

## Curriculum Vitae

Research Institute for Applied Physics& Astronomy- university of Tabriz



### Personal Data:

Name	Surname	Date and place of Birth	Nationality	Sex	Marital Status
Saeid	Shojaei	1980- Zanjan-Iran	Iranian	M	married

### Academic Positions: (Last One First)

Title of Position	Field of Specialization	Date		Name of Institution
		From	To	
Academic staff, Associate Professor	Photonics Electronics Group	2015	now	University of Tabriz-Iran
Researcher, Assistant Pofessor	Photonics	2010	2015	University of Tabriz-Iran
Instructor	Solid State Physics	2005	2010	University of Tabriz-Iran
Scientific visitor	Nanoscience	2007	2008	INFN-S3-University of Modena- Italy

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### Educational Background: (Last One First)

Certificate	Field of	Name of Institution Attended	Date
PhD	Solid state physics	University of Tabriz - Iran	2009
MSc	Solid State Physics	University of Tabriz - Iran	2004
Bsc	Physics	University of Tabriz - Iran	2002

**Title of Phd thesis:****Investigation of optical properties of Nitride based quantum dots****Title of Post-Graduate thesis:****Investigation of Infrared Photodetectors based on quantum well structures****Teaching Experiences:**

Title of Course	Level	Dates		Name of Institution
		From	To	
Optical & Quantum properties of nanostructures	PhD	2017	now	University of Tabriz
The theory of many body systems	PhD	2016	now	University of Tabriz
Selected topics in optical properties of materials	PhD	2015	now	University of Tabriz
The optics of nano structures	PhD	2014	now	University of Tabriz
Quantum Electronics	Msc	2015	2016	University of Tabriz
Classical Electrodynamics 1,2	Msc	2013	now	University of Tabriz
Quantum theory of solids	PhD	2012	2013	University of Tabriz
Semiconductor lasers	PhD	2012	2013	University of Tabriz
Optical properties of low dimensional semiconductors	Msc	2012	2015	University of Tabriz
Photonics I	Msc	2011	2011	University of Tabriz
Selected topics in Photonics	Msc	2011	2011	University of Tabriz
Advanced statistical mechanics	Msc	2011	2013	Tabriz Payame Nour University
Simulation	MsC	2012	2013	University of Tabriz
Solid State Physics	Bsc	2010	2014	Tabriz Payame Nour University
Semiconductor devices	Bsc	2010	2014	Tabriz Payame Nour University
Solution of advanced and basic Quantum Mechanics	Msc & Bsc	2004	2009	University of Tabriz
Thermodynamics	Bsc	2004	2005	Tabriz Payame Nour University
Basic Physics	Bsc	2004	2010	University of Tabriz

**Master and Doctorate Thesis Supervision:**

No	Full Name of Student	Level	Title of Thesis
1	Elahe Namvari	PhD	Luminescence in the semiconductor system of hybrid Nanowire –Quantum disk
2	Hossein Sattarian	PhD	The optimization of light extraction from a semiconductor based LED
3	Akram Mehdizade	PhD	Coupling of quantum dots and photonic-crystal microcavity
4	Javad Fouladi	PhD	Investigation of Optical Properties of Two-dimensional Transition Metal Dichalcogenide Nanostructures
5	Leila Azadi	PhD	The Study of Optical Transitions in Planary Graphene Supperlattice via Structural Parameters Engineering
6	Sasan Moradi	MSc	Aplication of Semiconductor Nanostructures in quantum information proscesing
7	Mehryar Alavi	MSc	Investigation of polaritonic states in semiconductor nanostructures
8	Hadi Samadzade	MSc	The study of some optical properties of Zno nanoparticles in Ceramic galsses doped by Lantanids
9	Behnam Bagheri	MSc	The study of polaritonic diodes
10	Behnam Ashkani	MSc	Transport properties in semiconductor based seuperlattices
11	Afsane Yeganetalab	MSc	The study of quantum gates based on semiconductor nanostructures
12	Sanam Saeid-Nahaei	MSc	Investigation of Exciton- phonon Interaction in Semiconductor QDs
13	Farahnaz Sayyadi	MSc	The effect of Electric field on nonlinear optical properties of Double quantum well structures
14	Neda Bagherzadeh	MSc	The study of nonlinear optical properties in a semiconductor quantum dot
15	Mahnaz Jafarzadeh	MSc	The generation of entangled photon pairs from semiconductor quantum dot
16	Maryam Pirgholi	MSc	The study of magnetic field on optical properties of semiconductor quantum dot
17	Sanaz Imannezhad	MSc	The investigation of the optical ptoperties of embedded graphene in a semiconductor microcavity
18	Solmaz Razzaghi	MSc	The investigation of the effect of magnetic field on excitonic properties of quantum well
19	Reza Hefzi	MSc	The study of optical transitions in graphene quantum dots
20	Mehdi Sattari	MSc	Resonant Tunneling Diode Based on Grapheme Nanostructures
21	Iman Ahmadi	MSc	The investigation of Graphene quantum wells and their optical properties for photodetection
22	Masoud Seyf Reihani	MSc	The investigation of Graphene- semiconductor quantum wells for solar cells
23	Davoud Raiyani	MsC	The study of the effect of graphene quantum dots in gas sensors
24	Hale Kord Haghi	MsC	The detection of molecule by Graphene Nanoribbon Field-Effect Transistor
25	Mehdi Jalali	MsC	Growth of Nowires by thin film deposition method
26	Mahdiye Zeinal	MsC	The detection of biomolecule by two dimensional material based Field-Effect Transistor

27	Ali Mehdizade	MsC	The Investigation of electronic&Optical properties of Proveskites
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**Research Interests:**

- 1- Optical and electronic properties of low dimensional semiconductors.
- 2- Optical Properties of 2D materials, in particular TMDCs.
- 3- Optical properties of Graphene nanostructures and their applications
- 4- implementation of cavity quantum electrodynamics in Polariton based devices.

**Papers Presented at refereed journals and National and International Scientific Assemblies:**

Title of Papers	Title and Place of Assembly	Date
Robust tunable excitonic features in monolayer transition metal dichalcogenide quantum dots	Journal of Physics: Condensed matter Vol30, No 47	2018
Optical absorption in planar graphene superlattice: The role of structural parameters	Superlattices& Microstructures Vol116, P95	2018
Optical graphene quantum dots gas sensors: Theoretical study	Superlattices& Microstructures Vol114, P321	2018
Robust Exciton-Polariton Rabi Splitting in Graphene Nano Ribbons: The means of Two Coupled Semiconductor Microcavities	Optical engineering Vol57-P047104	2018
Study of the Optical and Electronic Properties of the Lead-Halide-Based Organic Perovskites MAPbX <sub>3</sub> , FAPbX <sub>3</sub> , (X= I ,Br , Cl)	Journal of Research on Many-Body Systems (Accepted)	2018

Low-bias flat band-stop filter based on velocity modulated gaussian graphene superlattice	Solid state Communications Vol273- P66	2018
Tunable negative differential resistance in planar graphene superlattice resonant tunneling diode	Journal of Applied Physics Vol121-p144506	2017
Robust Low-Bias Negative Differential Resistance in Graphene Superlattices	Journal of Physics: D Vol 50, p255102	2017
Luminescence emission from Al <sub>0.3</sub> Ga <sub>0.7</sub> N/GaN multi quantum disc core/shell nanowire: Numerical approach	Physica E, Vol93, p132	2017
Negative differential resistance in partially fluorinated graphene films	Appl. Phys. Lett Vol 111, p 043108	2017
Enhanced visible light transmission in a one-dimensional hybride graphene-photonic crystal structure	Optical & Quantum electronics Vol 49, p319	2017
Luminescence Emission from Nonpolar Al <sub>0.3</sub> Ga <sub>0.7</sub> N/GaN Core-shell and core-multi-shell Nanowires	Superlattices & Microstructures (In press)	2017
Engineering of electronic transmission in novel graphene superlattice by the means of Dirac gap and Fermi velocity	Advanced Material Letter Vol 8 page 265	2017
Large Vacuum Rabi Splitting In a Single Nitride-based Quantum Well Microcavity	International Journal of Nanoscience and Nanotechnology Vol13, P289	2017
Molecular Sensing by the Means of Graphene Based Field Effect Transistor	Nanoscale Winter issue P205	2017
Synthesizing Graphene Quantum Dots for Gas Sensing Applications	Procedia Engineering Vol 168, p1312	2016
Polarization Sensitive High Extraction Efficiency Two Color Light Emitting Diode Based on Graphene	Chin. Phys. Lett Vol49, P319	2016

Nonlinear optical rectification of hydrogenic impurity in a disk-like parabolic quantum dot : the role of applied magnetic field	Physica E Vol70,108	2015
Biexciton induced refractive index changes in a semiconductor quantum dot	Superlattice Microstructures Vol82,357	2015
The control of the nonlinear optical response of semiconductor quantum dots	OPTIK Vol125, p6926	2014
Nonlinear optical rectification of intersubband transitions in a cubical Semiconductor quantum dot	MITTEILUNGEN KLOSTERNEUBURG Vol64, p9	2014
Photon emission from a quantum dot-photonic crystal microcavity system: the role of pumping and cavity decay rates	Superlattice & Microstructures Vol55, p98-108	2013
Genuine entanglement among coherent excitonic states of three quantum dots located individually in separated coupled QED cavities	European Physical Journal D Vol67,p5	2013
Coupling Effects in a Photonic Crystal Microcavity with Embedded Semiconductor Quantum Dot	Physica E Vol47,p13	2013
Electric-field effects on quantum correlations in Three coupled semiconductor quantum dots	Internation journal of Quantum Information Vol 11, p1350009	2013
Excitonic effects of bilayer graphene: A simple approach	OPTIK Vol124, p 6126	2013
Excitonic Properties of a Spherical Semiconductor Quantum Dot: the role of phonons	OPTIK Vol 124, p2561	2012
The role of exciton-photon coupling in the temporal behaviour of a quantum dot-photonic crystal microcavity system	Physica Status Solidi C Vol9, p2517	2012
Theoretical Calculation of Excitonic Binding Energy and Optical Absorption Spectrum for Armchair Graphene Nanoribbon	Eur. Phys. J. B Vol 84-p249	2011

localized defect modes in finite magnetic two-dimensional photonic crystals	Eur. Phys. J. B Vol81-P63	2011
Biexcitonic absorption in a disk shaped GaN quantum dot	Eur. Phys. J. B Vol83-P197	2011
Detailed study of the flat bands appeared in two-dimensional magnetic photonic crystals with square symmetry	Optics Communications Vol284-P4514	2011
Numerical optimization of an ambient temperature photoelectromagnetic Detector for middle and far infrared spectral regions	Infrared Physics &Technology Vol 53- p419	2010
Nonlinear optical properties of biexciton states in GaN quantum disks	Eur. Phys. J. B. vol 72-p 211	2009
Coulomb induced nonlinearities in a GaN microdisks	Eur. Phys. J. B. vol 65-p 505	2008
The role of exciton-exciton interaction on nonlinearity in a GaN Microdisks	SPIE , digital library vol7354-p735411-1	2009
Negative differential resistance in fluorographene matrix	RPGR2017 Singapore, 2017	2017
Graphene Superlattice Based Resonant Tunneling Diode	Annual International meeting on Low Dimensional Systems (RIAPA-LDS2017) Tabriz, Iran	2017
First-Principles Study of the Structural and the Electronic Properties of the Lead-Halide-Based Organic Perovskites (CH <sub>3</sub> NH <sub>3</sub> )PbX <sub>3</sub> , (CH(NH <sub>2</sub> ) <sub>2</sub> )PbX <sub>3</sub>	Annual International meeting on Low Dimensional Systems (RIAPA-LDS2017) Tabriz, Iran	2017

The Numerical Investigation of The Luminescence Emission from Nitrid Multi Quantum Disc core/shell Nano wire	Annual International meeting on Low Dimensional Systems (RIAPA-LDS2017) Tabriz, Iran	2017
Synthesizing Graphene Quantum Dots for Gas Sensing Applications	Euroensors 2016, Budapest, Hungary	2016
Tunable Differential Resistance (NDR) in Graphene Supperlattice	Global Graphene Forum Stockholm- Sweden (Oral Presentation)	2016
Synthesising Graphene Quantum Dots for Gas Sensing Applications	Annual International Advanced School on Low Dimensional Systems (RIAPA-LDS2016) Tabriz, Iran	2016
Tunable excitons in monolayer transition metal dichalcogenides	Annual International Advanced School on Low Dimensional Systems (RIAPA-LDS2016) Tabriz, Iran	2016
Molecular Sensing by the means of Graphene based Field Effect Transistor	Annual International Advanced School on Low Dimensional Systems (RIAPA-LDS2016) Tabriz, Iran	2016
Optical absorption coefficient in graphene-semiconductor quantum well	Workshop on Photonics: Fundamental & Applications Izmir-Turkey	2015
Effect of Temperature on Coupling Strength in a Polariton Microcavity	8 <sup>th</sup> conference on statistical physics and soft condensed matter physics Isfahan-Iran	2016
The calculation of Transmission Probability of Electron in Graphene Multi quantum well	Proceeding of the 22 <sup>th</sup> conference of optics&photonics Yazd-Iran	2016



Investigation of Dirac Fermions Tunneling Through Linear 1D Potential in Graphene p-n Junction	Proceeding of the 22 <sup>th</sup> conference of optics & photonics Yazd-Iran	2016
Stark effect in disk-shaped semiconductor quantum dot	Proceeding of 11th conferences on condensed Matter physics of Iran. Shahroud	2013
Spectroscopic properties of Nd <sup>3+</sup> doped Borophosphate glass and glass ceramics containing Zn base nanocrystals	Proceeding of 11th conferences on condensed Matter physics of Iran. Shahroud	2013
The enhancement of emission from Nd <sup>3+</sup> doped Borophosphate glass containing ZnO	Proceeding of the 19 <sup>th</sup> conference of optics & photonics Zahedan-Iran	2013
Temperature based Investigation of Graphene Refractive Index in Far-Infrared Region	Proceeding of the conference of Iranian society of physics, Yazd Iran	2012
Generation of entangled photon pairs from semiconductor quantum dots	Proceeding of the conference of Iranian society of physics, Yazd Iran	2012
Comparison of Sensing Performance of Metal-Semiconductor-Metal (MSM) Hydrogen Sensors Pd/GaN and Pt/GaN	Proceeding of the conference of Iranian society of physics, Yazd Iran	2012
Designing of Controlled-NOT gate based on optical properties of a semiconductor quantum dot	Proceeding of the conference of Iranian society of physics, Yazd Iran	2012
The study of trion binding energy in a semiconductor quantum dot	Proceeding of 18th IASBS condensed Matter Conference, ZANJAN, Iran	2012

The effect of confinement potential on exciton-phonon interaction in semiconductor quantum dot	Proceeding of 18th IASBS condensed Matter Conference, ZANJAN, Iran	2012
The Influence of Quantum Confinement on Exciton-Photon Interaction in Photonic-Crystal Microcavity	Proceeding of the 18 <sup>th</sup> conference of optics&photonics Tabriz-Iran	2012
Effect of polarization on photon lifetime in a semiconductor microcavity	Proceeding of the 18 <sup>th</sup> conference of optics&photonics Tabriz-Iran	2012
Investigation of electron-LO-phonon interaction in semiconductor QDs	Proceeding of the 18 <sup>th</sup> conference of optics&photonics Tabriz-Iran	2012
Investigation of Exciton-LO-phonon Interaction in Semiconductor QDs	Proceeding of conference of optics&photonics Armenia-Ashtarak	2011
The Effects Temperature on Optical Gain in GaN Based Quantum Dot Laser	Proceeding of conference of optics&photonics Armenia-Ashtarak	2011
Exciton-Phonon interaction in a semiconductor quantum dots	Proceeding of the conference of physics of payame nour Iran	2011
The study of normal modes coupling linewidth in a GaAs microcavity	Proceeding of the conference of Iranian society of physics, Uromia Iran	2011
The study of exciton-photon coupling in a photonic crystal microcavity	Proceeding of the conference of Iranian society of physics, Uromia Iran	2011

The calculation of exciton binding energy in graphene nanoribbons	Proceeding of the conference of Iranian society of physics, Uromia Iran	2011
The study of nonlinear biexcitonic absorption in a GaN quantum dot	Proceeding of 17th IASBS condensed Matter Conference, ZANJAN, Iran	2011
The study of polariton states formation in a semiconductor microcavity	Proceeding of 17th IASBS condensed Matter Conference, ZANJAN, Iran	2011
The effect of temperature on lifetime of laser levels in quantum cascade lasers in nitride-based materials	Proceeding of 17th optics and photonics Conference, Kerman, Iran.	2011
Optimization of analytical model for balometer detector performance prediction including radiative conductance and introduction of thermal feedback parameter	Proceeding of the conference of Iranian society of physics, Hamadan Iran	2010
Comparison of performance of photoelectromagnetic detectors for middle and far infrared spectral regions operating at room temperature	Proceeding of the conference of Iranian society of physics, Hamadan Iran	2010
The study of the effect of dephasing and population decay rates on the third order nonlinear susceptibility in a disk shaped Gallium Nitride quantum dot	Proceeding of 16th optics and photonics Conference, Yazd, Iran.	2010
Optimization of special detectivity of an ambient electromagnetic photodetector for the wavelength of 10.6 micrometer	Proceeding of 16th IASBS condensed Matter Conference, ZANJAN, Iran, p. 9	2010
Study of the effect of potential on binding energy of exciton in a cylindrical GaN quantum dot	Proceeding of 15th optics and photonics Conference, Isfahan, Iran	2009

Line Defect in Two-dimensional Photonic Crystals with Triangular Lattice	Proceeding of 9th conferences on condensed Matter of physics society of Iran,Ahvaz	2009
The formation of exciton and biexciton states in a GaN quantum dot and related optical transitions	Proceeding of 15th IASBS condensed Matter Conference, ZANJAN, Iran, p.39	2009
Investigation of optical gain in quantum well infrared detector using the ballistic transport model for electrons	Proceeding of 7th conferences on condensed Matter of physics society of Iran,Tehran P 273	2004
Theoretical analysis of subband states controlled cap layer thickness in an AlGaIn/GaN heterostructures	Proceeding of 12th Iranian physics society Conference,Shahrod, Iran, P. 542	2006
Theoretical calculation of parameters of quantum well infrared photodetectors based on bound to continuum transition	Proceeding of 8th conferences on condensed Matter of physics society of Iran, P 263	2006
Study of oscillator strength of AlGaAs/GaAs quantum well under the effect of the electric field	Proceeding of 12th conferences on condensed Matter of physics society of Iran, P 270	2006
Investigation of variations of detectivity in quantum well infrared photodetectors based on structural parameters	Proceeding of 7th IASBS condensed Matter Conference, ZANJAN, Iran, p.91	2006

### Research Activities:

Title of Project	Place of Work	date
<i>The calculation of built-in potential In Nitride based quantum dot</i>	<i>University of Tabriz</i>	<i>2010-2011</i>

<i>The modeling of single photon source based on embedded quantum dot in microcavity</i>	<i>University of Tabriz</i>	<i>2011-2012</i>
<i>The study of some electrical properties of Nitradization of Aluminium</i>	<i>University of Tabriz</i>	<i>2011-2012</i>
<i>Optical Quantum gates based on semiconductor nanostructure</i>	<i>University of Tabriz</i>	<i>2012-2013</i>
<i>The control of nonlinear optical response emerged from excitons in semiconductor quantum dots</i>	<i>University of Tabriz</i>	<i>2013-2014</i>
<i>The effect of anistropy on optical response of impurity in a semiconductor quantum dot</i>	<i>University of Tabriz</i>	<i>2014-2015</i>
<i>The optical properties of Graphene Quantum Dot</i>	<i>University of Tabriz</i>	<i>2016-2017</i>

### Honors and Awards:

<b>Name of Event</b>	<b>Level</b>	<b>Country-City</b>	<b>Year</b>
<i>Distgushed academic satff of Institute</i>	<i>University of Tabriz</i>	<i>Iran-Tabriz</i>	<i>2016</i>

### Organzing Scientific Events:

<b>Name of Event</b>	<b>Level</b>	<b>Country-City</b>	<b>Year</b>	<b>Role</b>
<i>Advanced School on graphene and its optoelectronic devices</i>	<i>National</i>	<i>Iran-Tabriz</i>	<i>2013</i>	<i>Member of Executive Committee</i>
<i>Advanced school on 2D systems</i>	<i>International</i>	<i>Iran</i>	<i>2014</i>	<i>Member of Executive Committee</i>
<i>Annual International Meeting on Low dimensional sytems</i>	<i>International</i>	<i>Iran</i>	<i>2015</i>	<i>Executive Committee Chair</i>
<i>Annual International Meeting on Low dimensional sytems</i>	<i>International</i>	<i>Iran</i>	<i>2016</i>	<i>Executive Committee Chair</i>
<i>Annual International Meeting on Low dimensional sytems</i>	<i>International</i>	<i>Iran</i>	<i>2017</i>	<i>Executive Committee Chair</i>

### Membership to Scientific Associations:

Name of Institution/Association	Position Held	Country	Year
<u>Iranian physics society</u>	<u>PhD</u>	<u>Iran</u>	<u>From 2000</u>
<u>Iranian Nanotechnology organization</u>	<u>PhD</u>	<u>Iran</u>	<u>From 2003</u>

### Language Proficiency:

Language	Degree of Proficiency												
	Writing				Reading				Speaking				
	Native	Good	Fair	Poor	Native	Good	Fair	Poor	Native	Good	Fair	Poor	
English		*			*						*		
Persian	*				*					*			
Turkish		*				*				*			

### **International Cooperation:**

- 1- Institute of Semiconductor Physics Russian Academy of Sciences, Novosibirsk, **RUSSIA**.
- 2- Faculty of Physics, University of Antwerpen, **Belgium**
- 3- Nanyang University of Technology, **Singapour**
- 4- Faculty of Physics, University of Humboldt, Berlin, **Germany**