Behrooz Rezaei ’s CV

Born: 10 June 1976(Tabriz-Iran)

Current Address: Research Institute for Applied Physics and Astronomy,Tabriz, Iran

**E-mails:** b\_rezaei@tabrizu.ac.ir , rezaeibhr@yahoo.com

**EDUCATION:**

B.Sc in physics, University of Tabriz, Iran

Sep 1994 – Jun 1998

M.Sc in physics, University of Tabriz, Iran

Sep 1998 – Jun 2001, Supervisor: Prof. M. Kalafi

Project Title: Nonlinear Optical Properties of CdS & GaSe: Quasi-Equilibrium Regime

PhD in Physics, University of Tabriz, Iran

Sep 2008 – Jun 2014, Supervisor: Prof. M. Kalafi , Dr. A. Soltani Vala

Project Title: Investigation of nonlinear optical properties of coupled cavity-waveguide photonic crystals

**INTERESTS:**

Linear and Nonlinear optical properties of semiconductors

Band structure calculations of semiconductors using the pseudo-potential method and wien2k package

Photonic band structure of photonic crystals (PCs)

Optical bi-stability in coupled cavity-waveguide PCs

Slow light PC waveguides

Graded index PCs

Photonic Nanojet

PC-based Bio-Sensor

PC cavity and waveguides

Bloch surface waves

Tunable PCs (including liquid crystal and graphene)

**ACADEMIC & PROFESSIONAL POSITIONS:**

2001-Present, Research fellow at Research Institute for Applied Physics and Astronomy, University of Tabriz, Iran.

**PUBLICATIONS:**

**National Conference:**

1. J. Bashiri, B. Rezaei, J. Barvestani, “Investigation of surface states in one dimensional photonic crystals with a chiral cap laye”, Proceeding of the annual physics conference of Iran, Imam Khomeini International University, Ghazvin-Iran, 720, 27-30 Auguts (2017).
2. B. Rezaei, H. Mahmoudzadeh, A. Asgari, “Tuning of defect mode in dielectric-graphene photonic crystals”, Proceeding of the annual physics conference of Iran, Yazd University, Yazd-Iran, 482, 28-31 Auguts (2017).
3. V. Pourmahmoud, B. Rezaei, A. Asgari, “Simultaneously creation and control of Bragg and graphene photonic band gaps in one-dimensional dielectric-graphene photonic crystal”, Proceeding of the annual physics conference of Iran, Yazd University, Yazd-Iran, 239, 28-31 Auguts (2017).
4. N. Qorani, S. Ahmadi Kandjani,H. Pashaie Adl, F. Bayat, B. Rezaie, “Designing Biosensors Using 1D Photonic Crystals in Total Internal Reflection”, Proceeding of the annual physics conference of Iran, Shiraz University, Shiraz-Iran, 605, 22-25 August (2016).
5. B. Rezaei, T. Fathollahi Khalkhali, M. Kalafi, “Tunable off-plane photonic band gap in anisotropic two-dimensional photonic crystal with square lattice”, Proceeding of the annual physics conference of Iran and 15th gathering of physics students, Bu-Ali Sina University, Hamadan-Iran, 767, 11-14 September (2010).
6. H. Hajian, B. Rezaei, A. Soltani Vala, M. Kalafi, “Tuning of switching and localization of surface modes in a one dimensional photonic crystal with a liquid crystal cap layer”, Proceeding of the annual physics conference of Iran and 15th gathering of physics students, Bu-Ali Sina University, Hamadan-Iran, 767, 11-14 September (2010).
7. Kh. Dadashi, B. Rezaei, M. Kalafi, “Band structure calculation of tow dimensional photonic crystals with FDTD method”, Proceeding of the annual physics conference of Iran and 15th gathering of physics students, Bu-Ali Sina University, Hamadan-Iran, 767, 11-14 September (2010).
8. T. Fathollahi Khalkhali, B. Rezaei, A. Soltani Vala, M. Kalafi, “Investigating the effect of additional dielectric rod in unit cell on photonic band gap of 2D annular anisotropic photonic crystal”, 16th Iranian Conference on Optics and Photonics, Yazd University, Yazd-Iran, 26-28 January (2010).
9. T. Fathollahi Khalkhali, B. Rezaei, A. Soltani Vala, M. Kalafi, “Investigation of photonic band structure in honeycomb lattice photonic crystals composed of triangular rings with opposite orientations”, 16th Iranian Conference on Optics and Photonics, Yazd University, Yazd-Iran, 26-28 January (2010).
10. M.S .Zakerhamidi, H .Tajalli, A .Ghanadzadeh, B. Rezaei, Nakisa Esmaeili, “Study of Infrared linear-dichroic (IR-LD) in the ordered 6CHBT and 6BOBT nematic liquid crystals”, 16th Iranian Conference on Optics and Photonics, Yazd University, Yazd-Iran, 26-28 January (2010).
11. B. Rezaei, M.-S. Zaker Hamidi, Kh. Dadashi, M. Kalafi, “Temperature tuning of photonic band gap in two-dimensional photonic crystal”, Proceeding of the annual physics conference of Iran and 14th gathering of physics students, Isfahan University of Technology, Isfahan-Iran, 767, 15-18 August (2009).
12. Kh. Dadashi, A. Soltani Vala, B. Rezaei, “Tunability of photonic band gap in two-dimensional magnetic photonic crystals”, The 1th National Conference on Optics & Laser Engineering, Malek Ashtar University of Technology, Isfahan-Iran, 335, 20-21 May (2009).
13. M. Shabani Nezhad, A. Soltani Vala, B. Rezaei, M. Kalafi, “Optimization of Photonic band gap of reduced symmetry hexagonal structure using the Genetic Algorithm”, Proceeding of the 9th conference on condensed matter of the physics society of Iran, Shahid Chamran University of Ahvaz, Ahvaz-Iran, 862, 3-4 Feb. (2009).
14. T. Fathollahi Khalkhali, B. Rezaei, A. Soltani Vala, M. Kalafi, “Investigation the effect of walls connecting air holes or dielectric rods on the band structure of an anisotropic square photonic crystal”, Proceeding of the 9th conference on condensed matter of the physics society of Iran, Shahid Chamran University of Ahvaz, Ahvaz-Iran, 922, 3-4 Feb. (2009).
15. A. Soltani Vala, B. Rezaei, M. Kalafi, “Tunable Resonance Transmision Defect Modes in Two-Dimensional Photonic Crystals”, 15th Iranian Conference on Optics and Photonics and 1th Iranian Conference on Photonics Engineering, University of Isfahan, Isfahan-Iran, 641, 27-29 January (2009).
16. B. Rezaei, T. Fathollahi Khalkhali, A. Soltani Vala, M. Kalafi, “Investigation of Photonic Band Gap in 2D Photonic Crystals With Triangular Lattice of Air Ring Holes in Tellurium Background”, 15th Iranian Conference on Optics and Photonics and 1th Iranian Conference on Photonics Engineering, University of Isfahan, Isfahan-Iran, 253, 27-29 January (2009).
17. T. Fathollahi Khalkhali, B. Rezaei, A. Soltani vala, M. Kalafi, “Effect of shape and rotation of rods on the properties of photonic band gap in a 2D anisotropic photonic crystal”, Proceeding of the annual physics conference of Iran and 13th gathering of physics students, Kashan University,Kashan-Iran, 58, 25-28 August (2008).
18. B. Rezaei, M. Haddadi Mogaddam, A. Soltani Vala, M. Kalafi, “Investigation of photonic band gap in a 2D anisotropic photonic crystal with different shape of dielectric rods”, Proceeding of the annual physics conference of Iran and 13th gathering of physics students, Kashan University,Kashan-Iran, 173, 25-28 August (2008).
19. A. Soltani Vala, B. Rezaei, M. Kalafi, “Investigation of tunable waveguide modes in two-dimensional photonic crystals”, Proceeding of 14th annual IASBS meeting on condensed matter physics, Institute for Advanced Studies in Basic Sciences, GavaZang, Zanjan-Iran, 22-23 May (2008).
20. B. Rezaei, M. Kalafi, “Band structure engineering of tunable two-dimensional photonic crystals”, Proceeding of 14th annual IASBS meeting on condensed matter physics, Institute for Advanced Studies in Basic Sciences, GavaZang, Zanjan-Iran, 22-23 May (2008).
21. M. Haddadi Moghaddam, B. Rezaei, A. Soltani Vala, M. Kalafi, “Investigation the effect of the shape of dielectric rods on the photonic band gap in anisotropic square photonic crystals”, Proceeding of the annual physics conference of Iran and 12th gathering of physics students, Yasuj University,Yasuj-Iran, 364, 27-30 August (2007).
22. M. Shabani Nezhad, B. Rezaei, A. Soltani Vala, M. Kalafi, “The study of symmetry reduction effect’s on the photonic band gap of 2D photonic crystals with anisotropic rods in hexagonal structure”, Proceeding of the annual physics conference of Iran and 12th  gathering of physics students, Yasuj University,Yasuj-Iran, 356, 27-30 August (2007).
23. B. Rezaei, M. Kalafi, “Absolute band gap engineering of anisotropic square and triangular photonic crystals”, Proceeding of 13th Optics & Photonics Conference of Iran, Iran Telecommunication Research Center, Tehran-Iran, 6-8 February (2007).
24. A. Sedghi, B. Rezaei, M. Kalafi, “ Photonic band structure calculation and density of states in a two-dimensional hexagonal photonic crystal”, Proceeding of 12th annual IASBS meeting on condensed matter physics, Institute for Advanced Studies in Basic Sciences, GavaZang, Zanjan-Iran, 25-26 May (2006).
25. B. Rezaei, M. Kalafi, “Analysis of photonic band gaps in two-dimensional hexagonal photonic crystals”, Proceeding of 12th Optics & Photonics Conference of Iran, Shiraz-University, Shiraz-Iran, 31 January-2 February (2006).
26. B. Rezaei, M. Kalafi, “ Photonic band structures in a two-dimensional photonic crystal with hollow anisotropic rods”, Proceeding of 11th annual IASBS meeting on condensed matter physics, Institute for Advanced Studies in Basic Sciences, GavaZang, Zanjan-Iran, 26-27 May (2005).
27. S. Mohammadzadeh, B. Rezaei, M.Kalafi, “Band structure and density of states of wurtzite AlN by FP-LAPW method”, Proceeding of 11th annual IASBS meeting on condensed matter physics, Institute for Advanced Studies in Basic Sciences, GavaZang, Zanjan-Iran, 26-27 May (2005).
28. B. Rezaei, M. Kalafi, “Band-structure pseudopotential calculation and effective-mass parameters of wurtzite GaN”, Proceeding of the 7th conference on condensed matter of the physics society of Iran, Iran University of Science and Technology, Tehran-Iran, 215, 25-26 January (2005).
29. B. Rezaei, M. Kalafi, “Electronic band structures and Luttinger parameters of CdTe”, Proceeding of the annual physics conference of Iran and 9th gathering of physics students, Power and Water university of technology (Shahid Abbaspour),Tehran-Iran, 345, 23-26 August (2004).
30. B. Rezaei, M. Kalafi, “Electronic band structures of CdTe and HgTe”, Proceeding of 10th annual IASBS meeting on condensed matter physics, Institute for Advanced Studies in Basic Sciences, GavaZang, Zanjan-Iran, 24-25 May (2004).

**International Conference:**

1. B. Rezaei, A. A. Sedghi, *“Tuning of band gap in graphene-based two-dimensional photonic crystal”*, The 3rd International Conference on Photonics Solutions (ICPS), Pataya, Thailand (2017).
2. بهروز رضائی، حسین محمودزاده، " *بلور فوتونی یک بعدی با لایه نقص شامل گرافن-دی الکتریک*" گردهمایی بین المللی سالانه سیستم های ابعاد پایین، 23-24 می 2017، دانشگاه تبریز.
3. نادیا قرآنی، فرزانه بیات، حمید پاشایی عدل، سهراب احمدی کندجانی و بهروز رضائی، "*طراحی حسگر زیستی بلور فوتونی یک بعدی بر اساس بازتاب داخلی کلی برای تشخیص بیماری سرطان*"، مدرسه پیشرفته سالانه سیستمهای ابعاد پایین، 24-25 می 2016، دانشگاه تبریز.
4. B. Rezaei, T. Fathollahi Khalkhali, Kh. Dadashi, *“Improvement of complete photonic band gap by reducing the lattice symmetry”*, International Advanced Research Workshop, Modern Problems in Optics and Photonics (MPOP), Yerevan, Armenia, 27 Aug. -2 Sept. (2009).
5. Kh. Dadashi, B. Rezaei, *“Temperature tuning of photonic band gap in two-dimensional photonic crystals”*, International Advanced Research Workshop, Modern Problems in Optics and Photonics (MPOP), Yerevan, Armenia, 27 Aug. -2 Sept. (2009).
6. A. Soltani Vala, B. Rezaei, M. Kalafi, “*Tunable Defect Modes in 2D Photonic Crystals by Means of External Magnetic Fields*”,The 8th International Conference on Electrical, Transport and Optical Properties of Inhomogeneous Media, ETOPIM8, Aquila Hotel, Rethymnon, Crete, Greece June 7-12 (2009).
7. B. Rezaei, T. Fathollahi Khalkhali, A. Soltani Vala, M. Kalafi, “*Effects of Symmetry Reduction in 2D Anisotropic Ring Photonic Crystals*”, The 8th International Conference on Electrical, Transport and Optical Properties of Inhomogeneous Media, ETOPIM8, Aquila Hotel, Rethymnon, Crete, Greece June 7-12 (2009).
8. A. Soltani Vala, B. Rezaei, M. Kalafi, “*Tuning of cavity modes in 2D square lattice photonic crystal*”, The First International Workshop on Theoretical and Computational Nano-Photonics, TaCoNa-Photonics 2008, Bad Honnef, Germany, December 3-5 (2008).
9. B. Rezaei, A. Soltani Vala, M. Kalafi, “*Tuning of surface states in semi-infinite one-dimensional photonic crystals containing a nematic liquid crystal as a cap Layer*”, International conference on advanced optoelectronics and lasers, CAOL 2008 , Alushta, Crimea, Ukraine, 29th Sept.–4th Oct. (2008).
10. A. Asgari, B.Rezaei, M. Kalafi, “*The control of absorption coefficient by cap layer thickness in AlxGa1-xN/GaN heterostructure quantum wells*”,Physics of Light Matter Coupling in Nanostructures (PLMCN6), Otto-von Guericke-Universität Magdeburg, Germany, 25th – 29th September (2006).

**Journals:**

1. H. Mahmoodzadeh and B. Rezaei, “Tunable Bragg defect mode in one-dimensional photonic crystal containing a graphene-embedded defect layer”, Appl. Optics 57 (2018) 2172-2176.
2. M. Khadem Sadigh, M. S. Zakerhamidi, B. Rezaei, K. Milanchian, “[Environment effects on the nonlinear absorption properties of Methylene blue under different power of excitation beam](https://scholar.google.com/citations?view_op=view_citation&hl=en&user=1j2Q5R0AAAAJ&sortby=pubdate&citation_for_view=1j2Q5R0AAAAJ:pqnbT2bcN3wC)”, J. Molecular Liquids 229 (2017) 548-554.
3. [N. Eti](http://www.tandfonline.com/author/Eti%2C%2BN), [I. H. Giden](http://www.tandfonline.com/author/Giden%2C%2BI%2BH), [Z. Hayran](http://www.tandfonline.com/author/Hayran%2C%2BZ), [B. Rezaei](http://www.tandfonline.com/author/Rezaei%2C%2BB) & [H. Kurt](http://www.tandfonline.com/author/Kurt%2C%2BH), “Manipulation of photonic nanojet using liquid crystals for elliptical and circular core-shell variations”, J. Modern Optics 64 (2017) 1566-1577.
4. A. A. Sedghi, B. Rezaei, “The effect of background dielectric on TE polarized photonic band gap of metallo-dielectric photonic crystals using Dirichlet-to-Neumann map method”, Appl. Optics 55 (2016) 9417-9421.
5. I. Halil Giden, N. Eti, B. Rezaei, and H. Kurt, “Adaptive Graded Index Photonic Crystal Lens Design via Nematic Liquid Crystals”, IEEE J. Quantum Electronics 52 (2016) 6400607
6. B. Rezaei, I. H. Giden, H. Kurt, “[Tuning light focusing with liquid crystal infiltrated graded index photonic crystals](https://www.researchgate.net/publication/305846224_Tuning_light_focusing_with_liquid_crystal_infiltrated_graded_index_photonic_crystals?ev=prf_pub)”, Optics Communications 382 (2017) 28-35.
7. I. H. Giden, B. Rezaei, H. Kurt, “Method of implementing graded index media by symmetry-reduced helical photonic structures”, J. Opt. Soc. Am. B 32 (2015) 2153-2157.
8. B. Rezaei, T. Fathollahi Khalkhali, A. Soltani Vala, M. Kalafi, “Low-power optical switching with Kerr nonlinear material in two-dimensional photonic crystal nanocavity”, J. Modern Optics 61 (2014) 904-909.
9. T. Fathollahi Khalkhali, B. Rezaei, A. Soltani Vala, M. Kalafi, “Design of high-Q polystyrene nonlinear cavity for ultrafast all-optical switching in mid-infrared photonic crystal slabs with cavity-waveguide structure”, Optics Communications 326 (2014) 43-47.
10. B. Rezaei, T. Fathollahi Khalkhali, A. Soltani Vala, and M. Kalafi, “Optimization of Q-factor in direct-coupled cavity-waveguide photonic crystal structures”, Optik 124 (2013) 7056-7061.
11. T. Fathollahi Khalkhali, B. Rezaei, A. Soltani Vala, M. Kalafi, “Investigation of the effect of noncircular scatterers on the band structure of anisotropic photonic crystal slabs”, Appl. Optics 52 (2013) 3745-3752.
12. T. Fathollahi Khalkhali, B. Rezaei and A. H. Ramezani, “Tuning of full band gap in anisotropic photonic crystal slabs using a liquid crystal”, Optics Communications 285 (2012) 5254-5258.
13. H. Hajian, B. Rezaei, A. Soltani Vala and M. Kalafi, “Tuned switching of surface waves by liquid crystal cap layer in one dimensional photonic crystals”, Appl. Optics 51 (2012) 2909-2916.
14. T. Fathollahi Khalkhali, B. Rezaei, M. Kalafi, “Enlargement of absolute photonic band gap in modified 2D anisotropic annular photonic crystals”, Optics Communications 284 (2011) 3315-3322.
15. B. Rezaei, T. Fathollahi Khalkhali, M. Kalafi, “Tunable out-of-plane band gap of two-dimensional anisotropic photonic crystals infiltrated with liquid crystals”, Optics Communications 284 (2011) 813-817.
16. A. Soltani Vala, B. Rezaei and M. Kalafi, “*Tunable defect modes in 2D photonic crystals by means of external magnetic fields*”, Physica B 405 (2010) 2996.
17. A. A. Sedghi, M. Kalafi, A. SoltaniVala, B. Rezaei, “*The influence of shape and orientation of scatterers on the photonic band gap in 2D metallic photonic crystals*”, Optics Communications 283 (2010) 2356-2362.
18. B. Rezaei, T. Fathollahi Khalkhali, A. Soltani Vala, M. Kalafi, “*Absolute band gap properties in two-dimensional photonic crystals composed of air rings in anisotropic tellurium background*”, Optics Communications 282 (2009) 2861-2869.
19. B. Rezaei, M. Kalafi, “*Tunable full band gap in two-dimensional anisotropic photonic crystals infiltrated with liquid crystals*”, Optics Communications, Vol. 282 (2009) 1584-1588.
20. B. Rezaei, M. Kalafi, “Absolute band gap engineering of anisotropic square and triangular photonic crystals”, Materials Science in Semiconductor Processing, Vol. 10 (2007) 159-166.
21. B. Rezaei, M. Kalafi, “Engineering absolute band gap in anisotropic hexagonal photonic crystals”, Optics Communications, Vol. 266 (2006) 159-163.
22. B. Rezaei, A. Asghari, M. Kalafi, “Electronic band structure pseudo-potential calculation of wurtzite III-nitride materials”, Physica B, Vol. 371 (2006)107-111.

**SKILLS:**

Software: Origin, Matlab, Maple, MathCAD, Word, Linux, Wien2k, Meep, MPB, Lumerical

Programming languages: Fortran

**FOREIGN LANGUAGE(S) PROFICIENCY:**

**English:** Writing (good), Reading(good), Speaking(good)