

## Curriculum Vitae

**First name:** Mohammad  
**Last name:** Sabaeian  
**Date of birth:** 18 Feb. 1979  
**Place of birth:** Dezful, Iran  
**Nationality:** Iranian  
**Skype ID:** sabaeian  
**Email address:** [sabaeian@scu.ac.ir](mailto:sabaeian@scu.ac.ir)  
[sabaeian@gmail.com](mailto:sabaeian@gmail.com)  
**Departmental Phone Number:** 0098-611-333-104  
**Cell Phone:** 0098-917-310-376

### Employments:

2016-Now: Associate Professor of Physics in Laser and Optics, Physics Department, Faculty of Science, Shahid Chamran University (SCU) of Ahvaz, Ahvaz, Iran.

2008-2016: Assistant Professor of Physics in Laser and Optics, Physics Department, Faculty of Science, SCU, Ahvaz, Iran.

### Responsibilities:

2010-Now: Topical Editor of Applied Optics journal (OSA).

2014-Now: Topical Editor of Journal of Research on Many Body Systems (SCU).

2016-Now: Manager of Center for Research on Laser and Plasma, SCU of Ahvaz, Ahvaz, Iran.

### Education Background:

- 2003-2008, PhD: Physics (Laser & Optics), University of Shiraz, Shiraz 71304, Iran. Average mark: 17.79 out of 20.

**PhD thesis title:** Investigation of thermal effects in solid state and fiber lasers

**Supervisor:** Prof. Hamid Nadgaran

- 2001-2003, MSc: Atomic and Molecular Physics, University of Shiraz, Shiraz 71304, Iran. Average mark: 17.63 out of 20.

**MSc. thesis title:** Measurement of liquid surface tension by laser beam diffraction

- 1997-2001, BSc: Physics, Shahid Chamran University of Ahvaz, Ahvaz, Iran. Average mark: 17.04 out of 20.

**BSc. Graduation dissertation:** Design and fabrication of  $\epsilon$ -channels sender and receiver in radio frequency domain

- 1994-1997: High School Diploma in Mathematics & Physics, Modarres High School, Dezful, Iran. Average: 18.21 out of 20.

### Sabbatical leaves:

- 2006-2007: Plitecnico di Bari, Faculta de Taranto, Italy.

**Project:** Rare Earth Doped Fiber Lasers and Amplifiers, Supervisor: Prof. Francesco Prudenzeno

- 2014: Honan University, Changsha, China.

**Project:** Thermal lens spectroscopy of Graphene Oxide (optical properties of 2D systems).

### Teaching experience:

- 2001-2002: High-School Physics Courses, Shiraz, Iran.
- 2002-2003: Elementary Physics: Scientific and Applied University of Power Ministry, Shiraz, Iran,
- 2003-2004: BSc. Physics Courses: Islamic Azad University, Arsanjan Branch, Fars Province, Iran.
- 2003-2004: BSc. Physics Courses: Payame-e-Noor University, Shiraz, Iran.
- 2004-2010: Physics Courses: Islamic Azad University, Dezful Branch, Dezful, Iran.
- 2008-Now: MSc. and BSc., and PhD. Physics Courses: Shahid Chamran University of Ahvaz, Ahvaz, Iran.

### Awards and honors:

- Winner of Ministry of Science, Research and Technology's Scholarship for PhD (2003-2008)

- Distinguished Researcher of Khouzestan province, Iran (۲۰۱۸).
- Being on the dean's list at Shahid Chamran University of Ahvaz (۲۰۰۱- Top ۳)
- Distinguished lecturer among Shiraz's teachers, Iran (۲۰۰۲)
- Distinguished annual researcher, Islamic Azad University, Dezful, Iran (۲۰۰۸)
- Best presenter in ۱<sup>st</sup> National Conference on Laser and Optics Engineering, Iran (۲۰۰۹).
- Best presenter in workshops in ۳<sup>rd</sup> National Conference on Laser and Optics Engineering, Iran (۲۰۱۳).
- Best consulting advisor among Shahid Chamran University's professors (۲۰۱۳).
- Supervisor of the best MSc student's thesis (Mohammadreza Shahzadeh) of SCU in ۲۰۱۳.
- Distinguished researcher at Shahid Chamran University of Ahvaz, ۲۰۱۵.
- Best poster presentation in Iranian Annual Physics Conference, Shiraz, ۲۰۱۶.
- Distinguished researcher at Faculty of Science, Shahid Chamran University of Ahvaz, ۲۰۱۶.
- Winner of national fund for extending attosecond physics in macro- and nano-scales
- Winner of highest grants at SCU in several years

### Languages:

- *Persian (native)*
- **English (Expert)**
- *Italy (Speaking, communication)*

### Intended workshops:

۱. Molecular Dynamics, **Sharif University of Technology, Tehran, Iran, November ۲۰۰۶.**
۲. School of Plasma, **Amir-Kabir University of Technology, Tehran, Iran.**
۳. Introduction to Recent Advances in Nanotechnology, **University of Kashan, Iran.**
۴. From Block waves optics to Photonic crystal fibers, Lecturer: Philip St. Russell, Max Planck Institute for the Science of Light, Germany, (in **Photonics ۲۰۱۰, ۱۱ December, Guwahati, India**).
۵. Plasmonics: Principles and Potential Applications, Lecturer: ByoungHo Lee, Seoul National University, South Korea (in **Photonics ۲۰۱۰, ۱۲ December, Guwahati, India**).
۶. Fiber-optic Bragg Grating Sensor systems, Background and structural health monitoring applications, Lecturer: Wolfgang Ecke, IPHT, Jena, Germany (in **Photonics ۲۰۱۰, ۱۱ December, Guwahati, India**).
۷. Fiber optics sensors, sensing principles and challenging application examples, Lecturer: Wolfgang Hable, Federal institute for materials Research and Testing, Berlin, Germany, (in **Photonics ۲۰۱۰, ۱۲ December, Guwahati, India**).
۸. High performance computation and TORIN (HPC), **IPM, Tehran, Iran (۲۰۱۳).**
۹. Advanced School on Two Dimensional Systems: from Semiconductors to New Two dimensional Materials, ۲۵-۲۶ May ۲۰۱۴, **Tabriz University, Iran.**
۱۰. Second PAM International School on Emergent Quantum Phenomena in Graphene, ۲۶-۲۸ April, **Sharif University of Technology (۲۰۱۵).**
۱۱. **Attosecond and High Harmonic Science: From Fento to Atto**, by P. Corkum, Europhoton Vienna Summer School (۲۰۱۶).
۱۲. **Attosecond and High Harmonic Science: Attosecond technology and using extreme nonlinear optics**, by P. Corkum, Europhoton Vienna Summer School (۲۰۱۶).
۱۳. **Fiber optic modeling**, Dr. Rüdiger Paschotta, Europhoton Vienna Summer School (۲۰۱۶).
۱۴. **Megajoule-Class Lasers for Fusion and Beyond**, by: Chris Barty, Europhoton Vienna Summer School (۲۰۱۶).
۱۵. **Filamentation of Powerful femtosecond laser pulses**, S. L. Chin, Europhoton Vienna Summer School (۲۰۱۶).
۱۶. **High Brightness Fiber Laser Technologies**, by: A. Galvanauskas, Europhoton Vienna Summer School (۲۰۱۶).
۱۷. **Semiconductor saturable absorber mirrors (SESAMs) ۱**, by: Ursal Keller, Europhoton Vienna Summer School (۲۰۱۶).
۱۸. **Semiconductor saturable absorber mirrors (SESAMs) ۲**, by: Ursal Keller, Europhoton Vienna Summer School (۲۰۱۶).
۱۹. **Structural light Workshop, one-week workshop, IASBS, Zanjan (۲۰۱۶).**

### Experimentations:

- ۲۰۰۳: Design and setup of research Ion Argon Laser Laboratory, University of Shiraz, Iran.

- ۲۰۰۴: Running the ion Ar laser pumped Ti:sapphire laser, University of Shiraz, Iran.
- ۲۰۰۵: Running the LBO pumped Ti:Sapphire laser (UV laser), University of Shiraz, Iran.
- ۲۰۰۶-۲۰۰۷: Setup an octagonal fiber laser, Politecnico di Bari, Italy.
- ۲۰۱۲: Design and fabrication of high voltage DC power supply (up to ۴۰ kV)
- ۲۰۱۳: A new design and fabrication of high-power CW CO<sub>۲</sub> laser
- ۲۰۱۳-**Now**: Design and fabrication a sun-light pumped Nd:YAG laser
- ۲۰۱۳-**Now**: Design a thermal lens spectroscopy system
- ۲۰۱۳-۲۰۱۴: Fabrication of a spin-coater (up to ۱۴ rpm) for organic materials coating
- ۲۰۱۴: Thin film coating of organic polymers on ITO and FTO aimed to fabrication of OLEDs.
- ۲۰۱۴: Thin metal (Ag, Al,...) film coatings by thermal evaporation (PVD).
- ۲۰۱۴: Fabrication of Krypton Arc Lamp for laser applications
- ۲۰۱۴: Design and fabrication of a commercial xenon flash lamp Nd:YAG laser
- ۲۰۱۵: Welding of glass to metals; a project for fabricating arc and flash lamps
- ۲۰۱۵: Construction a CVD system
- ۲۰۱۵: Graphene synthesis by CVD method
- ۲۰۱۷: Designing a Photoluminescence setup
- ۲۰۱۷: Designing a Raman setup

### Miscellaneous:

- ۲۰۱۶: Member of Scientific Committee of Iranian Annual Physics Conference.
- ۲۰۱۸: Member of Scientific Committee of Iranian Annual Physics Conference.
- ۲۰۰۰: Executive member of ۱<sup>st</sup> Scientific and Applied Physics conference, Ahvaz, Iran.
- ۲۰۰۰-۲۰۰۱: Journal Editor: Physics Students Scientific Society “Teif”, Physics Department, Shahid Chamran University of Ahvaz, Iran.
- ۲۰۰۸: Executive member of ۱۴<sup>th</sup> Iranian Conference of Condensed Matter, Ahvaz, Iran.
- ۲۰۰۹: Executive member of ۲<sup>nd</sup> Conference of Recent Advances in Superconductivity, Ahvaz, Iran.
- ۲۰۱۴-۲۰۱۵: Design and setup of research ion Argon Laser Laboratory, Shahid Chamran University of Ahvaz, Iran.
- ۲۰۱۳: Executive member of ۲<sup>nd</sup> National Conference on Crystallography and Mineralogy, Ahvaz, Iran.
- ۲۰۱۳-۲۰۱۴: Establisher of an Electro-Optics Research Laboratory, Shahid Chamran University of Ahvaz, Iran.
- ۲۰۱۴: Executive member of ۶<sup>th</sup> National Conference of Vacuum, Ahvaz, Iran.
- **Topical Editor:** Journal of Research on Many-Body Systems, Shahid Chamran University of Ahvaz, Iran.
- **Topical Editor:** Applied Optics (OSA).
- **Journal Reference:** Scientific Report (Nature group), Optics Express (OSA), Optics Letters (OSA), the Journal of Optical Society of America B (OSA), Journal of Applied Physics (AIP), Superlattices and microstructures (Elsevier), Iranian Journal of Surface Science and Engineering, International Journal of Thermal Sciences (Elsevier), Measurement Science and Technology (IOP), Journal of Science Kharazmi University (Iran), Modern Physics Letters B (World Scientific), Sensors and Actuators B: Chemical (Elsevier), Applied Optics (OSA), The Journal of Renewable and Sustainable Energy (AIP), Phase Transition (Taylor and Francis), The European Journal of Physics B, Materials & Design (Elsevier), IEEE Journal of Quantum Electronics (IEEE), the Journal of Physics and Chemistry of Solids (Elsevier), Materials Research Express (IOP), Nanomaterials and Nanotechnology (SPIE).
- **National Festival Reference:** The member of referee Committee of ۹<sup>th</sup> and ۱۰<sup>th</sup> National Movement Festival, Ministry of Science, Research, and Technology.
- ۲۰۱۲: Founder of Electro-Optic Research lab (SCU).
- ۲۰۱۳: Founder of Atomic and Molecular Research lab (SCU).
- ۲۰۱۵: Founder of Center for Research on Laser and Plasma (SCU).

### Professional memberships:

- OSA (Optical Society of America)
- OPSI (Optics and Photonic Society of Iran)
- PSI (Physics Society of Iran)
- A member of “Computational Chemistry Pole”, Shahid Chamran University (SCU) of Ahvaz.
- A member of “Specialist Committee of Optics and Photonics,” Iran National Standard Organization.

- A member of “Science and Technology Park of Khuzestan”

### Research interests:

#### *Common interests:*

- Two-dimensional photonic crystals and photonic crystal fibers
- Solid-state lasers
- Thermal lens spectroscopy
- Photonic crystals fiber lasers
- Cavity quantum electrodynamics
- High performance computations
- Plasmonics (theory and experiments)
- Optoelectronic (semiconductor quantum dots).

#### *New interests:*

- *Strong-field laser physics*
- *Attosecond lasers*
- *Femtosecond lasers*
- *Ultrashort pulse measurements*
- *Ultrashort pulse laser spectroscopy*
- *CPA lasers*

### Presentations given:

- ۲۰۰۳: *Laser Remote Sensing*, On-day Physics Gathering, Azad University, Arsanjan Branch, Iran.
- ۲۰۰۳: *Fiber Lasers*, High School Physics Teachers Seminar, Dezful, Iran.
- ۲۰۰۳: *Negative Refractive Index*, Week of Research, Islamic Azad University, Dezful Branch, Dezful, Iran.
- ۲۰۰۶: *Thermal Effects in high power fiber lasers*, Weekly Scheduled talk, University of Shiraz, Iran
- ۲۰۱۰: *Maple Workshop*, Physics club, Shahid Chamran University of Ahvaz, Iran.
- ۲۰۱۱: *Recent Advances in Optics and Laser*, Shahid Chamran University of Ahvaz, Iran.
- ۲۰۱۱: *Comsol Multiphysics Workshop*, Kerman University, Iran.
- ۲۰۱۳: Workshop on *Numerical Simulation with Finite Element Method*, ۳<sup>rd</sup> National Conference on Laser and Optics Engineering, Iran.
- ۲۰۱۳: *How to prepare a scientific report*, Islamic Azad University, Deaful Branch, Dezful, Iran.
- ۲۰۱۴: *Thermal lens Spectroscopy*, Honan University, College of Communication Science and Engineering.
- ۲۰۱۵: *Laser and its applications*, a Live Radio Interview in Khuzestan Province Radio Studio.
- ۲۰۱۵: Workshop on *Physical Simulations*, ۵<sup>th</sup> Physics Student Festival, Shahid Chamran University.
- ۲۰۱۵: *A Report on Advances in Optics at SCU*, Institute of Advance Studies on Basic Science (IASBS), ۲۰۱۵.
- ۲۰۱۶: Workshop on *Comsol Multiphysics*, Shiraz University of Technology, Iran (۲۰۱۶).
- ۲۰۱۷: *How to generate Attosecond Trains of Pulses*, Shahid Chamran University of Ahvaz (۲۰۱۷).
- ۲۰۱۷: *Attosecond Sources*, ۵<sup>th</sup> Iranian Conference on Optics and Laser Engineering (ICOLE ۲۰۱۷).
- ۲۰۱۸: *۱۰۰ years with optics (Part I)*, International Day of Light, Shahid Chamran University of Ahvaz (۲۰۱۸).
- ۲۰۱۸: *CPA Lasers and its impact on strong field laser physics*, Week of Research, SCU, Ahvaz, Iran.

### Skills:

- *Operating system:* Windows and Linux
- *Technical Software:* Comsol Multiphysics, Lumerical, Gaussian, MATLAB, MAPLE, JAVA, FORTRAN, C++,
- *Parallel programming* (High Performance Computing) based on CPU (Open MP, MPI) and GPU (Open CL, CUDA)
- *Other:* Microsoft office, Origin, Tecplot, Mathtype, End note, Latex

### Research Projects:

- 1) Investigation of thermal, thermally-induced stresses and photo-elastic effects on propagation modes of photonic crystal fiber lasers (۲۰۱۱).

- ۲) Optical properties of plasmonic and panda-shaped photonic crystal fiber, (۲۰۱۶).
- ۳) Temperature effects on the performance of KGW Raman generator (۲۰۱۲).
- ۴) Biological effects of harmful sound systems (۲۰۰۳).
- ۵) Thermal effects and compensation of them in solid state lasers (۲۰۱۴-۲۰۱۵).
- ۶) Design and generation of ultrashort attosecond train pulses in optical region (in progress, ۲۰۱۶).
- ۷) Utilization of Al<sub>2</sub>O<sub>3</sub> nanolayers to strengthen aluminum high voltage power cables aimed to remove steel medium (۲۰۱۷).
- ۸) Investigation of thermally-induced phase mismatching for generation of second harmonic laser in KTP type-II crystal (۲۰۱۰).
- ۹) 3D-modeling of heat effects on self-doubler NYAB laser in double-pass cavity using finite difference method (۲۰۱۱).

## **Publications:**

### ***Peer-Reviewed Journal Publications***

- ۱- **M. Sabaeian**, L. Mousave and H. Nadgaran, "Investigation of Thermally-induced phase mismatching in continuous-wave second harmonic generation: A theoretical model," *Optics Express*, ۱۸, ۱۸۷۳۲-۱۸۷۴۳ (۲۰۱۰).
- ۲- **Mohammad Sabaeian**, Fatemeh Sedaghat Jalilabadi, Mostafa Mohammadrezaee, and Alireza Motazedian, "Heat coupled Gaussian-wave CW double-pass type-II second harmonic generation: inclusion of thermally induced phase mismatching and thermal lensing," *Optics Express* ۲۲(۲۱), ۲۵۶۱۵-۲۵۶۲۸ (۲۰۱۴).
- ۳- **Mohammad Sabaeian** and Hamid Nadgaran, "An analytical model for finite radius dual-beam mode-mismatched thermal lens spectroscopy," *Journal of Applied Physics* ۱۱۴, ۱۳۳۱۰۲ (۲۰۱۳).
- ۴- **Mohammad Sabaeian** and Mohammadreza Shahzadeh, "Investigation of in-plane- and z-polarized intersubband transitions in pyramid-shaped InAs/GaAs quantum dots coupled to wetting layer: size and shape matter" *Journal of Applied Physics* ۱۱۶, ۰۴۳۱۰۲ (۲۰۱۴).
- ۵- M. Shahzadeh and **Mohammad Sabaeian**, "Numerical simulation of Optical nonlinearity enhancement in oblate semi-spheroid-shaped quantum dots coupled to wetting layer," *J. Opt. Soc. Am. B* ۳۲ (۶), ۱۰۹۷-۱۱۰۴ (۲۰۱۵).
- ۶- **M. Sabaeian**, H. Nadgaran and L. Mousave, "Analytical solution of the heat equation in longitudinally pumped cubic solid state laser," *Applied Optics* ۴۷, ۱-۹ (۲۰۰۸).
- ۷- Yaser Hajati, Zeinab Zambouri, and **Mohammad Sabaeian**, "Low-loss and high-performance mid-infrared plasmon-phonon in Graphene-Hexagonal boron nitride waveguide," *J. Opt. Soc. Am. B* ۳۵(۲), ۴۴۶-۴۵۳ (۲۰۱۸).
- ۸- **M. Sabaeian**, H. Nadgaran, M. De Sario, L. Mescia and F. Prudeniano, "Investigation of thermal effects in octagonal double-clad fiber lasers," *Optical Materials* ۳۱, ۱۳۰۰-۱۳۰۵ (۲۰۰۹).
- ۹- **Mohammad Sabaeian** and A. Khaledi-Nasab, "Size-dependent intersubband optical properties of dome-shaped InAs/GaAs quantum dot with wetting layer," *Applied Optics* ۵۱, ۴۱۷۶-۴۱۸۵ (۲۰۱۲).
- ۱۰- **Mohammad Sabaeian**, "Analytical solutions for anisotropic time-dependent heat equation with Robin boundary condition for cubic-shaped solid state laser crystals," *Applied Optics* ۵۱, ۷۱۵۰-۷۱۵۹ (۲۰۱۲).
- ۱۱- **Mohammad Sabaeian**, Alireza Motazedian, Mostafa Mohammad Rezaee, and Fatemeh Sedaghat Jalil-Abadi, "Pulsed Bessel-Gauss beams: A depleted wave model for type II second harmonic generation," *Applied Optics* ۵۳(۳۲), ۷۶۹۱-۷۶۹۶ (۲۰۱۴).
- ۱۲- **Mohammad Sabaeian** and Mohammadreza Shahzadeh, "Simulation of temperature and thermally-induced stress of human tooth under CO<sub>2</sub> pulsed laser beams using finite element method," *Lasers in Medical Science* ۳۰, ۶۴۵-۶۵۱ (۲۰۱۵).
- ۱۳- Ali Khaledi-Nasab, **Mohammad Sabaeian**, Mostafa Sahraei, and Vahid Fallahi, "Kerr nonlinearity due to intersubband transition in three-level InAs/GaAs quantum dot: the impact of wetting layer on dispersion curves", *Journal of Optics* ۱۶, ۰۵۰۰۰۴ (۲۰۱۴).
- ۱۴- **Mohammad Sabaeian** and Mohammadreza Shahzadeh, "Self-assembled strained pyramid-shaped InAs/GaAs quantum dot: the effects of wetting layer thickness on discrete and quasi-continuum levels" *Physics E* ۶۱, ۶۲-۶۸ (۲۰۱۴).
- ۱۵- Mohammadreza Shahzadeh and **Mohammad Sabaeian**, "Wetting layer-assisted modification of in-plane- and z-polarized transitions in strain-free GaAs/AlGaAs quantum dots," *Superlattices and Microstructures* ۷۵, ۵۱۴-۵۲۲ (۲۰۱۴).
- ۱۶- **Mohammad Sabaeian** and H. Nadgaran, "Bessel-Gauss beams: Investigation of thermal effects on their generation", *Optics Communications* ۲۸۱, ۶۷۲-۶۷۸ (۲۰۰۸).

- ۱۷- H. Nadgaran, M. Servatkhah and **Mohammad Sabaieian**, "Mathieu-Gauss beams: A thermal consideration," *Optics Communications* ۲۸۳, ۴۱۷-۴۲۶ (۲۰۰۹).
- ۱۸- Laleh Mousavi, **Mohammad Sabaieian**, and Hamid Nadgaran, "Thermally-induced birefringence in solid-core photonic crystal fiber lasers," *Optics Communications* ۳۰۰, ۶۹-۷۶ (۲۰۱۳).
- ۱۹- Alaeddin Sayahian Jahromi, **Mohammad Sabaieian**, and Hamid Nadgaran, "Heat coupled laser rate equations: a model for Er-doped fiber lasers," *Optics Communications* ۳۱۱, ۱۳۴-۱۳۹ (۲۰۱۳).
- ۲۰- Ali khaledi-Nasab, **Mohammad Sabaieian**, Vahid Fallahi, Mostafa Sahraei, Mostafa Mohammad Rezaee, "Intersubband absorption dispersion and group velocity on Woods-Saxon InAs/GaAs quantum dots with wetting layer," *Physics E* ۶۰, ۴۲-۴۹ (۲۰۱۴).
- ۲۱- Mohammadreza Shahzadeh and **Mohammad Sabaieian**, "The effects of wetting layer on electronic and optical properties of intersubband P-to-S transitions in strained dome-shaped InAs/GaAs quantum dots," *AIP Advances* ۴, ۰۶۷۱۱۳ (۲۰۱۴).
- ۲۲- **Mohammad Sabaieian** and Mohammadreza shahzadeh, "A comparison between semi-spheroid and dome-shaped quantum dots coupled to wetting layer," *AIP Advances* ۴, ۰۶۷۱۳۴ (۲۰۱۴).
- ۲۳- M. Mohammadrezaee, **Mohammad Sabaieian**, A. Motazedian, F. Sedaghat, "Complete anisotropic time-dependent heat equation in KTP crystal under repetitively pulsed Gaussian beams: a numerical approach," *Applied Optics* ۵۴ (۶), ۱۲۴۱-۱۲۴۹ (۲۰۱۵).
- ۲۴- **Mohammad Sabaieian** and H. Nadgaran, "Investigation of thermal dispersion and thermally-induced birefringence on high-power double clad Yb:Glass fiber laser," *International Journal of Optics and Photonics (IJOP)* ۲(۱), (۲۰۰۸).
- ۲۵- Hamid Nadgaran and **Mohammad Sabaieian**, "Pulsed pump: Thermal effects in solid state lasers under super-Gaussian pulses," *Pramana Journal of Physics* ۶۷, ۱۱۱۹-۱۱۲۸ (۲۰۰۵).
- ۲۶- Laleh Mousavi, **Mohammad Sabaieian**, and Hamid Nadgaran, "Numerical modeling of self-heating effects on guiding modes of high-power photonic crystal fiber lasers," *Lithuanian Journal of Physics* ۵۳(۲), ۱۰۴-۱۱۱ (۲۰۱۳).
- ۲۷- **Mohammad Sabaieian**, "The effects of air-holes on temperature and temperature gradient of solid-core photonic crystal fibers," *OptiK: International Journal for Light and Electron Optics* ۱۲۴(۲۲), ۵۷۸۷-۵۷۹۱ (۲۰۱۳).
- ۲۸- Ali Khaledi-Nasab, **Mohammad Sabaieian**, Mostafa Sahraei, and Vahid Fallahi, "Optical rectification and second harmonic generation on quasi-realistic InAs/GaAs quantum dots: with attention to wetting layer effect," *ISRN Condensed Matter Physics* (۲۰۱۳) DOI ۱۰.۱۱۵۵/۲۰۱۳/۵۳۰۲۵۹.
- ۲۹- Ali Khaledi-Nasab, **Mohammad Sabaieian**, Mehdi, Rezaie, Mostafa Mohammad-Rezaee, "Linear and Nonlinear Tunable Optical Properties of intersubband transitions in GaN/AlN Quantum Dots in Presence and Absence of Wetting Layer" *Journal the of European Optical Society: Rapid Publication* ۹, ۱۴۰۰ (۲۰۱۴).
- ۳۰- **Mohammad Sabaieian**, Fatemeh Sedaghat Jalil-Abadi, Mostafa Mohammad Rezaee, Alireza Motazedian, and Mohammadreza Shahzadeh, "Temperature dependence of thermal conductivity and radiation boundary condition on the temperature distribution of KTP crystal: an inhomogeneity and nonlinearity in ۳D diffusion equation", *Brazilian Journal of Physics* ۴۵, ۱-۹ (۲۰۱۵).
- ۳۱- Laleh Mousavi, **Mohammad Sabaieian**, and Hadi Askari, "Self-doubler NYAB laser: A theoretical model for coupling the rate and nonlinear equations," *Journal of Research on Many body Systems* ۴ (۷), ۴۵-۵۴ (۲۰۱۴).
- ۳۲- **Mohammad Sabaieian**, Fatemeh Sedaghat Jalil-Abadi, Mostafa Mohammad Rezaee, Alireza Motazedian, and Mohammadreza Shahzadeh, "Temperature increase effects on a double-pass cavity type II second-harmonic generation: a model for depleted Gaussian continuous waves," *Applied Optics* ۵۴ (۴), ۸۶۹-۸۷۵ (۲۰۱۵).
- ۳۳- **Mohammad Sabaieian**, M. Shahzadeh, and M. Farbod, "Electric field-induced nonlinearity enhancement in strained semi-spheroid-shaped quantum dots coupled to wetting layer" *AIP Advances* ۱۴(۱۲), ۱۲۷۱۰۵ (۲۰۱۴).
- ۳۴- **Mohammad Sabaieian** and Mohammadreza Shahzadeh, "GaAs pyramidal quantum dot coupled to wetting layer in an AlGaAs matrix: a strain-free system" *Physica E* ۶۸, ۲۱۵-۲۲۳ (۲۰۱۵).
- ۳۵- Hamidreza Rezaei, **Mohammad Sabaieian**, and Laleh Moosavi, Developing and designing a special-cut dual-core photonic crystal fiber (PCF) for pressure sensing, *MAGNT Research Report* ۳(۲), ۱۳۵۴-۱۳۶۲ (۲۰۱۵).
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۶۵. S. Baham Bakhtiari, M. Zargar Shoushtari, and M. Sabaeian, "The process of synthesizing SrAl<sub>2</sub>O<sub>4</sub> nanoparticles by combustion method using microwave," ۸<sup>th</sup> National Payam-e-Noor Conference on Physics, Shiraz Payam-e-Norr University, Shiraz.
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۶۹. Z. Radrashid, M. Zargar Shoushtari, M. Sabaeian, "Synthesis and study of strontium aluminate nanoparticles properties and doping them with europium," ۲<sup>nd</sup> National Conference on Crystallography and Mineralogy, Yazd, Jan. ۲۰۱۸.
۷۰. Kh. Beiranvand, A. Ghalambor-Dezfuli, and M. Sabaeian, "k.p Hamiltonian of monolayer MoS<sub>2</sub> based on the infinitesimal basis transformations perturbation theory," ANNUAL ADVANCED INTERNATIONAL SCHOOL ON LOW DIMENSIONAL SYSTEMS, Tabriz, May ۲۰۱۶

### Supervised theses:

#### *BSc students*

- ۱) Seyed Akbar Hossini (**BSc. thesis**), **Holography: Concepts, applications and fabrication**, Shahid Chamran University of Ahvaz, Iran (۲۰۰۹).
- ۲) Ali Khaledi-Nasab (**BSc. thesis**), **Semiconductor quantum dots**, Shahid Chamran University of Ahvaz, Iran (۲۰۱۱).
- ۳) Mohammadreza Shahzadeh (**BSc. thesis**), **Simulation of temperature and thermally-induced stress of human tooth under CO<sub>2</sub> pulsed laser beams using finite element method**, Shahid Chamran University of Ahvaz, Iran (۲۰۱۱).
- ۴) Mohsen Baghalaei (**BSc. thesis**), **Biological temperature sensor based on fiber-coupled microdisk whispering gallery modes**, Shahid Chamran University of Ahvaz, Iran (۲۰۱۲).
- ۵) Mina Afsharnia, **High performance computations based on GPU**, Shahid Chamran University of Ahvaz, Iran (۲۰۱۳).
- ۶) Shirin Saki, **Study of flash-lamps for solid-state lasers**, Shahid Chamran University of Ahvaz, Iran (۲۰۱۴).
- ۷) Hamed Amouzgar, **Fabrication of ۲, ۴ m diameter optical reflector for laser applications**, Shahid Chamran University of Ahvaz (۲۰۱۴).

- ۸) Hossein Khalili, *Photomultiplier Tube, Concepts, Design, and Circuits*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۶).
- ۹) Mina Behruzian, *Lock-in Amplifier*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۷).
- ۱۰) Mahshid Ya-Ali, *XUV spectroscopy*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۷).
- ۱۱) Zeinab Sajjadi, *Diffraction Elements*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۸).

#### **MSc students**

- ۱) Hamidreza Rezaei (MSc. thesis), *Designing a stress sensor based on dual-core photonic crystal fiber*, Islamic Azad University, Qom Branch, Qom, Iran (۲۰۰۹).
- ۲) Elham Maghamianzadeh (MSc. thesis), *Investigation of beam quality of solid-state laser output under thermal effects*, Islamic Azad University, Central Tehran Branch, Tehran, Iran (۲۰۱۲).
- ۳) Maryam Falatounzadeh (MSc. thesis), *Investigation of thermal effects on solid-state beam quality*, Islamic Azad University, Central Tehran Branch, Tehran, Iran (۲۰۱۲).
- ۴) Leila Shahmandi (MSc. thesis), *Investigation of thermal effects in flash lamp side pumped solid-state Nd:YAG pulsed lasers*, Yazd University, Iran (۲۰۰۹).
- ۵) Heydar Liaghat (MSc. thesis), *Investigation of metal nano-layer on mode characteristics of photonic crystal fiber*, Islamic Azad University, Fars Science and Research Branch, Iran (۲۰۱۲).
- ۶) Azam Askari (MSc. thesis), *Time-dependent solution for heat equation in electron beam welding*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۲).
- ۷) Fatemeh Sedaghat Jalilabadi, *“An investigation of thermally-induced phase mismatching effect in KTP crystal type-II double-pass cavity CW SHG”* Shahid Chamran University of Ahvaz, Iran (۲۰۱۳).
- ۸) Alireza Motazedian, *“An investigation of efficiency and filed profile of quasi-nondiffracting Bessel-Gauss beams in pulsed second harmonic generation under thermal effects”* Shahid Chamran University of Ahvaz, Iran (۲۰۱۳).
- ۹) Mostafa Mohammadrezaei, *“Heat-Pulsed second harmonic generation coupling: A theoretical model”* Shahid Chamran University of Ahvaz, Iran (۲۰۱۳).
- ۱۰) Ali Khaledi-Nasab (MSc. thesis), *Kerr effect in dome-shaped InAs/GaAs quantum dots molecules*, Bonab University, Iran (۲۰۱۳).
- ۱۱) Bahman Rezaei (MSc. thesis), *Investigation of optical properties of micricavities based 1D metallic photonic crystals*, Payam-e-noor University, Ahvaz, Iran (in progress).
- ۱۲) Hassan Mohammadi (MSc. thesis), *Investigation of plasmonic excitation of metallic nano-particles in photovoltaic solar cells*, Payam-e-Noor University, Ahvaz, Iran (in progress).
- ۱۳) Seyed Azadi Hossini (MSc. thesis), *Size dependent emission properties of In<sub>x</sub>Ga<sub>1-x</sub>As/GaAs conical-shaped quantum dot lasers*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۴).
- ۱۴) Mohammadreza Shahzadeh (MSc. thesis), *Investigation of electronic and optical properties of pyramid-shaped quantum dots with strain and wetting layer effects*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۴).
- ۱۵) Maryam Maktabi (MSc thesis), *Quantum dot based photo detectors*, Payam-e-noor University, Ahvaz, Iran.
- ۱۶) Mehdi Heydari (MSc thesis), *The influence of noble metal nano-strips on optical absorption of ultra-thin silicon solar cells*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۵).
- ۱۷) Rahimeh Nasser (MSc thesis), *Investigation of exciton excitation in dome-shaped InN/GaN quantum dots*, Payam-e-noor University, Ahvaz, Iran (۲۰۱۵).
- ۱۸) Narges Ajamgard (MSc thesis), *An investigation of spontaneous emission rate of quantum dots in a plasmonic photonic crystal microcavity*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۵).
- ۱۹) Sheida Namniha, *“Fabrication of Organic light emitting diode using thermal evaporation and spin-coating deposition methods”* Shahid Chamran University of Ahvaz, Iran (۲۰۱۶).
- ۲۰) Azadeh Ebrahimzadeh (MSc thesis), *Design and fabrication of a side-pumped solid-state Nd:YAG laser using commercial xenon lamp*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۶).
- ۲۱) Zeinab Nazari (MSc thesis), *Design and fabrication of krypton flash- and arc-lamps and its optimization for laser applications*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۶).
- ۲۲) Narges Rajabinasab (MSc thesis), *Design and construction of high power gas flow CO<sub>2</sub> laser*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۶).
- ۲۳) Majid Dindar (MSc thesis), *Ti:sapphire laser pumped ion Argon laser*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۶).
- ۲۴) Mahboubeh Khabbaz (MSc thesis), *An investigation of thermally-induced phase mismatching in Mgo:PPLN continuous wave optical parametric oscillator double-pass cavity in infrared region*, University of Shiraz (۲۰۱۶).

- ۲۵) Mahyar Joudaki (MSc thesis), *An investigation of Fano effect in crescent-shaped plasmonic nanostructures*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۷).
- ۲۶) Azardokht pouladzadeh (MSc thesis), *Chemical vapor deposition of graphene on copper substrate for gas sensing and light detection applications*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۷).
- ۲۷) Azimeh Nikandish (MSc thesis), *An analytical model for second harmonic generation under thermal effects*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۷).
- ۲۸) Farzaneh Kouravand (MSc thesis), *Investigation of plasmonic excitation in thin metal films*, Payam-e-noor University, Ahvaz, Iran.
- ۲۹) Elham Pouyanimehr (MSc thesis), *Trace detection of explosive materials by laser remote sensing*, Shahid Chamran University of Ahvaz, Iran.
- ۳۰) Zeinab Zarei (MSc thesis), *Investigation of thermal effects on optical parametric oscillator in mid-IR region*, Shahid Chamran University of Ahvaz, Iran.
- ۳۱) Mojtaba Narimousa (MSc thesis), *Modeling and analysis of group velocity dispersion in femtosecond solid-state laser system in the Bessel-Gauss mode and designing its experimental setup*, Shahid Chamran University of Ahvaz, Iran.
- ۳۲) Zeinab Zambouri (MSc thesis), *An investigation of plasmonic properties of graphene nonoribbon on two-dimensional hexagonal boron nitride*, Shahid Chamran University of Ahvaz, Iran..
- ۳۳) Zeinab Hardani (MSc thesis), *Non-perturbative study of super-high intense laser interaction with atomic aimed to high-order harmonic generation*, Shahid Chamran University of Ahvaz, Iran (in progress).
- ۳۴) Hossein Hayat Davoudi (MSc thesis), *Measurement of nonlinear optical properties of Selenide compound nanoparticles by Z-scan and thermal lens spectroscopy techniques*, Shahid Chamran University of Ahvaz, Iran (in progress)

#### **PhD students**

- ۱) Alaeddin Sayahian Jahromi (PhD thesis supervisor), *“Investigation of thermal effects in Er fiber lasers: Direct and ab initio coupling of thermal equation and rate equations,”* The University of Shiraz, Iran (۲۱۰۳).
- ۲) Kobra Rahmani (PhD thesis, Advisor), *Plasmonic based biological sensors*, Shahid Chamran University of Ahvaz, Iran.
- ۳) Azar Sadollahkhani (PhD thesis advisor), *Synthesis of core-shell nanostructure based on zinc oxide and investigation of the effect of different shells on their band gap and optical and photocataytic properties*, Shahid Chamran University of Ahvaz, Iran.
- ۴) Narges Kafaei (PhD thesis supervisor), *k.p matrix representation of two-dimensional blue and black phosphorene*, Shahid Chamran University of Ahvaz, Iran (۲۰۱۸).
- ۵) Hamidreza Rezaei (PhD thesis supervisor), *Development of theoretical models and experimental investigation of useful and destructive thermal effects in continuous and femtosecond pulsed pumping laser systems*, Shahid Chamran University of Ahvaz, Iran (in progress).
- ۶) Khadijeh Beiranvand (PhD thesis co-supervisor), *Calculation of some electronic and optical properties of MoS<sub>2</sub> monolayer with k.p model*, Shahid Chamran University of Ahvaz, Iran (in progress).
- ۷) Maryam Riyahi (PhD thesis co-supervisor), *Design and fabrication of photonic microwaveguide in the presence of graphene*, Shahid Chamran University of Ahvaz, Iran (in progress).
- ۸) Majid Shahriari (PhD thesis co-supervisor), *Calculation of electronic and optical properties of MoS<sub>2</sub> by using tight-binding model*, Shahid Chamran University of Ahvaz, Iran (in progress).
- ۹) Masoomeh Dehghanian (PhD thesis supervisor), *Macroscopic aspects of attosecond pulse generation*, Shahid Chamran University of Ahvaz, Iran (in progress).
- ۱۰) Marjan Zakavi, *Non-perturbative, relativistic, and beyond dipole approximation study of super-high intense laser interaction with atomic gases aimed to generate high-order harmonics*, Shahid Chamran University of Ahvaz, Iran (in progress).
- ۱۱) Azadeh Ebrahimzadeh (PhD thesis supervisor), *Nanoscle attophysics*, Shahid Chamran University of Ahvaz, Iran (in progress).

#### **References:**

- ۱) Prof. Hamid Nadgaran, Department of Physics, University of Shiraz, Shiraz, Iran.  
E-mail: [nadgaran@susc.ac.ir](mailto:nadgaran@susc.ac.ir)
- ۲) Prof. Mojtaba Jafarpour, Department of Physics, Shahid Chamran University of Ahvaz, Ahvaz, Iran.  
E-mail: [mojtaba\\_jafarpour@hotmail.com](mailto:mojtaba_jafarpour@hotmail.com)

- ۳) Prof. Irej Kazeminezhad, Department of Physics, Shahid Chamran University of Ahvaz, Ahvaz, Iran.  
Ikazeminezhad@scu.ac.ir
- ۴) Prof. F. Prudenzano, Faculta di Taranto, Politecnico de Bari, Italy.  
E-mail: [prudenzano@poliba.it](mailto:prudenzano@poliba.it)
- ۵) Prof. Han Zhang, Shenzhen Engineering Laboratory of Phosphorene and Optoelectronics, Shenzhen University, Shenzhen.  
E-mail: [h Zhang@szu.edu.cn](mailto:h Zhang@szu.edu.cn)