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Curriculum Vitae of Roei A. Cohen

April, 2022

RESEARCH POSITIONS

2020 – Today **Founder and Chief Scientist**

Star Photonics, Tel Aviv

R&D for linear and non-linear electro-optical circuits in integrated optics.

EDUCATION

2011 – 2020 **Tel Aviv University**

Ph.D. in Electrical Engineering

Dissertation – "Double Injection Method in Silicon Photonics".

Advisors: Prof. Shlomo Ruschin & Prof. Ofer Amrani.

2007 – 2011 **Tel Aviv University**

M.Sc. in Physics – Graduated Cum Laude

Thesis – "The design and fabrication of Electro-Optic modulator in Silicon Photonics".

Advisors: Prof. Menachem Nathan & Prof. Abraham Katzir.

2003 – 2007 **Ben-Gurion University of the Negev**

B.Sc. in Physics

AWARDS & PRIZES

- Electro-Optic Foundation of EE School, outstanding research work, Tel Aviv, Israel, 2019.
- Norman Rozenberg Foundation prize, School of EE, Israel, 2019.
- Weinstein Research Institute for Signal Processing, Best Article, Israel, 2019.
- Weinstein Research Institute for Signal Processing, Best Article, Israel, 2016.
- Department conference, school of engineering, Tel Aviv, Israel, 2013.

GRANTS

- Ministry of Defense – MAF'AT grant for Microwave Photonics 2016 (200K ILS).
- Ministry of Defense – MAF'AT grant for RF photonics 2013-2015 (600K ILS).

JOURNAL PUBLICATIONS

1. R. A. Cohen, O. Amrani, S. Ruschin, "Double Injection modulator – Sensitivity analysis", Optics Express, under peer review, Dec. 2021.
2. R. A. Cohen, O. Amrani, S. Ruschin, "Response shaping with a silicon ring resonator via double injection", **Nature Photonics**, vol. 12, no. 11, pp. 706–712, Nov. (2018).
3. R. A. Cohen, O. Amrani, S. Ruschin, "Linearized electro-optic racetrack modulator based on double injection method in silicon", Optics Express, Vol. 23, Issue 3, pp. 2252-2261, (2015).

PATENTS

1. R. A. Cohen, O. Amrani, S. Ruschin, "Response Shaping by Multiple Injection in a Ring-Type Structure", US11101620B2 (granted 2021).

CONFERENCE PROCEEDINGS

1. R. A. Cohen, O. Amrani, S. Ruschin, "Parameters-Insensitive Modulator for Optical Interconnect Systems Based on Double Injection", Optical Interconnect (IEEE), Santa Fe, NM, USA, 2019.
2. R. A. Cohen, O. Amrani, S. Ruschin, "The Multi-Functionality of Double-Injection", OASIS-7, Tel Aviv, Israel, 2019.
3. R. A. Cohen, O. Amrani, S. Ruschin, "Response Shaping by a Silicon Racetrack Resonator via Double Injection Method", Industrial Affiliates Program, Tel Aviv, Israel, 2016.
4. R. A. Cohen, O. Amrani, S. Ruschin, "Improving the Linearity of a Silicon-Based Racetrack Modulator via Double Injection", COMCAS, Tel Aviv, Israel, 2015.
5. R. A. Cohen, O. Amrani, S. Ruschin, "Linearized Electro-Optic Silicon Racetrack Modulator Based on Double Injection Method", Microwave Photonics (IEEE), Paphos, Cyprus, 2015.
6. R. A. Cohen, O. Amrani, S. Ruschin, "Linearized electro-optic racetrack modulator based on double injection method in silicon", OASIS-5 2015, Tel Aviv, Israel, 2015.

WORK EXPERIENCE

2011 – 2013 **Teaching Assistants Supervisor**

Tel Aviv University

Supervisor of electronic lab course for 4th year undergraduate students.

2008 – 2010 **Teaching Assistant**

Tel Aviv University

Assistant at the physics lab course for undergraduate students.

2001 – 2003 **Founder of MNS Company**

Venture Capital Funds in Israel

Fundraising for "Multi-Devices Network" software that dealt with computers networks, conceived and programmed by me.

EXPERTISE

- Electromagnetic propagation in waveguides.
- Carrier transport in semiconductors.
- Optical structures, resonators, switches, sensors and reflectors.
- Electro-Optical modulators driven by PN diodes and MOS capacitors.
- Nonlinear Optics: Four-Wave Mixing, Quasi-Phase Matching, Cavity Resonances.
- Nonlinear Effects: Two Photon Absorption, Free Carriers, Kerr (optical, DC).
- Mask designing in CAD tools.
- Design and simulations of fabrication process for Silicon Photonics circuits.
- Fabrication of nano-scale structures (standard and E-beam lithography).
- Design and construction of measurement stations for electro optical chips supporting RF.
- Modeling linear and nonlinear optics.
- MATLAB, C/C++ coding in 64bit architecture.
- Graphical UI design.

LANGUAGES

- Hebrew – native speaker
- English – read, write and speak fluently