

# Raanan Gad

## 2017 Curriculum Vitae

### Contact Information

[raanan.gad@utoronto.ca](mailto:raanan.gad@utoronto.ca)

[raanan.gad@gmail.com](mailto:raanan.gad@gmail.com)

### Education

- 2012-2015 **Post-Doctoral Fellow**, University of Toronto, Institute of Biomaterials & Biomedical Engineering, and The Department of Electrical & Computer Engineering.  
**Research:** *Nanophotonics, Nanobiosensing and Neurophotonics.*  
**Supervisor:** Ofer Levi
- 2008-2012 **Ph.D.**, Physics, Technion - Israel Institute of Technology, Department of Physics.  
**Thesis:** *Magnetically Induced Transparency in a Classical Magnetized Plasma.*  
**Supervisors:** Amiram Ron, Amnon Fisher  
**M.Sc.**, Physics, Technion - Israel Institute of Technology, Department of Physics.  
**Thesis:** *Investigation of a Hollow Anode with an Incorporated Ferroelectric Plasma Source in Millisecond Time Scale.*  
**Supervisors:** Yakov Krasik, Joshua Felsteiner
- 1998-2001 **B.A.**, Physics, Technion - Israel Institute of Technology, Department of Physics.

### Awards

- 2013-2015 CRANIA Post-Doctoral Fellowship
- 2013-2015 Mitacs-Accelerate Post-Doctoral Fellowship
- 2012 The Samuel Goldsmith Award for Best Student Presentation, Israel Plasma Science and Technology Association (IPSTA), The 14th Israel Conference on Plasma Science and Applications, February 28, 2012, Weizmann Institute of Science, Rehovot, Israel.
- 2012 The Amnon Pazy Prize for excellence in the PhD research, the Council For Higher Education, Planning & Budgeting Committee, Hebrew University, Israel.

### Military Service

- 1997-1998 **Lieutenant Commander** – Israel Naval Academy, XO of Israeli navy ship, head instructor of basic academic training in the Naval Academy, Haifa, Israel.
- 1996-1998 **Israel Naval Academy** - Advanced training (Completed with excellence), Haifa, Israel.
- 1992-1994 **Israel Naval Academy** – Basic training, Haifa, Israel.

## **Research & Professional Experience**

2012-2015 **Post-Doctoral Fellowship** – *Nanophotonics, Nanobiosensing and Neurophotonics, Institute of Biomaterials & Biomedical Engineering, and The Edwards S. Rogers Sr. Department of Electrical Engineering & Computer Engineering, University of Toronto, Toronto, ON, Canada.*

Investigated different schemes for biosensing with high quality factors and sensitivity, based on 2D photonic crystal slabs symmetry and by perturbation of dark modes. My work includes theoretical investigation of coupled-mode systems, sub-wavelength numerical simulations of photonic devices and experimental nano-fabrication and realizing nanostructures.

I explore the complex physics behind 2D PCS and harvest this for Biosensing. I investigate multimodality optical brain imaging in different scenario. We showed the applicability of laser speckle contrast imaging to monitor blood-brain-barrier disruption and supported these findings with flow-dynamic simulations. Making use of phase-elements provided depth discrimination into the tissue.

2008-2012 **Ph.D.** – *Plasma physics and wave plasma interaction, Department of Physics, Technion – Israel institute of Technology, Haifa, Israel.*

In my Ph.D. research I demonstrated experimentally, for the first time, magnetically induced transparency in opaque magnetized plasma. Magnetically induced transmission in plasma is a classical analog to the electromagnetically induced transparency in atomic systems. This provides means to control the extent of absorption of electromagnetic radiation in magnetized plasma. I showed numerically that phenomena such as nondiffraction and stored light, demonstrated in quantum systems, are also feasible in classical plasma. I have built a laboratory, the experimental system and related diagnostics. My experience extends to pulsed power, high voltage and various diagnostics is required.

2002-2012 **Physicist & Project Manager** – Rafael Advanced Defense Systems Ltd., Acre Rd., P.O.B 2250 Haifa 31021, Israel. Rafael designs, develops, manufactures and supplies a wide range of high-tech defense systems.

1999-2002 **Physicist** – Nanomotion Ltd, Yokneam, Israel. Nanomotion is a small startup company that develops a unique Piezoelectric motor that is accurate to a nanometer scale.

## **Press & News**

2012 My work on Magnetically induced transparency in cold magnetized plasma was featured as Physics Synopsis.

### **Student Mentoring & Teaching Experience**

- 2014-2015 Teaching Assistance - Bio Photonics (Winter 2014 - ECE1475)
- 2012-2013 Teaching Assistance - Bio Photonics (Fall 2012 - ECE1475)
- 2012-2013 Teaching Assistance - Introduction to Electronic Devices (Fall 2012 - ECE335)
- 2013-present Cory Rewcastle, M.A.Sc. student – Nanophotonics (University of Toronto)
- 2013-present Soroosh Ahmadi, M.A.Sc. student – Nanophotonics (University of Toronto)
- 2013-2014 Huayi Gau, M.A.Sc. student – Nanophotonics (University of Toronto)
- 2012-2013 Costa Nicholaou, M.A.Sc. student – Nanophotonics (University of Toronto)
- 2012-2013 Yaaseen Atchia, M.A.Sc. student – Multimodality brain imaging (University of Toronto)
- 2012-present Iliya Sigal, Ph.D. student – Multimodality brain imaging (University of Toronto)
- 2011-2015 Ziv Abelson, M.Sc. student – Plasma physics (Tel Aviv University)

### **Academic associations, affiliations**

- 2009-present **Member**, American Physical Society (APS)
- 2012-present **Member**, Optical Society of America (OSA)

### **Professional Experience**

- 1999-2002 Responsible for scientific product development. Modeling and developing a piezoelectric motor, its electrical behavior and output motion. Nanomotion Ltd.
- 2002-2007 Head of project. Full scale project management: scientific, technological, budget- design and production. Rafael Advanced Defense Systems Ltd.
- 2015-present Head of R&D group. Rafael Advanced Defense Systems Ltd.