Babak Olyaeefar

Academic and Education

- **Doctor of Philosophy in Photonics**
  Photonics Group, Research Institute for Applied Physics & Astronomy, the University of Tabriz, Tabriz, Iran
  From September 2011 to January 2015
  Thesis Title: “Design and optimization of plasmonic waveguides operating in telecommunication wavelength”, Supervised by Dr. Habib Khoshsima and Advised by Dr. Sirous Khorram

- **Master of Science in Organic Photonics**
  Photonics Group, Research Institute for Applied Physics & Astronomy, the University of Tabriz, Tabriz, Iran
  From 2009 to 2011
  Thesis Title: “Experimental Investigation of Electro-Optical Switching Dynamics in Doped Nematic Liquid Crystals”, Supervised by Dr. Habib Khoshsima & Dr. Habib Tajalli

- **Bachelor of Science in Atomic & Molecular Physics**
  Atomic & Molecular Group, Physics Department, Tabriz University, Tabriz, Iran
  From 2003 to 2008

Research Background

- Plasmonic waveguides
- Plasmonic nano-antennas
- Slow light in 2D photonics crystals
- Liquid Crystal sensors
- Liquid Crystal optical data storage and gratings
- Liquid Crystal intensity and phase modulators

Research Interests

- Perovskite solar cells
- Plasmonic
- Metamaterials
- Organic Materials (LC, PDLC, OLED, OSC and optical tweezers)
- Holograms and Gratings (Optical data storage)

Journal Publications

1) Title: Inverse-rib hybrid plasmonic waveguide for low-loss deep sub-wavelength surface plasmon polariton propagation
   Authors: Babak Olyaeefar and Habib Khoshsima
   Journal: ***Optical and Quantum Electronics (2015)***

2) Title: Low-loss ultra-subwavelength hybrid plasmonic waveguide based on metallic
bump structures.
Authors: Babak Olyaeefar and Habib Khoshsima
Journal: ***Journal of Physics D: Applied Physics (2014)***

3) Title: High diffraction efficiency in permanent optical memories based on Methyl Red doped liquid crystal
Authors: Farid Mogaddas, Habib Khoshsima and Babak Olyaeefar
Journal: ***Optical and Quantum Electronics (2014)***

4) Title: Field enhancement by plasmonic contour H-shaped nano-antenna
Authors: Milad Gharibi, Sirous Khorram, Babak Olyaeefar and Habib Khoshsima
Journal: ***The European Physical Journal D (2014)***

5) Title: Faster electro optical switching with a highly viscous nematic liquid crystal mixture
Authors: Babak Olyaeefar and Habib Khoshsima
Journal: ***Optical and Quantum Electronics (2014)***

6) Title: Optical memory based on azo-dye-doped nematic liquid crystals
Authors: Farid Mogaddas, Habib Khoshsima and Babak Olyaeefar
Journal: ***Molecular Crystals and Liquid Crystals (2012)***

7) Title: the Refractive Index Grating Formation in Azo Dye Doped Nematic Liquid Crystal
Authors: Hadi Afshari, Babak Olyaeefar and Habib Khoshsima
Journal*:* ***Molecular Crystals and Liquid Crystals (2012)***

8) Title: Anchoring Effect on Switching Dynamics of a Nematic Liquid Crystal Intensity Modulator
Authors: Babak Olyaeefar and Habib Khoshsima
Journal: ***Optics Communications (2012)***

Conference Proceedings

1) Title: Study of frequency response of plasmonics rectangular shape and contour H-shaped nanoantennas in environments with different refractive indices
Authors: Nayime Taheri, Babak Olyaeefar and Habib Khoshsima
Journal: ***Proc. NCWNN (2015)***

2) Title: Investigation of the effect of variations in the refractive index of the surrounding medium on the spectral response of bowtie nano-antennas
Authors: Nayime Taheri, Babak Olyaeefar and Habib Khoshsima
Journal: ***Proc. ICOP (2015)***

3) Title: Negative Refraction in Novel 2D Photonic Crystal for Telecommunication Applications
Authors: Navid Farezi, Babak Olyaeefar, Habib Khoshsima and Jaffar Poursamad
Journal: ***Proc. ICOP (2014)***

4) Title: Experimental Phase Modulation in Liquid Crystal Electro-optical Modulators
Authors: Babak Olyaeefar and Habib Khoshsima
Journal: ***Proc. ICOP (2012)***

5) Title: Response time reduction and viscoelastic coefficient measurement in a liquid crystal electro-optical light modulator by using higher voltage regimes
Authors: Babak Olyaeefar and Habib Khoshsima
Journal: ***proc. ICOLE (2011)***

6) Title: Thickness effect on switching dynamics and calculating the viscoelastic coefficient of liquid crystal in an intensity light modulator
Authors: Babak Olyaeefar and Habib Khoshsima
Journal: ***proc. ICOP (2011)***

7) Title: Carbon nano tube and azo dye effect on switching dynamics and response time of an electro-optical light modulator
Authors: Babak Olyaeefar, Habib Khoshsima, Habib Tajalli and Mahdie Shakouri
Journal: ***proc. ICOP (2011)***

8) Title: Experimental investigation of dynamical behavior & director reorientation relaxation of a novel nematic liquid crystal in small signal regime
Authors: Babak Olyaeefar, Habib Khoshsima and Habib Tajalli
Journal: ***proc. PSI (2010)***

9) Title: Experimental investigation of temperature effect on modulation dynamics and figure of merit (FOM) for a novel liquid crystal based electro-optic switch
Authors: Babak Olyaeefar, Habib Khoshsima and Habib Tajalli
Journal: ***proc. PSI (2010)***

Speeches

- Title: Experimental Phase Modulation in Liquid Crystal Electro-optical Modulators
Place: ***18th ICOP – Tabriz (2012)***

- Title: Carbon nano tube and azo dye effect on switching dynamics and response time of an electro-optical light modulator
Place: ***17th ICOP – Kerman (2011)***

Teaching Experience

- Elementary Physics at Payame Nour University of Tabriz (2011-2014)
- Physics Laboratory at Payame Nour University of Tabriz (2011-2014)

Thesis Advising

1) Student's name: Nayime Taheri
Degree: Master of Science (M.Sc.)
Thesis title: Plasmonics nano-antenna and their application
Institute: Research Institute for Applied Physics and Astronomy (RIAPA)
Year: 2014

Community Involvement / Administrative Activity

- Member of British Liquid Crystal Society (Since 2009)

- Member of Iranian Optics and Photonics Society (Since 2010)
- Member of Bright Talent Office at the University of Tabriz (Since 2013)
- Member of 17th ICOP executive committee (Jan 2012)

Technical skill

- Optical setups
- LASER adjustments (N_2 , Nd:YAG and Ar)
- Spectroscopy (UV-Visible and FT-IR)
- Spatial Light Modulators based on Liquid Crystals (SLMs and LCDs)
- Organic material's sample preparation (Spin coating, Dip coating and Dr Blade for Polymers and rubbed alignment cells for Liquid Crystals)

Software skill

Matlab
Origin
Rsoft CAD
Optiwave
Lumerical

Industrial Projects

Co-worker in "High Resolution Liquid Crystal Gas Sensor" Project

Lingual proficiency

Fluent in English (holder of 7.0 band score in IELTS)

Native in Persian, Azerbaijani and Turkish (Bilingual)

References

- Dr Asghar Asgari (professor)
  asgari@tabrizu.ac.ir
- Dr. Sohrab Ahmadi (associated professor)
  s_ahmadi@tabrizu.ac.ir
- Dr. Habib Tajalli (professor)
  tajalli@tabrizu.ac.ir