheuer and M.S. Shahriar, "*Theoretical study on Brillouin fiber laser sensor based on white light cavity*", **Opt. Express** 20, 28234 (2012).
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67. O. Kotlicki* and J. Scheuer, “Dark states ultra-long fiber laser for practically secure key distribution”, Quantum Inf. Process. 13, 2293–2311 (2014). (**special issue on secure quantum communications**)
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69. O. Kotlicki* and J. Scheuer, “Wideband Perfect Coherent Absorber based on White Light Cavity”, **Opt. Lett.** 39, 6624–6627 (2014).
70. D. Bar-Lev* and J. Scheuer, “Plasmonic Meta-Surface for Efficient Ultra-Short Pulse Laser-Driven Particle Acceleration”, **Phys. Rev. ST Accel. Beams** 17, 121302 (2014).
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77. J. Scheuer and S. Shahriar, “Lasing dynamics of super and sub luminal lasers”, **Opt. Express** 23, 32350– 32365 (2015).
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79. J. Scheuer, “Quantum and thermal noise limits of coupled resonator optical waveguide and resonant waveguide optical rotation sensors”, **J. Opt. Soc. Am. B** 33, 1827-1834 (2016).
80. J. Scheuer, “Metasurfaces based holography and Beam shaping: Engineering the phase profile of light”, **Nanophotonics 6**, 137-152 (2017).
81. V. Egorov*, M. Eitan* and J. Scheuer, “Genetically optimized All-dielectric metasurfaces”, **Opt. Express** 25, 2583-2593 (2017).
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83. P. Brenner†, O. Bar-On*,†, T. Siegle, T. Leonharf, R. Gvishi, C. Eschenbaum, H. Kalt, J. Scheuer, and U. Lemmer, “3-D Whispering Gallery Mode Microlasers by Direct Laser Writing and Subsequent Soft Nanoimprint Lithography”, **Appl. Opt**. 56, 3703-3708 (2017).
    † - Equal contribution
84. J. Scheuer, “Optimal interfacing with coupled-cavities slow-light waveguides: mimicking periodic structures with a compact device”, **Opt. Express** 25(14), 16260 (2017).

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85. O. Kotlicki* and J. Scheuer, “Thermal self-stability, multi-stability, and memory effects in single-mode Brillouin fiber lasers”, **Opt. Express** 25(22), 27321 (2017).

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90. Y. Blau*, M. Eitan*, V. Egorov*, A. Boag, Y. Hanein, and J. Scheuer, “*In situ* real-time beam monitoring with dielectric meta-holograms”, **Opt. Express** 26(22), 28469-28483 (2018).

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Program Director/Principal Investigator (Last, First, Middle):