



Ahmadreza Daraei

Associate Professor

Faculty : Science

Departments : Physics

Phone : +9854 - -----

Email : daraei@phys.usb.ac.ir

Address : Dept.of Physics, Faculty of Science, University of Sistan and Baluchestan, Daneshgah Ave., Zahedan, Iran.

Education

- ✓ B.Sc, Nuclear Physics, Shiraz University - 1991
- ✓ MS, Physics, Amirkabir University of Technology - 1994
- ✓ PhD, Photonics, - 2007
- ✓ PhD, Photonics, - 2007

Courses

- | | |
|---|---|
| 1. Grows of Crystals and Semiconductor Devices Technology | 2. Physics Laboratory 3 |
| 3. Project | 4. Lasers |
| 5. Special Topics | 6. Theory and Technology of Manufacturing Optical Instruments |
| 7. Special Topics of Photonic | 8. Photonics I |
| 9. Laser Physics | 10. Quantum Mechanics1 |
| 11. Advanced Laser Physics | 12. Laser Spectroscopy |
| 13. Nanophotonic | 14. Fundamentals of nano physics |
| 15. laser snd applied in chemistry | 16. Semiconductor Device Fabrication Technology |
| 17. Nanophotonics I | 18. Physics 1 |
| 19. Basic Physics 2 | 20. Physics 2 |
| 21. Basic Physics 3 | 22. Computational Physics |
| 23. Electrodynamics 1 | 24. Basic Physics 1 |
| 25. Computational Physics of Nanometer Systems | 26. Basic Physics 2 and Laboratory |
| 27. Quantum Mechanics1 | 28. Advanced Laser Physics |
| 29. Technical English | 30. Semiconductor Device Fabrication Technology |
| 31. Electromagnetic | 32. Quantum Mechanics1 |
| 33. Photonics1 | 34. Laser and Applied in Chemistry |
| 35. Physics 1 | 36. Photonics2 |
| 37. Special Topics 1 | 38. Electromagnetism1 |
| 39. Electromagnetism2 | 40. Physics II |
| 41. General Physics2 | 42. Electromagnetism1 |

Thesis

Master Thesis

1. Studying the Role of Utilizing Slot Geometry in the Photonic Crystal Nanocavities in Sensing

فاطمه جمعه پور [Ahmadreza Daraei, Naser Hatefi Kargan, Mohammad mahdi Babakhani fard, Zihab Sohbatzadeh, Majid Azarang, Soodeh Zarepour]

نیمسال دوم سال تحصیلی 1401

2. Investigation of a Photonic Crystal Containing a Combination of Multi-Branch Nanobeam-Cavity for Chemical Sensing

عاطفه براهوئی نژاد [Ahmadreza Daraei, Naser Hatefi Kargan, Mohammad mahdi Babakhani fard, Zihab Sohbatzadeh, Mousa Aliahmad, Mojtaba Ashhadi]

نیمسال دوم سال تحصیلی 00-01

3. Investigating the performance of a plasmonic perovskite photodetector

حدیثه شهریار [Naser Hatefi Kargan, Ahmadreza Daraei, Mousa Aliahmad, Mohammad Reza Mohammadi, Mohsen Saadat]

نیمسال دوم سال تحصیلی 00-01

4. Synthesis of CdTe quantum dots for the selective and sensitive determination of explosive materials in a photonic crystal platform

مصیب منتظمی [Ahmadreza Daraei, Nematollah Omidikia, Naser Hatefi Kargan]

نیمسال اول سال تحصیلی 98-99

5. Investigation of microsphere optical resonator with integrated fiber optics connection

مهناز براهوئی مطلق [Ahmadreza Daraei, Hamideh Saravani]

نیمسال اول سال تحصیلی 98-99

6. Investigating the performance of a graphene photodetector inside a Fabry-Perot microcavity

فاطمه مولوی وردجانی [Naser Hatefi Kargan, Ahmadreza Daraei]

نیمسال اول سال تحصیلی 98-99

7. Investigation of small linear defect cavity photonic crystal nano-laser

اسماعیل شیبک [Ahmadreza Daraei, Seyed Alireza Alavi]

نیمسال دوم سال تحصیلی 97-98

8. Study of the Photonic Modes of Toroidal Microcavity for Sensing Applications

مهناز ریسی کوهستانی [Ahmadreza Daraei, Naser Hatefi Kargan, Majid Azarang, Mousa Aliahmad, Seyed Alireza Alavi]

نیمسال دوم سال تحصیلی 96-97

9. Investigation of Photonic Crystal Fiber Bragg Grating for Sensing Applications

محمد قهرمانی مقدم [Ahmadreza Daraei, Sead mohsean Aeazadyar, Soheyl Sharifi, Shahram Mohanna, Seyed Alireza Alavi]

نیمسال دوم سال تحصیلی 96-97

10. Investigating the performance of a plasmonic graphene photodetector

رویا فتوحی [Naser Hatefi Kargan, Ahmadreza Daraei, Mousa Aliahmad, Majid Azarang, Seyed Alireza Alavi]

نیمسال اول سال تحصیلی 96-97

11. Investigating the performance of a Schottky barrier plasmonic photodetector

سلیمان رضاییان کوچی [Naser Hatefi Kargan, Ahmadreza Daraei]

نیمسال اول سال تحصیلی 96-97

12. Study of Quantum Dots with Diverse Geometrical Arrangements in the Photonic Crystals Structure with an Emphasis on Biological Applications

منا ستوده [Ahmadreza Daraei, Neda Nahr shahri]

نیمسال دوم سال تحصیلی 95-96

Journals Papers

2024

1. Plasmonic graphene/perovskite Schottky barrier photodetector

Hadiseh Shahriyari, Naser Hatefi Kargan, Ahmadreza Daraei

ZEITSCHRIFT FUR NATURFORSCHUNG SECTION A-A JOURNAL OF PHYSICAL SCIENCES Volume: (79) 815 - 821

2. High Q/V single-mode nanobeam-grating resonator, functional in the ultra-high sensitive label-free lab-on-a-chip chemical sensor

Maryam Zoor, Ahmadreza Daraei, Naser Hatefi Kargan, Mohammad mahdi Babakhani fard

APPLIED PHYSICS A-MATERIALS SCIENCE and PROCESSING Volume: (130) 364-1 - 364-13

2022

3. Performance of a tunable photoconductive graphene plasmonic photodetector

Fateme Molavi, Naser Hatefi Kargan, Ahmadreza Daraei

ZEITSCHRIFT FUR NATURFORSCHUNG SECTION A-A JOURNAL OF PHYSICAL SCIENCES Volume: (77) 813 - 819

4. Bio-medical sensing by ultra-high quality-factor/modal-volume (Q/V) multi-slotted SOI Bragg grating cavity

Mohammad mahdi Babakhani fard, Ahmadreza Daraei, Sara Hassani

European Physical Journal Plus Volume: (137) 648-1 - 648-10

2020

5. Ultrahigh sensitive gas sensors based on slotted photonic wire-based structures including optical microcavities

Mohammad mahdi Babakhani fard, Ahmadreza Daraei, Naser Hatefi Kargan

European Physical Journal Plus Volume: (135) 1 - 13

6. Design and Simulation of Photonic Crystal Lenses in Various Nano-Structures

, Ahmadreza Daraei

Volume: (6) 47 - 53

7. A nanomaterial sensor based on tapered photonic crystal nanometer-scale cavity in a microdisk

, Ahmadreza Daraei

OPTICAL AND QUANTUM ELECTRONICS Volume: (52) 167-1 - 167-11

8. Performance of an Integrated Structure of Photonic Crystal-Microdisk in a Functional Nano-Particles Sensor

, Ahmadrza Daraei,

Volume: (10) 37 - 45

9. Enhancing crystal quality and optical properties of GaN nanocrystals by tuning pH of the synthesis solution

Mohammad, Naser Hatefi Kargan, Ahmadrza Daraei

ZEITSCHRIFT FUR NATURFORSCHUNG SECTION A-A JOURNAL OF PHYSICAL SCIENCES Volume: (75) 551 - 556

2017

10. Thin Cylindrical Slot in an Optical Microdisk Cavity for Sensing Biomaterials

Ahmadrza Daraei, ms daraei

APPLIED PHYSICS A-MATERIALS SCIENCE and PROCESSING Volume: (123) 1 - 6

2016

11. Compact nanocavity with elliptical slot inside photonic wire bandgap materials including sidewalls gratings for biosensing

Ahmadrza Daraei,

APPLIED PHYSICS A-MATERIALS SCIENCE and PROCESSING Volume: (122) 1 - 6

2007

12. Single photon sources based upon single quantum dots in semiconductor microcavity pillars

, , Ahmadrza Daraei, , , , , ,

JOURNAL OF MODERN OPTICS Volume: (54) 453 - 465

13. High Q Modes in Elliptical Microcavity Pillars

, , , , , Ahmadrza Daraei, , , ,

APPLIED PHYSICS LETTERS Volume: (90) -

14. Control of polarization and mode mapping of small volume high Q micropillars

Ahmadrza Daraei, , , , , , , ,

JOURNAL OF APPLIED PHYSICS Volume: (102) -

2006

15. Control of polarized single quantum dot emission in high-quality-factor microcavity pillars

Ahmadrza Daraei, , , , , , , ,

APPLIED PHYSICS LETTERS Volume: (88) -

2005

16. Observation of ultrahigh quality factor in a semiconductor microcavity

, Ahmadsreza Daraei, , , ,

APPLIED PHYSICS LETTERS Volume: (86) -

Conferences Papers

2021

1. Modeling of a Polarization Rotator Photonic Crystal Resonator on Insulator for Label-Free DNA Detection

1st Iranian Conference on Optical Fiber Sensors

Mohammad-Mahdi Babakhani-Fard, Ahmadreza Daraei, Mohammad Ghahremani, Mohammad Ismail Zibaii

2. Simulation of a Chemical Sensor based on the Defective Photonic Crystal Fiber Structure

1st Iranian Conference on Optical Fiber Sensors

Mohammad Ghahremani, Ahmadreza Daraei, Mohammad-Mahdi Babakhani-Fard , Mohammad Ismail Zibaii

2020

3. Schottky barrier photodetector with high responsivity

26th Iranian Conference on Optics and Photonics and 12th Iranian Conference on Photonics Engineering and Technology

Soleyman Rezaeian koochi, Naser Hatefi Kargan, Ahmadreza Daraei

2019

4. Chemical and Biological Sensing using Nano-Structured Single-Mode Fiber Bragg Grating

20th Iranian Inorganic Chemistry

Mohammad Ghahremani, Ahmadreza Daraei, Mohammad mahdi Babakhani fard

5. Ultra-Sensitive Chemical Gas Sensor based on Slot and Cavity Strip Silicon Waveguide

20th Iranian Inorganic Chemistry Conference

Mohammad mahdi Babakhani fard, Ahmadreza Daraei, Mohammad Ghahremani, Naser Hatefi Kargan

2015

6. Theoretical Model of the Optical Modes in Microcavity Pillar with Elliptical Cross-Section in Weak Coupling Regime Observation of the Purcell Effect

Neda Nahr shahri, Ahmadreza Daraei

2014

7. Fabry-Pérot Based Photonic Crystal Nanobeam Cavity, With Parabolic-Nanobeam Accompanied by Taper Air-Holes

, Ahmadreza Daraei

8. Investigation on effect of air-holes taper in a photonic crystal nanobeam cavity structure on the quality factor, using COMSOL Multiphysics

9. Effect of Lattice Constant to Improving Confinement Characteristics of the L3 Photonic Crystal Nanocavity Modes

, Ahmadreza Daraei

10. Effect of incident radiation direction size and shape of nobel metal nanoparticles on the electromagnetic scattering cross section

The 5th Conference and Workshop on Mathematical Chemistry

Executive activities

معاون آموزشی دانشکده علوم

from 1395/07/01 - to 1399/06/01

Research Project

1999

1. Design and installing the simultaneous measurement system of film thickness and refractive index by

Majid Rashidi Huyeh, Ahmadreza Daraei - 1999